Strategic defaults in emerging land auctions: A case study in Vietnam

Abstract

In emerging economies, land auctions are central to urban governance yet increasingly vulnerable to financialized speculation. This study investigates the 2021 Thủ Thiêm auction, where a US$106,000/m^2 bid ended in strategic default. We reframe this event not as a winner's curse, but as a rational pump-then-default strategy designed to revalue external asset portfolios. By modeling the auction with financial externalities, we demonstrate that standard fixed-deposit rules fail to insulate markets from systemic risk. When bidders hold significant collateral, manipulation becomes a dominant strategy, displacing genuine development and paralyzing site clearance. To restore viability, we propose a dynamic deposit mechanism with rolling peg requirements. This reform forces bidders to internalize the cost of price signaling, realigning financial incentives with urban development goals.

Keywords: Land governance, Land auctions, Strategic default, Mechanism design, Real estate speculation, Price signaling.

1. Introduction

For three decades, the marketization of land rights has driven Vietnam's economic transition. Under Đổi Mới (Revolution) reforms, land evolved from a state resource into a tradable asset, fueling rapid urbanization (Labbé, 2011; Gillespie, 1994; Ravallion and van de Walle, 2008). Central to this transformation is the public auction, theoretically favored for transparency and allocative efficiency (Milgrom, 2004; Klemperer, 2004). However, as land

markets increasingly intertwine with complex financial systems, the incentives governing these mechanisms have fundamentally shifted (Labbé and Musil, 2014; Shatkin, 2017).

This paper investigates a structural weakness in land market governance: the susceptibility of standard auctions to financial exploitation. It analyzes how bidders with substantial external holdings, such as corporate bonds or adjacent land, can manipulate the bidding process. Their objective is not to acquire the land, but to generate artificial price signals that boost the valuation of their broader portfolios. While the financialization literature documents the downstream effects of speculative cycles (Harvey, 2006; Christophers, 2017; Shatkin, 2017), few studies examine the micro-structural rules enabling this manipulation.

We address this gap by analyzing the 2021 Thủ Thiêm auction in Ho Chi Minh City. This watershed event featured a record-breaking bid of approximately US$106,000 per square meter, a valuation comparable to those in Manhattan and Tokyo. However, this benchmark was immediately followed by a default. We contend this was not a Winner's Curse, but the outcome of a specific regulatory failure: the fixed deposit rule. By capping entry deposits while permitting unlimited bids, the framework provided bidders a low-cost call option on the revaluation of the entire sector.

Methodologically, we advance beyond qualitative critiques by constructing a formal game-theoretic framework. We model the auction as a contest between a Genuine Developer, valuing the land for use, and a Strategic Manipulator, profiting from the external appreciation of a collateral portfolio. This maps the *pump-then-default strategy* into a rigorous model of rational behavior under asymmetric information.

Our analysis contributes three findings to the literature. First, we formalize the conditions for a rational pump-then-default equilibrium. When deposits are fixed and external asset sensitivity is high, manipulation becomes a dominant strategy, causing market breakdown. Second, the model

reveals two counter-intuitive paradoxes: the *Competition Paradox*, where honest developers inadvertently provide a liquidity shield for manipulators; and the *Revenue Paradox*, where the state tolerates bubbles because deposit forfeitures generate higher revenue than fair sales.

We subsequently propose a dynamic deposit rule and characterize its bounded equilibrium. Linking the bid bond to the live price restores incentive compatibility, compelling bidders to internalize systemic risk. This functions as an algorithmic regulator, dampening speculation without requiring the state to ascertain true value. Such a mechanism is particularly robust in contexts with limited administrative capacity (Posner and Weyl, 2018).

Finally, we link these dynamics to urban planning challenges. Distorted benchmarks exacerbate the gap between compensation and market prices, paralyzing site clearance and public works (Doan, 2023; Labbé and Musil, 2014). As residents demand compensation at "virtual" auction prices, genuine development capital is displaced. To address these failures, we propose a reform package: transitioning to dynamic deposits to price the manipulation option; enforcing immediate settlement to truncate false signals; and erecting prudential firewalls to insulate bond markets from unverified auction data.

The paper proceeds as follows: Section 2 reviews auction theory and Vietnamese land governance; Section 3 details the Thủ Thiêm case and the game-theoretic environment; Section 4 presents the equilibrium analysis; and Section 5 outlines the relevant legal excerpts and reform package. Mathematical proofs are relegated to Appendix A.

2. Literature review

2.1. Theoretical foundations

This paper contributes to research at the intersection of auction design, land governance, and the political economy of financialization. We move beyond standard and behavioral explanations to identify the structural drivers of strategic overbidding.

2.1.1. The limits of standard auction theory

Auctions are theoretically favored for their transparency and allocative efficiency, ensuring land flows to the developer with the highest valuation (Milgrom, 2004; Klemperer, 2004). Consequently, they serve as critical indicators of real estate dynamics, reflecting market interest and price expectations (Tang, 1989; Wu and Yeh, 1997; Xie et al., 2002; Ching and Fu, 2003).

Standard theory predicts that rational bidders exit when prices exceed private valuations, ensuring outcomes reflect market-clearing prices (Vickrey, 1961; Milgrom and Weber, 1982). Yet, aggressive overbidding persists in land markets (Ooi et al., 2006). The literature typically attributes this to the Winner's Curse—a cognitive error where bidders fail to adjust for the optimism inherent in a winning bid (Kagel and Levin, 1986; Thaler, 1988; Wilson, 1977). However, cognitive error offers limited explanatory power in financialized contexts where auction outcomes shape institutional values, such as planning benchmarks and collateral appraisals (Haila, 2000). In such settings, bids function as costly signals. Evidence from China's "Land King" phenomenon suggests record bids are often strategic attempts to reset consumer expectations and stimulate secondary markets (Wu et al., 2012; Fang et al., 2016). The objective shifts from simple acquisition to valuation signaling; the premium is paid not out of optimism, but to secure the external benefits of a higher benchmark. This creates a structural incentive to bid above fundamental value, deviating from the Nash equilibrium of standard auctions (Milgrom and Weber, 1982).

Despite extensive research on land price differentials (Quan, 1994; Colwell and Yavas, 1994; Lusht, 1996; Mayer, 1995, 1998), limited attention has been paid to governance mechanisms where bids function as financial options. To address this gap, we explore how fixed deposit rules render overbidding a *strategic* choice rather than a behavioral error.

