Secondary Markets for VC-Backed Startup Equity

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Large shift toward private market fundraising

- **Startups can raise staggering amounts**
  - Highest total proceeds raised in IPOs: **$145bn** (2021; 311 companies; Jay Ritter)

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- **Shift facilitated by capital and (de)regulation**
  - Venture Capital AUM from $300bn in 2008 to $3.5tn in 2023 (Source: StepStone)
  - JOBS Act and NSMIA reduced pressure to go public early (Ewens and Farre-Mensa, 2020; de Fontenay, 2017)

Largest VC rounds

Why do private secondary markets exist?

- **Startups staying private increases frictions**
  - Employees paid in illiquid equity
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- **Secondary markets are a response**
  - A marketplace that connects buyers and sellers
  - **$92bn** direct secondaries in 2025 (PitchBook estimate)
    - VC secondaries had **$10bn** in dry powder in 2025 (PitchBook)
  - **Key frictions:** Access, illiquidity, limited information

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- **Research questions**
  - Are prices informative?
  - Do institutions use these prices?
  - What drives pricing?

What do we find?

1. **Secondary market prices typically reflect a discount**
   - Average price is about **11% below** the most recent VC round
   - Discounts narrow when buyer demand is strong

2. **Order flow responds to new information**
   - VC rounds shift buyer interest and pricing

3. **Secondary prices are informative and relied on**
   - Prices predict future VC valuations
   - Mutual funds incorporate price signals, but only partially

We contribute to several strands of literature

- **Secondary markets in private assets:** Nadauld et al. (2019); Maurin et al. (2022); Boyer et al. (2023); Abuzov et al. (2025)

  Here: First systematic evidence on secondary markets for startup shares

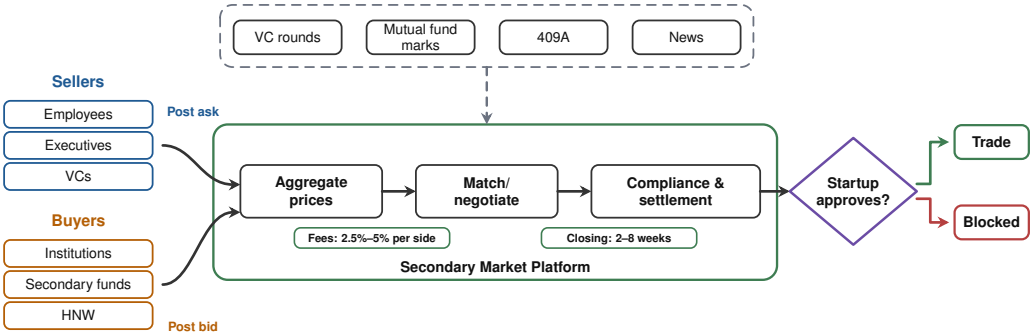
- **The shift from public to private markets:** Doidge et al. (2017); Ewens & Farre-Mensa (2020); Lowry (2024); Kwon et al. (2020); Chernenko et al. (2021)

  Here: Study a market that helps alleviate frictions in private markets through liquidity provision and price discovery

- **Public investors in startups and valuing those holdings:** Kwon et al. (2020); Gornall & Strebulaev (2020); Huang et al. (2020); Chernenko et al. (2021); Agarwal et al. (2023; 2025); Imbierowicz & Rauch (2024)

