

Supply without Demand: a research protocol

More supply may expand choice while also increasing same-side competition, search friction, and operating costs. This protocol specifies mechanisms, testable hypotheses, and identification designs; it does not claim that marginal supply usually harms a marketplace.

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Claim status: hypothesis

Disclosure: Independent research protocol. No company data, empirical estimates, or universal saturation threshold are presented.

Abstract

Marginal supply creates value when it serves demand that would otherwise remain unmet. The same increase may split unchanged demand among more suppliers, raise buyer search costs, dilute quality, or add operating cost. Supplier counts cannot determine the direction of the effect: the study needs a counterfactual, a micro-market unit, and outcomes for both sides.

This protocol links two-sided-market theory, search and matching models, and empirical identification. It is a research plan, not a finding and not a recommendation to restrict supplier entry.

Research question and scope

Primary question: under which observable conditions does a causally induced increase in eligible supply weaken matching, participation quality, or the platform's marginal economics?

The unit is micro-market $\times$ period $\times$ cohort. Product marketplaces, classifieds, services, lead generation, and on-demand platforms must be studied separately

because their supply units, success events, perishability, and allocation mechanisms differ.

Practical significance

The protocol supports decisions about supplier acquisition, eligibility, and activation. It separates valuable choice expansion from demand reallocation, quality deterioration, and added operating cost. The intended answer is not “how many more suppliers should the platform acquire?” but “where, under which constraints, and with which guardrails does marginal supply create an incremental system outcome?”

Working definitions

- **Eligible supply:** an available unit or participant capable of serving qualified demand under preregistered rules.
- **Supply increase:** a change in eligible supply, not registrations, uploaded records, or nominal assortment.
- **Saturation:** a micro-market state in which marginal supply does not improve a preregistered system outcome under the current demand and matching rules. It is an estimated state, not a universal supply-to-demand ratio.
- **Worse economics:** a negative change versus the counterfactual in a preregistered system outcome: marginal revenue net of acquisition, servicing, incentives, failures, and quality losses. Lower income for an individual supplier alone does not establish platform harm.
- **Incremental liquidity:** successful matches that would not have occurred without the new supply and are not merely reallocated existing demand.

Conceptual model

For a micro-market and period, let D denote qualified demand, S eligible supply, M successful matches, R platform marginal revenue, and C acquisition, servicing, incentive, and failure costs. Working diagnostics are:

- demand-side success probability: M / D ;
- supply-side success probability: M / S ;

- platform marginal result: $R - C$.

These are definitions for testing, not a universal production function. Added S is valuable when it creates relevant incremental M and value exceeding added cost. A negative effect may operate through one or more mechanisms.

Mechanism	Candidate chain	Observable trace	Competing explanation
Demand dilution	unchanged demand is split across more suppliers	lower M/S and supplier repeat without higher M/D	lower-quality suppliers entered
Search friction	buyer comparison becomes more costly	more browsing and time to outcome, lower completion	interface or traffic mix changed
Exposure congestion	limited attention is allocated over a larger pool	more zero-exposure supply and concentrated impressions	ranking rules changed simultaneously
Quality composition	marginal entrants fit demand less well	lower qualified response, acceptance, and completion	demand moved across segments
Strategic response	competition changes price, availability, or effort	price, response, or cancellations move	external price shock
Operating load	moderation, support, and trust costs outgrow results	higher cost per successful match	temporary incident or accounting change
Micro-market cannibalisation	close substitutes compete for the same demand	aggregate volume is flat while supply outcomes weaken	micro-market boundaries are wrong

Literature map

This is a scoping review of primary studies available by 23 July 2026, not a completed systematic review. Included papers directly address cross-side effects, within-side competition, search friction, or market-thickness design. A publishable empirical paper still requires a reproducible search log, exclusion criteria, and independent coverage review.

Foundational two-sided-market models establish cross-side interdependence and the importance of price structure, but they do not imply a universal monotonic relationship between seller counts and outcomes. Chen and Huang's search-matching model admits positive cross-group and negative within-group effects. Halaburda, Piskorski, and Yildirim formalise a trade-off between greater choice and stronger same-side competition.

Empirical findings depend on market design. Li and Netessine use a one-time listing migration on a holiday-rental platform and associate lower matching rates in that setting with greater search friction. In B2B auctions, Bimpikis, Elmaghraby, Moon, and Zhang show that supply timing and demand participation can alter revenue even when aggregate supply and demand remain fixed, while substitutable lots may cannibalise one another.

These papers motivate mechanisms and research designs. They do not establish the same effect for every platform or every form of supply growth.

Testable hypotheses

All hypotheses should be registered before final comparisons are inspected.

1. **H1 — saturation:** the effect of added supply on successful matches declines with baseline demand coverage.
2. **H2 — search friction:** holding search technology fixed, more substitutable supply increases search effort or time and may reduce completion.
3. **H3 — composition quality:** negative effects are stronger when marginal supply has lower availability or relevance.

4. **H4 — exposure:** under limited attention, pool growth increases the share of eligible supply below a minimum exposure floor and raises impression concentration.
5. **H5 — supply durability:** diluted success probability reduces supplier repeat or increases later-cohort churn.
6. **H6 — elastic demand:** the effect is less negative or positive when added supply expands demand through price, variety, or availability.
7. **H7 — perishability:** search friction and congestion are stronger where matching must occur within a short window.

