

Fractional Real Estate Tokenization

Fractional Real Estate Tokenization as a Pathway to Housing Affordability

A Computational Simulation Framework for Vietnam's Housing Market

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Core distinction: affordable investment participation $\neq$ affordable residential access.

The problem: Large upfront capital barrier

SOCIAL-HOUSING PRICE BAND

VND 15-30m / m²

70 m² reference unit → VND 1.05-2.10bn

COMMERCIAL PRICE BAND

VND 50-60m / m²

70 m² reference unit → VND 3.50-4.20bn

Policy motivation: households between support eligibility and market affordability.

Reference case: VND 40m monthly household income; not a population-wide estimate.

Focus: the upfront capital barrier to property-linked investment.

Research question and scope

Can an evidence-informed simulation illustrate lower capital entry barriers?

- **Recompute affordability**

Transparent price bands, income and savings inputs.

- **Calibrate fractional pricing**

Published RealT token structure, adapted to a Vietnamese reference value.

- **Evaluate accounting logic**

Specified operations and reported reference-model unit tests.

Scope: Computational simulation, not a housing-outcome evaluation

Design science: Three connected modules



Data actually used: reported aggregate Vietnamese prices + published RealT summaries.

Listing microdata and raw token data were not newly analyzed for the reported results

Module A: Transparent affordability baseline

MIDPOINT PROPERTY VALUE

VND 1.575bn

70 m² × midpoint of VND 15–30m/m²

ANNUAL SAVINGS

VND 144m

12 × VND 40m × 30% savings assumption

YEARS TO SAVE

10.94 years

VND 1.575bn ÷ VND 144m/year

Cross-check: computed 10.94 years aligns with the cited 10-12-year example.

Static savings calculation: excludes financing costs and future price changes.

Consistency check for one reference case, not market-wide empirical validation.

Module B: Empirical structure, explicit assumptions

PUBLISHED EMPIRICAL ANCHOR

RealT: 58 properties

Typical structure: 1,000-1,300 tokens

Typical initial token price: USD 44-77

Small, single-platform U.S. sample

MODEL CHOICES

1,000 tokens

20% down-payment comparator: assumption

5% gross rental yield: illustrative assumption

Vietnam price input: VND 1.575bn

Calibrated structure ≠ validated Vietnamese demand, rental yield or optimal token count.

Headline result: Smaller investment ticket

20% DOWN PAYMENT

VND 315m

ONE OF 1,000 TOKENS

VND 1.575m

ENTRY-TICKET REDUCTION

99.50%

Entry amounts on the same linear scale (VND millions)

Down payment



315

One token



1.575

Different rights: whole-property mortgage entry versus a 0.1% modeled financial interest.

What drives the 99.5% result?

$$P = V / N \quad D = V \times d \quad R = [1 - 1 / (N \times d)] \times 100\%$$

V = property value N = token count d = down-payment fraction

WITH N = 1,000 AND d = 0.20

$$R = 99.50\%$$

Property value cancels.

The percentage is a structural arithmetic result, not a measured blockchain effect.

Fractionalization changes the investment unit; it does not reduce the underlying asset price.

Illustrative income: Access does not imply large returns

ASSUMED GROSS YIELD

5% per year

Illustrative, not a verified
Vietnamese market average

ANNUAL RENT / TOKEN

VND 78,750

$\text{VND } 1.575\text{bn} \times 5\% \div 1,000$

MONTHLY RENT / TOKEN

VND 6,562.50

Small investment → small
absolute income claim

Not deducted: vacancy, maintenance, management, taxes, platform fees or transaction costs.

Gross simulated income is not a forecast, net return or guarantee.

Module C: Specified logic and reported tests

Four operations: initialize → transfer → distribute dividends → read metadata

Initialization

Tests 1-3: metadata, supply and issuer balance

Transfers

Tests 4-5: valid transfer; excessive transfer rejected

Dividend accounting

Tests 6-7: owner authorization; proportional payout

Information accessor

Test 8: property metadata and token price

PAPER-REPORTED

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Tests passed in the
reference model

Unit tests ≠ exhaustive formal proof, security audit or demonstrated Solidity execution.

No live-network deployment or measured gas results.

A concrete finding: Integer rounding leaves “dust”

SYNTHETIC INVESTORS

10 holders

Unequal balances: 17-215
tokens

Total supply: 1,000 tokens

QUARTERLY RENTAL POOL

VND 19,687,500

Integer-based proportional
allocation

UNDISTRIBUTED RESIDUAL

VND 2

Reported rounding “dust”

Production requirement: define an explicit remainder-handling policy.

Examples: carry forward the residual or allocate it under a stated rule.

Execution surfaces accounting details that a conceptual proposal can miss.

Interpretation: Feasibility is conditional

- **Legal and asset eligibility**

No claim of current authorization; social-housing price is a valuation benchmark.

- **Liquidity and governance**

Token transferability does not establish an active secondary market or enforceable rights.

- **External validity and economics**

Small U.S. calibration sample; assumed yield; omitted transaction and operating costs.

Next: Vietnamese data → legal/governance design → expanded testing → conditional pilot.

Computational plausibility precedes-but does not establish-real-world feasibility.

Conclusion: Lower entry barriers, not cheaper homes

AFFORDABILITY BASELINE

10.94 years

Modeled savings time to the full reference purchase price

INVESTMENT ENTRY

VND 1.575m

One token; 99.5% below the modeled down-payment amount

REFERENCE-MODEL LOGIC

8 tests passed

Reported execution + VND 2 rounding residual

Contribution: an evidence-informed, computational illustration of fractional investment access.

Lower investment entry barriers, not demonstrated cheaper homes or occupancy rights.

Token-count sensitivity

Tokens	Token price (VND)	Entry reduction	Annual gross rent / token
500	3,150,000	99.00%	VND 157,500
1,000	1,575,000	99.50%	VND 78,750
2,000	787,500	99.75%	VND 39,375

Fixed: VND 1.575bn property; 20% down-payment fraction; illustrative 5% gross yield.

References

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