2.1.2. Strategic externalities and the "toehold" effect

To explain rational overbidding, we draw on the corporate takeover literature regarding "toeholds". Burkart (1995) and Singh (1998) demonstrate that bidders with small stakes in a target firm may overbid to force rivals to pay a premium, thereby inflating their existing holdings. Such toeholds distort equilibrium bidding and impede efficiency (Bulow et al., 1999).

In land markets, the "toehold" is exposure via neighboring holdings or portfolios sensitive to local prices. Here, auction results act as public signals reshaping expectations and collateral values, following the logic of costly signaling (Spence, 1973). Mechanism design literature confirms that standard auctions fail when bidders care about the winner's identity (Jehiel and Moldovanu, 1996, 2001) or derive utility from the winning price (Maasland and Onderstal, 2007; Lu, 2012). We extend this by highlighting that in financialized markets, this externality is *constructed*. Bidders actively manufacture a financial link between the clearing price and external asset valuations, creating a feedback loop: bids set benchmarks, benchmarks shift portfolios, and portfolio gains fund higher bidding.

2.1.3. Land governance and financialization

We situate these mechanisms within the political economy of land financialization, treating land as a privileged store of value and collateral (Aalbers, 2016, 2019; Fernandez and Aalbers, 2016). As Christophers (2017) argues, the treatment of land as a financial asset defines modern capitalism. Here, prices are not mere market outcomes but are actively constructed through institutional arrangements linking valuation, credit, and state governance.

When auctions establish authoritative benchmarks, overbidding becomes a strategic effort to make prices rather than take them. This perspective explains why aggressive bidding persists and how its distributive effects extend beyond the transacted parcel. Thus, land auctions function not merely as allocation mechanisms but as institutionalized processes of price formation. Strategic default is driven less by the auction format than by the integration

of outcomes into these broader frameworks.

2.2. The discovery of land price in Vietnam

In Vietnam, these frameworks position auctions as a state-organized interface between urban development, fiscal governance, and financial markets.

2.2.1. State land regime and auction salience

The 2013 Constitution (as further specified in the Land Law 2013 and 2024) provides that land is owned by the entire people, with the State acting as the representative owner (National Assembly of Vietnam, 2013a,b, 2024). Private actors receive time-limited Land Use Rights (LURs) rather than a freehold title that can nonetheless be transferred, inherited, mortgaged, or contributed as capital within the planning framework. This positions land as a tool of governance and fiscal policy rather than a simple commodity (Gillespie, 1994; Labbé, 2011; Vo, 2011). In such a state-controlled and lacking private transaction data, LUR auctions become salient public price signals, with auction outcomes serve as critical reference points for market expectations (Wing et al., 2010).

Vietnam's "two-price system", with official land price tables and higher, informally recognized market rates, heightens this significance. Auctions are viewed as rare instances where administrative pricing yields to market logic, lending them unusual legitimacy (Vo, 2011; Labbé and Musil, 2014). Consequently, sharp divergences from official norms propagate through valuation practices, compensation benchmarks, and planning expectations.

2.2.2. Auctions, valuation practices, and financialization

The influence of land auctions is strengthened by the legal and technical procedures used to calculate and mobilize land values. Official appraisal standards primarily employ the comparative method, which requires valuers to reference recent transactions, including auction outcomes, when estimating market prices. After documentation, a successful auction quickly becomes

part of the authoritative set of comparables utilized by state agencies, banks, and developers (Doan, 2023).

These practices directly link auctions to financialization. Since the mid-2010s, LURs have increasingly collateralized credit expansion (World Bank, 2022). This transformation accelerated under Decree No. 153/2020/ND-CP, which relaxed issuance rules and allowed aggressive leveraging of land assets (Government of Vietnam, 2020b). Thus, auction prices do not simply reflect value; they manufacture balance-sheet capacity, reshaping risk exposure. Institutional analyses show that public pricing events act as moments of market-making that redistribute risk (Christophers, 2017; Shatkin, 2017). In Vietnam, the alignment of auction prices, appraisal standards, and financial leverage enables a single auction to reset valuation practices across entire metropolitan regions.

2.2.3. Benchmark authority under state land regimes

Vietnam's experience mirrors a broader Global South pattern. In China, "land king" auctions function as price benchmarks buffered by soft budget constraints (Fang et al., 2016). Similarly, state-led pricing events in India and Brazil reset market valuations to enable financial leveraging, even amidst project delays (Fix et al., 2003; Sanfelici, 2013; Searle, 2016). The Thủ Thiêm auction exemplifies this institutional logic. While the event garnered media attention, it remains underexplored in academic literature. We provide the first comprehensive documentation of this case, identifying how governance structures engineered such extreme incentives.

The next section will continue to establish the empirical and theoretical foundations of our analysis.

3. Case study and game-theoretic framework

We begin by documenting the anatomy of the 2021 Thủ Thiêm valuation shock, distinguishing the decoupled land price and subsequent financial transmission from standard valuation errors. Building on these stylized facts, we

construct a game-theoretic framework to map the qualitative observations of the pump-then-default strategy into a rigorous model of rational exuberance.

3.1. The valuation shock of Plot 3-12

Figure 1: **The Thủ Thiêm Auction Site.** The map highlights Lot 3-12 within the New Urban Area master plan. This specific location was the subject of the anomalous bidding event and subsequent default. *Source: Adapted from Sasaki.*

The empirical setting for this analysis is the auction of "Plot 3-12", a parcel of 10,059 square meters in the Thủ Thiêm New Urban Area, as shown in Figure 1. While the event on December 10, 2021 involved four distinct plots (3-5, 3-8, 3-9, and 3-12) as shown in Figure 2, Plot 3-12 was the undisputed crown jewel, situated along the riverfront with direct views of the central business district. The Ho Chi Minh City Property Auction Service Center initially set the reserve price at 2.9 trillion VND (US$127.7 million), a figure already considered ambitious given the peninsula's undeveloped state. However, following seventy rounds of rapid-fire bidding among Vietnam's largest real estate conglomerates, the highest bid reached 24.5 trillion VND (approximately US$1.1 billion). The winning entity was Viet Star Real Estate

Investment Co., Ltd., a member of the Tan Hoang Minh Group ecosystem.[1]

Figure 2: **Specific land plots involved in the 2021 auctions.** The aerial view details zones 3-5, 3-8, 3-9, and 3-12, which were subject to speculative bidding and subsequent default. These plots serve as the primary empirical setting for the analysis in this paper. *Source: Adapted from Lao Dong Newspaper.*