Data and variables

The minimum permissioned dataset retains numerators and denominators while excluding personal data.

Block	Minimum fields
Units	platform archetype, micro-market, time window, cohort
Demand	qualified demand, eligibility, price or budget, outcome
Supply	eligible supply, availability, quality, price, entry time
Allocation	candidate set, impression, position, contact, response, acceptance
Terminal outcome	successful match, cancellation, failure reason, repeat
Economics	marginal revenue and permitted aggregate costs
Context	seasonality, marketing, policy, interface, logistics, payments

Eligibility, deduplication, censoring, time zones, missingness, and schema changes are documented before analysis. Internal company data or metrics are not included in public outputs without written permission from the data owner.

Data collection plan

1. Select one platform archetype and define the terminal success event without internal numerical targets.
2. Freeze micro-market, eligibility, and treatment rules before extracting final outcomes.
3. Document the data owner, legal basis, retention period, and publishable aggregates.
4. Build an event dictionary and validate the time order of demand, exposure, response, and outcome.
5. Pilot data quality for completeness, duplicates, missingness, schema drift, and identifier stability.
6. Determine power only after permissioned variance estimates exist; do not insert invented effect sizes.
7. Freeze the analytical dataset and retain a reproducible transformation log.

Identification designs

The preferred design is a randomised, staggered supply-program rollout at the micro-market level with preregistered primary outcomes and guardrails. If experimentation is infeasible, candidates include:

1. **Waitlist randomisation:** random access order when a real capacity constraint exists.
2. **Eligibility threshold:** local comparison near a cutoff after manipulation and covariate-continuity checks.
3. **Phased rollout:** event study or difference-in-differences with defensible parallel trends and no anticipation.
4. **Exogenous migration or availability:** a natural experiment only if the shock operates through the stated channel and does not jointly move demand.
5. **Geographic or category constraint:** control markets selected before outcomes are viewed, with spillovers estimated separately.

A correlation between seller counts and outcomes is not an effect estimate: supply entry responds to expected demand, prices, seasonality, and platform policy.

Estimation plan

1. Freeze the causal graph, unit, treatment, primary outcomes, guardrails, and window.
2. Test balance, pre-trends, missingness, concurrent interventions, and composition changes.
3. Estimate intent-to-treat; report treatment-on-the-treated only under defensible assumptions.
4. Report effects separately for M/D, M/S, completion, repeat, cancellation, exposure concentration, and marginal economics.
5. Test heterogeneity by baseline saturation, substitutability, quality, price, geography, and perishability.
6. Run sensitivity checks for windows, micro-market definitions, eligibility, and censored observations.
7. Correct for multiple testing or label outcomes as exploratory.

Results status

No empirical results are available. The protocol contains no effect estimate, sample size, saturation threshold, or company comparison. Any future results table must separate observed facts, statistical estimates, interpretation, and uncertainty.

Alternative explanations and negative controls

Required alternatives include demand composition, seasonality, promotion, prices, interface, ranking, moderation, logistics, payments, external competition, and event-definition changes.

Negative controls depend on the design: placebo dates before treatment, preregistered unaffected categories, outcomes measured before exposure, and attributes the treatment cannot plausibly change. A failed negative control reduces the design's evidentiary weight; it is not repaired by specification search.

Candidate natural experiments

Unexpected listing migration, an external capacity limit, an independently imposed eligibility change, phased geographic access, or technical incompatibility may create supply variation. An event qualifies as a natural experiment only after checking the causal channel, concurrent demand shocks, precise manipulation, and measurement stability.

What would falsify the thesis

The marginal-supply-harm thesis for a preregistered segment is weakened if a causally identified increase consistently raises successful matches, quality, and marginal economics without harming guardrails. It is also weakened if the observed deterioration is fully explained by pricing, traffic quality, seasonality, product changes, or measurement error.

Non-claims

One case cannot establish a universal supply-to-demand threshold, justify entry restrictions, compare companies, or imply that every supplier's welfare must rise with the platform outcome. Even a causal effect within one micro-market does not automatically transfer to another platform archetype.

External review protocol

A methods reviewer evaluates the causal graph, identification, standard errors, multiple testing, and sensitivity analysis. An industry reviewer evaluates demand and supply units, mechanisms, and intervention feasibility. Privacy and legal review is mandatory for non-public data. Reviewer names and comments are published only with consent; corrections enter the version log.

The review packet must contain the causal graph, literature matrix, variable dictionary, exclusion plan, identification memo, negative controls, result-free table shells, and an open-issues log.

Empirical-paper release gate

- treatment, primary outcomes, guardrails, and exclusions are preregistered;
- a data dictionary and data-owner permission exist;
- the counterfactual and identification assumptions precede results;
- mechanisms are separated from observable traces and alternatives;
- code reproduces all tables from a publishable dataset;
- external reviews are resolved or listed as open issues;
- the public paper separates facts, estimates, interpretation, and limitations.

Until these conditions are met, the work remains a version 0.x protocol.

Limitations

- The protocol has not yet received external methodological or industry review.
- Candidate mechanisms come from different platform archetypes and require context-specific validation.
- No permissioned dataset is available; causal estimates and empirical findings are absent.
- Supplier income, matching performance, and platform profit can move in different directions, so no single outcome represents system health.

Sources

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How to cite

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Related reading

- Marketplace Liquidity Map
- Supply is not liquidity
- Marketplace Health Index: a research protocol