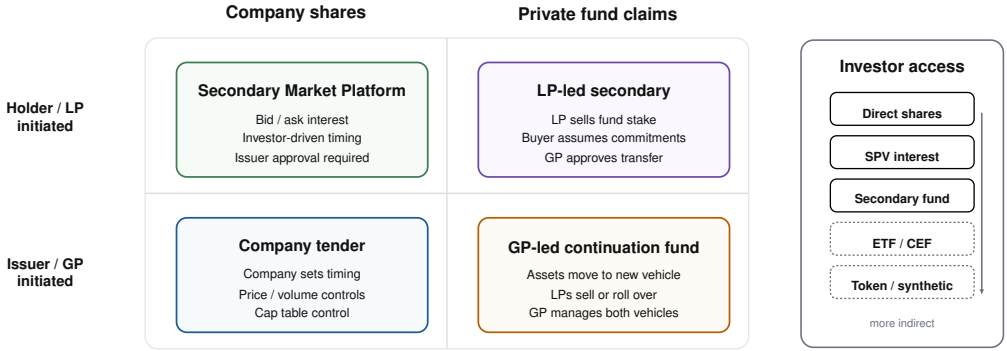
  Here: Show that secondary prices are informative and used by mutual funds

Institutional setting



Access points

The private secondaries landscape



Data: order flow plus valuation benchmarks

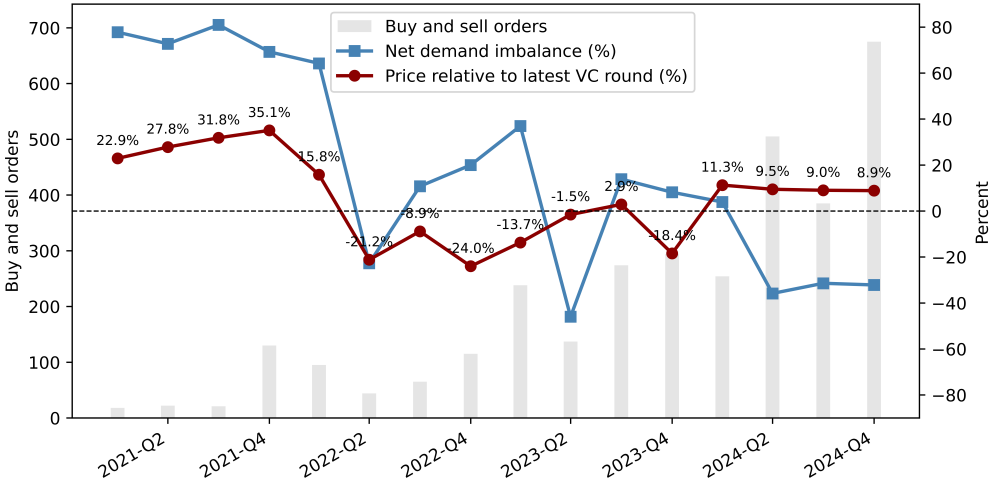
Secondary activity
11,925 orders
for 1,474 startups

VC histories
for 772 firms

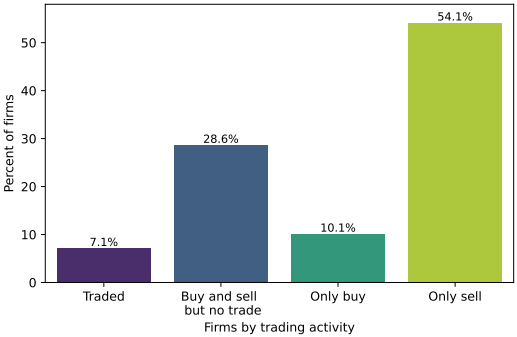
Fund marks
21,384
mutual-fund valuations

- Orders include executed trades plus buy and sell interest
- For most orders we observe quoted price, share count, and share class
  - Average order: **$10m**
  - Average trade: **$4m**
- Prices on secondary market expressed as ratios relative to prior VC round pricing