This winning bid implied a land value of about 2.43 billion VND (roughly US$106,000 USD) per square meter. As shown in Figure 3, this valuation applies to a peninsula that, despite its proximity to the center, is visually distinct from the dense District 1 across the river. To give context, despite Thủ Thiêm still lacking full sewerage and transport infrastructure, its price per square meter nominally eclipsed valuations in the world's top financial centers, including Tokyo's Ginza, Hong Kong's Central, and Manhattan's Fifth Avenue. While precise comparisons are difficult due to varying definitions of "net" versus "gross" floor area, prime residential land in Tokyo's Ginza was trading at approximately $210,000 per square meter for fully developed, income-generating lots. In contrast, the Thủ Thiêm price of $106,000 per

[1]The winning bid surpassed the final offer from Capital One Financial, a Chinese investor, who had proposed approximately US$1 billion for the plot before withdrawing (Vietnam Investment Review, 2022).

square meter for "bare land" requiring massive capital expenditure implies a finished product price of over $40,000 per square meter of apartment space, a price point essentially non-existent in the Vietnamese market at that time.

Figure 3: **Panoramic view of Thủ Thiêm New Urban Area.** The sharp contrast between the undeveloped peninsula and the dense CBD illustrates the area's delayed urbanization. *Source: Thu Thiem Zeit.*

The structural failure of the auction culminated on January 10, 2022, exactly one month later, when the winning bidder unilaterally terminated the purchase contract. The formal withdrawal was communicated via a letter signed by Mr. Do Anh Dung, Chairman of Tan Hoang Minh Group, and addressed directly to General Secretary Nguyen Phu Trong and Prime Minister Pham Minh Chinh. In this correspondence, the developer cited "instability in the domestic real estate market" and voluntarily forfeited its deposit of nearly 600 billion VND ($26 million USD) (Viet Nam News, 2022). The Chairman claimed his initial aggressive bidding was motivated by "national pride" to prevent foreign competitors from acquiring strategic land, but stated that upon reflection, completing the transaction at such a price would "lead to negative implications for the real estate sector" (Vietnam Investment Review, 2022).

In the field of auction theory, building on the foundational mechanism

design work of Vickrey (1961), Milgrom and Weber (1982), such a default is typically categorized under the Winner's Curse. This phenomenon describes a scenario where a bidder overestimates the asset's common value and, upon realizing the error, chooses to incur a small penalty rather than complete a disastrous transaction (Thaler, 1988; Kagel and Levin, 1986).

However, we argue this was a rational execution of market manipulation. Legal proceedings confirmed the auction was inextricably linked to a massive financial fraud. Concurrent with the bidding in late 2021, the Tan Hoang Minh Group was orchestrating a circular bond issuance scheme totaling over 10 trillion VND (US$430 million). Using three subsidiary companies, specifically *Viet Star* (the winning bidder), *Soleil*, and *Winter Palace*, the Group issued nine separate bond lots, ostensibly to fund development projects but in reality to cover operational debts (Viet Nam News, 2024).

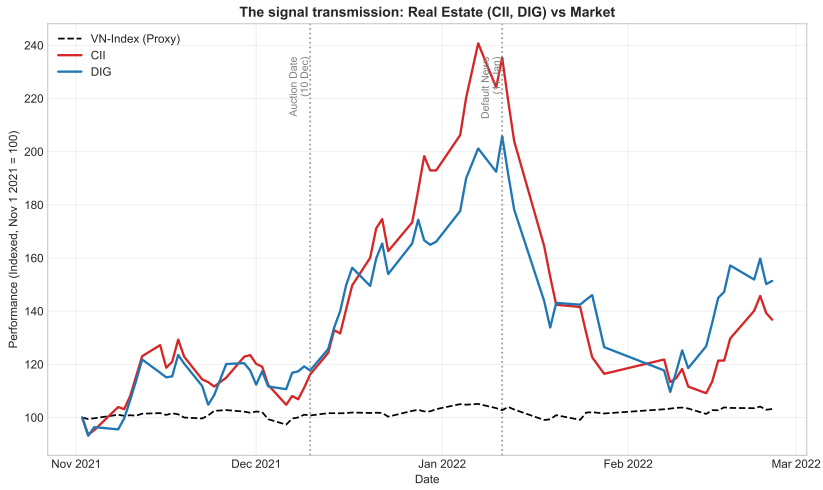

Figure 4: **The signal transmission.** Stock performance of exposed firms (CII, DIG) vs. VN-Index (Nov 2021 – Feb 2022). Prices normalized to 100. Vertical lines indicate the auction and default dates. *Data source: Yahoo Finance.*

To market these instruments to nearly 6,600 retail investors, the Group needed to manufacture immense solvency. The record-breaking auction result provided this legitimacy. By establishing a benchmark of 2.4 billion

VND/m^2, the Group effectively re-priced the sector, enabling complicit firms to inflate collateral valuations. Thus, the bid was not an acquisition attempt, but a mechanism to generate a price signal for an external portfolio. The forfeited deposit was merely a calculated marketing expense, dwarfed by the US$430 million liquidity mobilized. This scheme ultimately led to the Chairman's eight-year prison sentence in 2024 (The Saigon Times, 2023; VnExpress International, 2024).

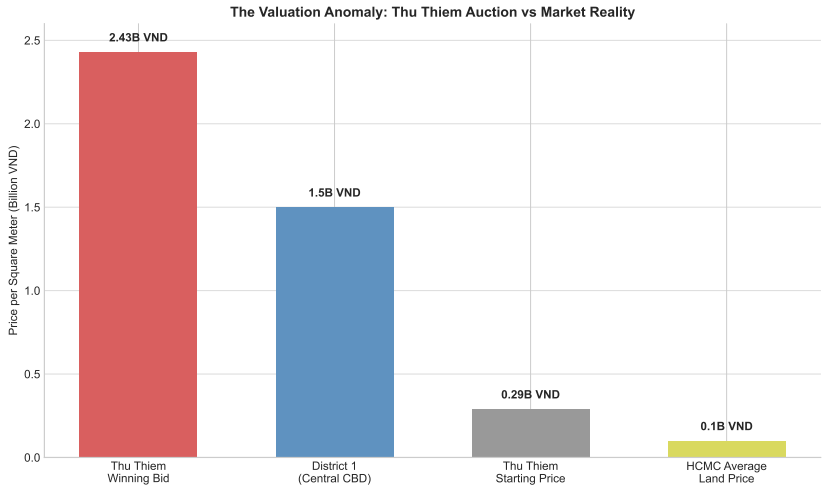

Figure 5: **The valuation anomaly.** The winning bid for Plot 3-12 (2.43 billion VND/m^2) compared to the average price of prime land in the existing CBD (District 1) and the auction reserve price. *Data sources: General market reports (The Saigon Times, VnExpress).*

We empirically validate this mechanism by tracing the shock's transmission across three dimensions: immediate financial capitalization (Figure 4), decoupling from development fundamentals (Figure 5), and statistical isolation from national trends (Figure 6). Figure 4 tracks the equity performance of real estate firms with Thủ Thiêm exposure (e.g., CII, DIG) against the market index (VN-Index). The divergence post-auction is stark: while the broader market remained stable, the stock prices of "treated" firms doubled within thirty days. This volatility contradicts the *Efficient Market Hypothesis* (Fama, 1970). Instead, it validates models of noise trader risk (Long

et al., 1990) and extrapolative expectations in real estate (Case and Shiller, 1989), where the auction signal triggered a speculative feedback loop detached from intrinsic fundamentals. Specifically, the bid acted as a positive shock via the *Collateral Channel* (Kiyotaki and Moore, 1997), inflating land values to relax borrowing constraints and boost net worth—an effect that reversed sharply upon default, with Figure 4 showing stock prices reverting fully to pre-auction benchmarks.

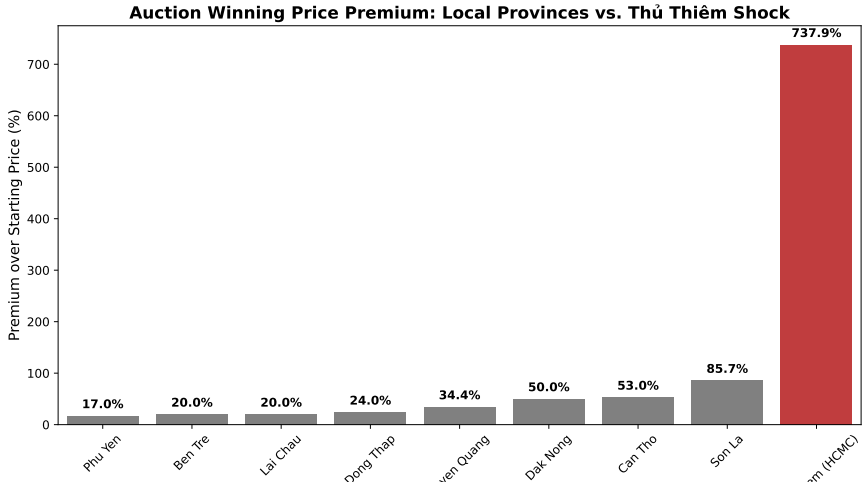

Figure 6: **The Decoupling of Land Value.** While national premiums typically range from 17% to 86%, the Thủ Thiêm bid is a statistical anomaly. This outlier indicates a valuation detached from urban utility, likely driven by incentives to revalue external collateral portfolios. *Data sources: Vietnamnet.*

Figure 5 illustrates the magnitude of the valuation shock. By juxtaposing the bid against prime prices in the fully developed Central Business District (District 1), we reveal a premium defying standard development economics. This gap exceeds the empirical value uplift ceiling of one-third typically associated with infrastructure projects (Tang and Lo, 2008), rendering legitimate speculation explanations unlikely. Market analysis by HoREA confirms the bid was insolvent from inception; the land price of 2.43 billion VND/m^2 implied a break-even residential price of 400 million VND/m^2, far exceed-

ing existing luxury benchmarks. Finally, Figure 6 situates the event within the national landscape. While competitive premiums country-wide typically range from 17% to 86%, the Thủ Thiêm bid registers as an extreme statistical outlier of 830%. This radical decoupling confirms the auction functioned not as a vehicle for price discovery, but as a strategic instrument engineered to revalue external collateral portfolios.

3.2. A model of rational exuberance

Motivated by the incentives for external signaling and default observed in Thủ Thiêm, we develop a stylized model of an open ascending (English) auction.[2] We depart from standard theory by introducing a *Strategic Manipulator* (M) who bids purely for price signaling rather than acquisition.

The auction involves two distinct agents. First, the *Genuine Developer* (D) seeks to acquire the land for construction. D holds a private valuation v_D drawn from a distribution $F(v)$ on $[0, \infty)$. Aiming to maximize profit, D follows the dominant strategy of bidding up to v_D. Second, the *Strategic Manipulator* (M) has no intrinsic interest in the plot (use-value normalized to zero) but holds an external asset portfolio of size A. This portfolio is sensitive to the auction's price signal; as the price p rises, M's external wealth increases by θp, where θ captures market sensitivity.[3]

Modeled as a standard clock auction, the price rises continuously until one bidder exits. The model's central feature is the option to default. If M wins, they avoid paying the bid price by exercising this option. This incurs a penalty κ (the forfeited deposit), but crucially, the market signal p is already realized. This creates a strategic tension characterized by two outcomes.

[2] In standard private-value English auctions, the dominant strategy is bidding up to true valuation v_i, yielding an outcome equivalent to a second-price sealed-bid (Vickrey) auction (Krishna, 2009).

[3] Empirically, M represents Tan Hoang Minh Group and A their bond collateral and land bank. The parameter θ captures the "mark-to-market" mechanism under Decree 153, allowing the auction price (p) to immediately revalue these assets.

In the *ideal outcome* (M loses), M inflates external assets while D wins, yielding appreciation without penalty:

$$Pi_M^{lose}(p) = A \cdot \theta p. \tag{1}$$

In the *accidental outcome* (M wins), D exits early. M benefits from the signal but must pay the default penalty κ:

$$\Pi_M^{win}(p) = A \cdot \theta p - \kappa(p). \tag{2}$$

The critical variable is the penalty structure $\kappa(p)$. The status quo pegs deposits to the reserve ($\kappa = 0.2r$), maintaining a constant default cost despite infinite signaling upside. We propose linking the deposit to the live bid, ensuring the cost of manipulation scales with signal intensity.

4. The simple economics of pump-then-default tactic

Having defined the environment, we analyze the Manipulator's strategic behavior. Unlike traditional bidders assessing intrinsic value, the Manipulator asks: *does the marginal increase in my external portfolio outweigh the risk of accidental winning?* This section derives equilibrium strategies under the status quo (Fixed Deposit) and our proposed reform (Dynamic Deposit), exploring how manipulation distorts honest competition and state incentives.

4.1. The failure of fixed deposits

The Manipulator (M) faces an optimal stopping problem under uncertainty regarding the Genuine Developer's (D) valuation v_D, drawn from $F(v)$.

1. **The Benefit of Staying:** If M stays in and D also stays, the price rises. This increases the public market signal, inflating M's external assets by $A \cdot \theta \Delta p$, where Δp is a bid increment. The *marginal benefit* of staying is thus $A \cdot \theta$.

2. **The Risk of Staying:** If M remains active but D withdraws, M is left holding the winning bid. This outcome forces M to exercise the default option, thereby incurring the penalty $\kappa(p)$. Consequently, the approximate cost of raising the price from p to $p+\Delta p$ is the conditional probability of D's exit multiplied by the penalty: $\frac{f(p)\Delta p}{1-F(p)}\kappa(p)$. The expected *marginal cost* of staying is thus $\frac{f(p)}{1-F(p)}\kappa(p)$.

To formalize this risk, we utilize the concept of the *Hazard Rate* from reliability theory.[4] Let $h(p) = \frac{f(p)}{1-F(p)}$ be the hazard rate of the developer's valuation distribution. Economically, $h(p)$ represents the *conditional probability* that the developer will quit in the next second, given that they have already bid up to price p.

The Manipulator will continue to bid if and only if the marginal benefit exceeds the expected marginal cost:

$$\underbrace{A \cdot \theta}_{\text{Marginal External Gain}} \geq \underbrace{h(p) \cdot \kappa(p)}_{\text{Expected Penalty}} \tag{3}$$

Think of the auction as a game of chicken. The Manipulator is driving a car (the price) faster and faster. The marginal gain is the thrill or profit from the speed. The expected penalty is the probability of a crash (winning the auction) multiplied by the cost of the crash (the deposit). The Manipulator keeps their foot on the gas as long as the thrill outweighs the crash risk.

To characterize the equilibrium, we must first address the statistical nature of the Developer's valuation. In auctions for trophy assets, where bidders are sovereign wealth funds or mega-conglomerates, capital constraints do not follow a standard Normal (Gaussian) distribution. Instead, they exhibit *heavy tails* (e.g., Pareto or Log-normal distributions), reflecting the extreme concentration of wealth at the top of the pyramid (Gabaix, 2009).

[4] Adapting the hazard rate from reliability theory (Barlow and Proschan, 1975), we treat price p as time and rival exit as the "failure" event.

A defining property of these heavy-tailed distributions is a *Decreasing Hazard Rate* (Kleiber and Kotz, 2003). Economically, this captures a "survival of the fittest" dynamic. At low prices, smaller players drop out, keeping the exit probability high. However, as the bidding enters the stratosphere, a selection effect occurs: only the best-capitalized whales remain. If a rival has survived to a record-breaking price, the conditional probability that they will run out of cash in the very next increment is statistically low. In short: the higher the price goes, the less likely the auction is to end abruptly.

This statistical reality collides with the specific regulatory design of the Vietnamese market. In the 2021 Thủ Thiêm auction, the deposit was fixed at 20% of the *reserve* price. This means $\kappa(p) = \bar{\kappa}$ was a constant number, regardless of how high the bidding went. As the auction progresses, the marginal benefit of pumping the price remain constant, while the marginal risk of getting caught holding the bag actually shrinks. The lines diverge, creating a one-way bet where the optimal strategy is to never stop.

We formalize this market breakdown below.

Claim 1 (Unbounded Manipulation)**.** *Under a Fixed Deposit regime, if the Manipulator's external portfolio is sufficiently large ($A\theta > h(p)\bar{\kappa}$ for all p), the Manipulator has a dominant strategy to bid indefinitely high, leading to a market breakdown.*

The inequality $A\theta > h(p)\bar{\kappa}$ implies that for every incremental bid, the *sure* gain to the external portfolio ($A\theta$) strictly exceeds the *risk-weighted* cost of the deposit ($h(p)\bar{\kappa}$). Because the penalty is capped while the signaling benefit is continuous (and the probability of the rival quitting $h(p)$ effectively shrinks), the Manipulator is locked into a loop of positive expected value. They do not stop bidding because the risk of "accidental winning" never grows large enough to outweigh the reward of market manipulation.

This result provides a rational foundation for the seemingly irrational bid of 24.5 trillion VND. Critics argued that the bidder behaved recklessly.

Our model suggests the opposite: given the fixed deposit constraint, infinite bidding is the *only* rational strategy.

4.2. The dynamic deposit mechanism

To restore market order, we must correct the misalignment between the fixed penalty and the unbounded benefit. We propose a *dynamic deposit rule*, where the requisite bid bond is not a static entry fee, but a linear function of the standing bid: $\kappa(p) = \alpha p$, where $\alpha \in (0, 1)$ is the deposit ratio.

Before formalizing the solution, we must address the behavior of the risk function. As established in Section 4.1, high-value auctions often exhibit a Decreasing Hazard Rate ($h(p)$ falls as p rises), reflecting the deep pockets of remaining bidders.

However, for a dynamic penalty to effectively deter manipulation, we rely on *expected penalty rate* $\phi(p) = p \cdot h(p)$ being strictly increasing. This is a regularity condition in revenue management literature (Lariviere, 2006). This assumption implies that while the *probability* of a rival quitting ($h(p)$) may decrease, it does not decrease fast enough to offset the linear growth of the financial penalty (p). In other words, even if a rival is less likely to quit at \$10 billion than at \$1 billion, the pain of being forced to pay a 20% deposit on \$10 billion is sufficiently larger to increase the expected loss.[5]

Claim 2 (Bounded Equilibrium)**.** *Under a Dynamic Deposit rule where $\kappa(p) = \alpha p$ and assuming the regularity condition that $p \cdot h(p)$ is strictly increasing, there exists a unique finite stopping price p^* at which the Manipulator voluntarily exits the auction.*

Under this rule, the cost of the crash scales with speed. Even if M is optimistic about D's survival, the magnitude of the potential penalty even-

[5]This condition holds for the vast majority of economic distributions, including the Uniform, Normal, Exponential, and Log-normal distributions. It fails only in cases of "infinite variance" (such as certain parameterizations of the Pareto distribution) where wealth concentration is so extreme that risk effectively ceases to scale.

tually becomes prohibitive. To prevent M from displacing a developer with valuation v_D, the regulator must calibrate the deposit ratio α such that:

$$\alpha^* = \frac{A\theta}{v_D \cdot h(v_D)}$$

This dictates that the required "skin in the game" must be proportional to the leverage of the manipulator's external assets (A).

4.3. Strategic exit of honest developers

The presence of a Manipulator fundamentally distorts legitimate participation. In Thủ Thiêm, major developers withdrew early, well below their financial capacity. This puzzle is explained by the option value of waiting.

Why would a profit-maximizing developer exit an auction below their true valuation (v_D)? Standard auction theory predicts that a bidder will stay in until the price p equals their valuation v_D. However, this assumes the auction is a "one-shot game" where losing means losing the asset forever. In a pump-then-default scenario, this assumption fails.

If the Honest Developer (D) suspects that their rival is a Manipulator (M) who intends to default, the auction transforms into a dynamic game with an embedded *waiting option*. The Developer realizes that losing to the Manipulator today is not final. If M wins and defaults, the state must re-auction the land in the future, likely at a lower starting price and without the disruptive presence of M (who would be disqualified).

Consequently, the Honest Developer faces two competing strategies:

1. **Win Now:** Pay the current price p to secure the land immediately.
2. **Wait and See:** Drop out, let M win (and inevitably crash), and plan to acquire the land in the subsequent re-auction at a rational price.

Rationality dictates that D should only bid if the surplus from winning today exceeds the discounted expected surplus of winning later. Because the Manipulator is driving the current price p well above the fundamental market

consensus, the value of the waiting option quickly exceeds the value of the winning option. We formalize this decision rule below.

Claim 3 (The Option to Wait)**.** *If the Honest Developer anticipates a default and a subsequent re-auction, they will optimally exit the current auction at a price $\hat{p}$ strictly lower than their true valuation v_D.*

This explains the "early exit" puzzle. The Honest Developer effectively *shorts* the auction. They recognize that paying an inflated price today to beat a "crazy" bidder is irrational when they can simply let the bidder fail and buy the asset at a discount next year. This leads to a distinct form of market failure: the auction mechanism fails to discover the true market value because rational buyers flee the room, leaving the floor to speculators. This phenomenon mirrors the lemons problem, where adverse selection forces high-quality participants to exit the market entirely (Akerlof, 1970).

4.4. The competition and revenue paradoxes

Conventional wisdom in mechanism design and auction theory posits that "more competition is better" (Bulow and Klemperer, 1996). Typically, increasing the number of bidders (N) mitigates collusion and ensures the final price converges to the true valuation. However, our model reveals that in the presence of a pump-then-default strategy, market thickness can produce a counter-intuitive and deleterious effect.

4.4.1. The competition paradox

The Manipulator (M) faces a risk of "accidental winning" whenever the current highest honest bidder drops out. Therefore, M's decision to continue bidding depends on the aggregate staying power of the honest opposition.

Claim 4 (Competition Paradox)**.** *Increasing the number of honest developers N in the auction increases the Manipulator's optimal stopping price p^*, that is, increased honest competition strictly emboldens the manipulator.*

One can visualize the Manipulator as a surfer and the aggregate demand of honest bidders as the wave. If the wave is small (few bidders), it breaks early, forcing the surfer to bail out (stop bidding) at a low price. However, if the wave is massive (N is large), the surfer can ride it much longer and higher. By providing a liquidity shield, a thick market inadvertently provides the cover necessary for the Manipulator to extend their bluff.

4.4.2. The State's revenue paradox

Finally, we highlight a perverse incentive generated by the proposed dynamic deposit mechanism. While the rule $\kappa(p) = \alpha p$ restores incentive compatibility for the bidder, it simultaneously distorts the objective function of the auctioneer (the State).

Claim 5 (Revenue Paradox)**.** *There exists a range of manipulated prices $p > \frac{v_D}{\alpha}$ where the State derives strictly greater revenue from a Manipulator's default than from a successful allocation to an honest developer.*

This inequality creates a profound conflict of interest. A revenue-maximizing Finance Ministry may tacitly encourage speculative bubbles, recognizing that default forfeiture yields higher immediate cash flow than a fair sale. This aligns the State's fiscal incentives with the Manipulator's predatory strategy, opposing the urban planning goal of physical development.

5. Policy implications

The theoretical findings in Section 4 demonstrate that the Thủ Thiêm default was not an isolated market anomaly, but a rational exploitation of specific regulatory loopholes. As detailed below, the interaction between the *Law on Property Auction*, the *Law on Tax Administration*, and the *Law on Enterprises* inadvertently subsidized a pump-then-default strategy. The cost of this regulatory failure extends beyond the forfeiture of a single deposit; it fosters predatory bond issuance schemes and inflicts a debilitating "time tax" on the urban economy.

This paralysis creates a scenario where both the state and local residents lose years to stagnation. The friction is vividly illustrated by the stalling of key infrastructure projects in Ho Chi Minh City. Following the 2021 Thủ Thiêm auction shock, residents in the neighboring 30-hectare Nam Rạch Chiếc resettlement area cited the record-breaking 2.4 billion VND/m^2 price as a new baseline, refusing previously agreed compensation rates. This recalibration of expectation halted site clearance, delaying critical arterial roads (The Investor, 2025). Similarly, Metro Line No. 2 has been plagued by widening gaps between state compensation frames and the virtual prices inferred from these high-profile transactions (The Investor, 2026). This forced repeated, time-consuming revisions to the project's investment capital.

To transition from systemic value destruction to efficient allocation, policy must evolve beyond administrative compliance to incentive-compatible design. We propose a comprehensive reform package across three dimensions: pricing the option, shortening the signal duration, and strengthening bidder liability.

5.1. Pricing the option: The dynamic deposit rule

The most critical failure identified in our model is the convexity of the Manipulator's payoff function. Under the status quo codified in the *Law on Property Auction* No. 01/2016/QH14 (National Assembly of Vietnam, 2016), the state effectively sells a fixed-cost financial derivative to the bidder:

> **Article 39. Advance payment and handling thereof**
>
> 1. A bidder shall make an advance payment... which must be **between five percent and twenty percent of the reserve price** of the auctioned property...

By capping the deposit $\bar{\kappa}$ at 20% of the reserve price, the law ensures the cost of the default option remains constant even as the auction price p rises to infinity. This creates a free upside: once the bid exceeds a certain

threshold, the marginal cost of an additional bid becomes zero, while the marginal benefit to the external portfolio $A \cdot \theta$ remains positive.

To restore linearity to the payoff function, the deposit must rise endogenously with the placed bid. We propose replacing the static cap with a dynamic activity rule:

1. **The rolling peg mechanism:** As bidding progresses, the deposit requirement updates in real-time. If the standing bid exceeds 150% of the reserve price, the bidder must immediately top-up their deposit to maintain a 20% ratio against the *current* standing bid. This ensures the price of the default option scales with the magnitude of the signal.
2. **The calibration constraint:** To prevent the bubble from displacing genuine economic activity, the regulator must calibrate the deposit ratio α according to our model's constraint:

$$\alpha > \frac{A\theta}{v_D h(v_D)} \tag{4}$$

   This inequality implies that the "skin in the game" (α) must be proportional to the leverage of the external assets (A) relative to the intrinsic value of the land (v_D).[6]

5.2. Limiting the duration: The Hong Kong settlement model

An option is valuable only if it has duration. The "pump" strategy relies on the time window between the auction win and the payment deadline to execute external financial maneuvers. Currently, *Decree No. 102/2024/ND-CP* (Government of Vietnam, 2024) defers to *Decree No. 126/2020/ND-CP* (Government of Vietnam, 2020a), granting a generous payment schedule:

> **Article 18 (Decree 126). Tax payment time limits...**

[6]To determine fundamental value (v_D), policymakers should transition from single-point auction signals to mass valuation models based on tangible attributes (Doan, 2023).

> 4 b/ Within 90 days from the date of issuance of a notice... the land user shall pay the remaining 50% of the payable land use levy amount as notified.

This statutory timeline creates a 90-day "Free Look" period where the Manipulator utilizes the high auction price as an official market benchmark without having paid the principal. To neutralize this, we propose adopting the Hong Kong Settlement Model:

1. **Immediate partial settlement:** The winning bidder must settle a substantial portion of the premium (e.g., 10–20% of the *strike price*) within 7 days of the hammer fall.
2. **Signal quarantine:** If the initial settlement is not paid immediately, the auction result is legally classified as *provisional* and explicitly excluded from the comparative data used for official land appraisals. This shortens the effective duration of the signal option (T) to near zero, rendering the external manipulation strategy insolvent.

5.3. Blocking transmission: Prudential firewalls

The Manipulator's incentive is driven by , the sensitivity of external assets to the auction price. At the time of the auction, *Decree No. 153/2020/ND-CP* (Government of Vietnam, 2020c) prioritized issuance autonomy, shifting risk entirely to the issuer:

> **Article 5. Principles of bond issuance and use**
>
> 1. Corporations shall issue bonds on the principles of self-borrowing, self-repayment... and ensuring their solvency.

Under this framework, developers could issue bonds based on the *book value* of their land banks without mandatory third-party valuation. A record-breaking auction result serves as a comparable transaction that justifies updating these book values. We propose a Prudential Firewall between auction outcomes and banking collateral:

1. **Exclusion of unsettled bids:** The Ministry of Finance must amend valuation standards to explicitly prohibit the use of auction prices as comparable transactions until *full payment* is verified and the Land Use Right certificate issued.
2. **Outlier smoothing:** For auction results that exceed the historical average by more than three standard deviations (e.g., $> 3\sigma$), the price should be excluded from the Land Price Frame for a probationary period (e.g., 12 months) to prevent a single speculative attack from resetting the tax and compensation baseline.

This firewall is particularly urgent given the 2024 Land Law's mandate to calculate compensation based on specific market prices rather than static state frames (National Assembly of Vietnam, 2024). Without an outlier quarantine, a single manipulated auction immediately poisons the compensation baseline for all nearby public works. As seen in Thủ Thiêm, when residents anchor their expectations to a speculative price, the gap between state compensation and citizen demand becomes unbridgeable, freezing site clearance and trapping infrastructure projects in indefinite legal limbo. Isolating these outliers is therefore not just a financial safeguard, but a prerequisite for maintaining the operational viability of urban development.

5.4. Strengthening the counterparty: Piercing the corporate veil

Finally, the mechanism must address the solvency blind spot. Current regulations focus on project feasibility (total investment capital) rather than bidder liquidity. This allows large conglomerates to bid through undercapitalized Special Purpose Vehicles (SPVs) with limited liability. *Decree No. 43/2014/ND-CP* (Government of Vietnam, 2014) requires equity based on self-declared investment capital:

> **Article 14. Detailed provisions on... leased land...**
>
> 2 a/ Having own capital... equal to at least 20% of the total investment...

However, when the SPV defaults, the *Civil Code* No. 91/2015/QH13 (National Assembly of Vietnam, 2015) and *Law on Enterprises* No. 06/2020/L-CTN (National Assembly of Vietnam, 2020) ensure that the parent conglomerate's broader assets remain immunised from the subsidiary's insolvency and limiting total liability strictly to the deposit:

> **Article 74 (Law on Enterprises).** *Single member limied liability company*
>
> 1. ...The company owner is liable for all debts... within the charter capital of the company.

This structure ensures the parent company retains external gains while the SPV absorbs the deposit loss. To align incentives, the cost of default must pierce the corporate veil:

1. **Cross-default provisions:** For strategic national assets, parent companies must sign a corporate guarantee. This ensures that a default by the subsidiary triggers cross-default clauses on the parent company's other debts, vastly increasing the cost of the strategy (κ).
2. **Addressing liquidity trade-offs:** To avoid stifling competition from genuine developers who face liquidity constraints, the Dynamic Deposit need not be fully cash-collateralized. It can be structured as an Irrevocable Bank Guarantee that scales with the bid. This shifts the burden of risk assessment to the banking sector; a bank will issue a scaling guarantee for fundamental value, but refuse to finance a bubble.

6. Conclusion

The 2021 Thủ Thiêm auction served as a stress test for emerging market institutions. Beyond the headline US\$106,000/m^2 valuation, the event's true significance lies in the subsequent default. We contend this was not a

Winner's Curse, but a *pump-then-default* tactic. By forfeiting a capped deposit, the bidder effectively purchased a sector-wide asset revaluation. This exposes an incentive design flaw: when static entry fees meet scalable external gains, the legal framework inadvertently subsidizes market manipulation. Our theoretical model demonstrates this vulnerability is structural. As long as manipulation costs remain fixed while signaling benefits scale with price, rational agents with large external portfolios possess an incentive to push bidding beyond intrinsic value. In this context, the Winner's Curse is no longer a mistake to be avoided, but a weapon to be wielded.

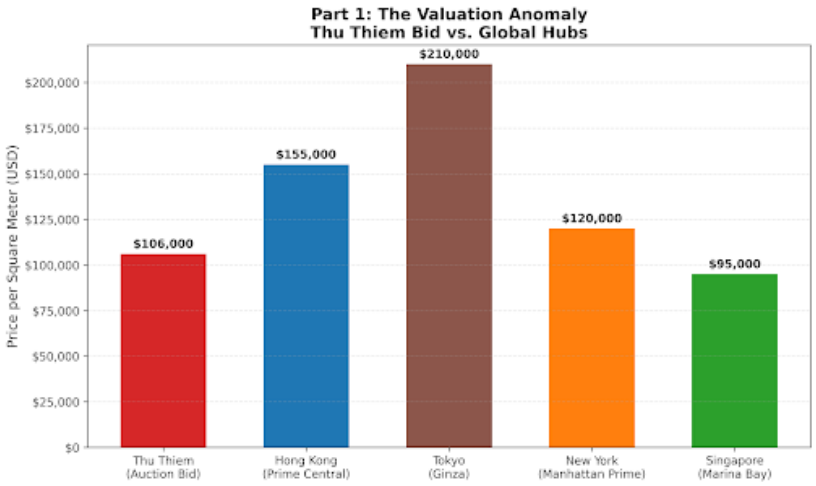

Figure 7: **The Valuation Anomaly** Thủ Thiêm Plot 3-12 winning bid vs. prime land prices in global financial hubs (USD/m^2). *Sources: Official auction results; Knight Frank/Savills via VnExpress and CafeF.*

The magnitude of this distortion is evident in its global context. As shown in Figure 7, the winning bid for undeveloped land in Ho Chi Minh City exceeded valuations in Singapore's Marina Bay ($95,000) and rivaled Manhattan ($120,000). While remaining below peaks in Tokyo or Hong Kong, the anomaly lies in the economic context: a bid competing with established financial capitals occurred in an economy with a fraction of their GDP per capita. Such pricing defies fundamental valuation; it can only be

explained as an option price—the cost paid to reset the valuation baseline for external collateral assets.

These reforms are urgent. Ho Chi Minh City plans to re-auction seven Thủ Thiêm plots in 2026, including those involved in the 2021 default (The Saigon Times, 2025). Without dynamic deposit rules and solvency firewalls, the city risks repeating cycles of artificial inflation and market paralysis.

The implications extend far beyond Vietnam. As Global South cities increasingly utilize land value capture to finance urbanization, Thủ Thiêm offers a critical warning. Without robust activity rules, auctions risk becoming casinos for speculative finance (Strange, 1986). The transition from "land for construction" to "land for financialization" demands a parallel evolution in governance. To harness the market, the state must ensure market design can withstand the weight of its own capital.

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Appendix A. Mathematical proofs

Appendix A.1. Proof of Claim 1

Proof. The optimality condition requires Marginal Benefit $\geq$ Expected Marginal Cost: $A\theta \geq h(p)\bar{\kappa}$. For high-value asset distributions (e.g., Pareto, Log-normal), the hazard rate $h(p)$ is non-increasing. Consequently, if the external portfolio is sufficiently large such that $A\theta > h(p)\bar{\kappa}$ initially at the reserve price r, the inequality holds for all p. The Manipulator perceives the fixed deposit $\bar{\kappa}$ as a sunk entry fee rather than a scaling risk, rendering infinite bidding the dominant strategy. □

Appendix A.2. Proof of Claim 2

Proof. Substituting $\kappa(p) = \alpha p$ into the FOC yields $A\theta = h(p)\alpha p$. Rearranging isolates the stopping price:

$$\frac{A\theta}{\alpha} = p^* h(p^*). \tag{A.1}$$

Let $\phi(p) = ph(p)$. Assuming the standard regularity condition that the expected penalty rate $\phi(p)$ is strictly increasing and unbounded, the Intermediate Value Theorem guarantees a unique intersection p^* where the escalating penalty outweighs the external benefit. □

Appendix A.3. Proof of Claim 3

Proof. Let $\delta \in (0, 1)$ be the discount factor representing the time cost of the delay (e.g., the 12 months required for the default to be processed and the land re-listed). Let p_{future} be the expected clearing price of the future re-auction. Crucially, since the Manipulator will be excluded, p_{future} is expected to reflect fundamental value rather than speculative signal (i.e., $p_{future} < p$).

The Developer must weigh the immediate surplus of securing the land today ($\Pi_{now} = v_D - p$) against the option value of waiting for the defaulter's

exit ($\Pi_{wait} = \delta(v_D - p_{future})$). The Developer remains in the auction only so long as $\Pi_{now} > \Pi_{wait}$. The optimal exit price $\hat{p}$ is the point of indifference:

$$v_D - \hat{p} = \delta(v_D - p_{future}).$$

Solving for $\hat{p}$:

$$\hat{p} = (1 - \delta)v_D + \delta p_{future}.$$

Since $p_{future} < v_D$ (the future price is lower than the developer's maximum willingness to pay), the term on the right-hand side is a weighted average that is strictly less than v_D. Thus, $\hat{p} < v_D$. □

Appendix A.4. Proof of Claim 4

Proof. Let $Y_N = \max\{v_1, ..., v_N\}$ be the valuation of the strongest honest bidder. Order statistic theory establishes that for standard distributions, the hazard rate of the maximum, $h_N(p)$, decreases as N increases (David and Nagaraja, 2004). A lower hazard rate reduces the expected marginal cost in Eq. (3). Consequently, a thicker market ($N \uparrow$) extends the Manipulator's profitable bidding range, increasing p^*. □

Appendix A.5. Proof of Claim 5

Proof. The State compares revenue from a fair sale ($R_{sale} \leq v_D$) against a default penalty ($R_{default} = \alpha p$). The State strictly prefers default when $\alpha p > v_D$, or $p > v_D/\alpha$. Since the Manipulator's strategy is unbounded under fixed deposits, prices exceeding this threshold are attainable, creating a perverse fiscal incentive to tolerate bubbles. □