Market has grown rapidly since 2021 VC boom

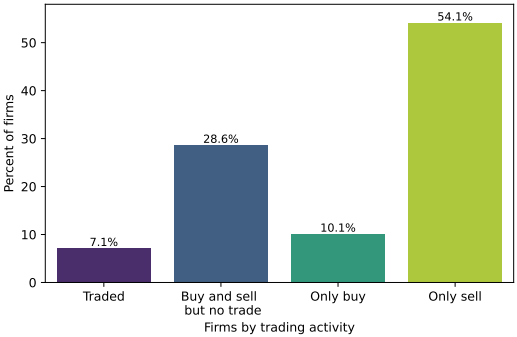


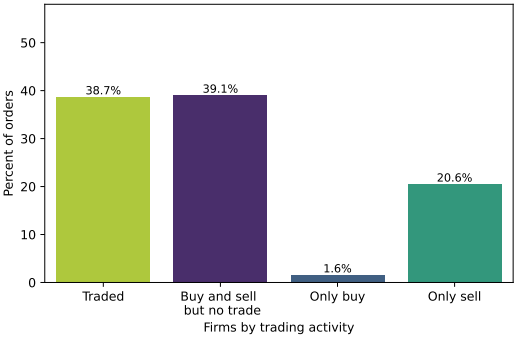
Most firms have no trades



- Only **7%** of firms have a completed trade

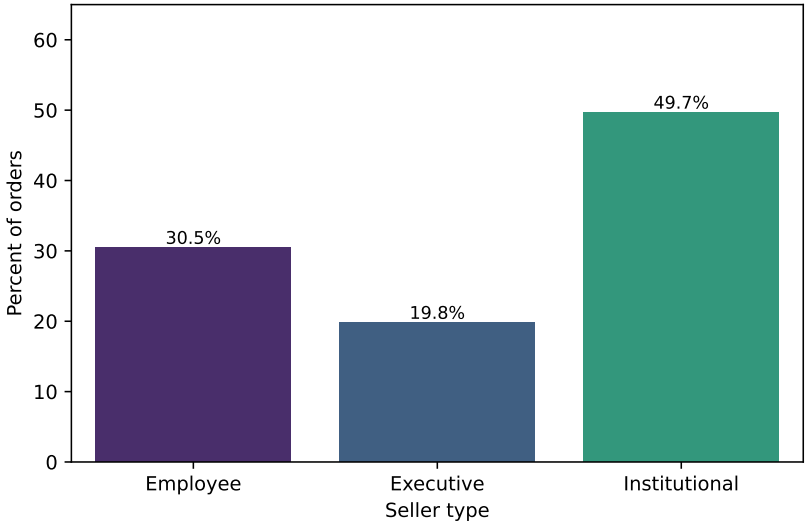
Most firms have no trades — those that do have more orders



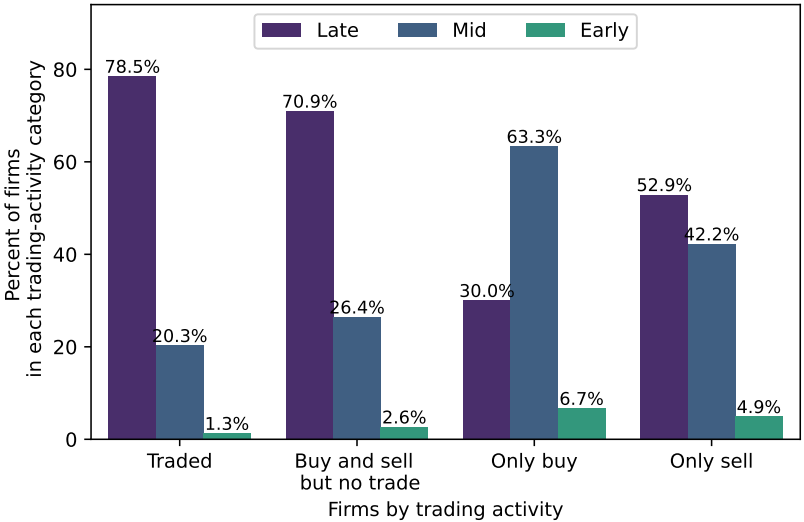


- Only **7%** of firms have a completed trade, but they account for **39%** of orders

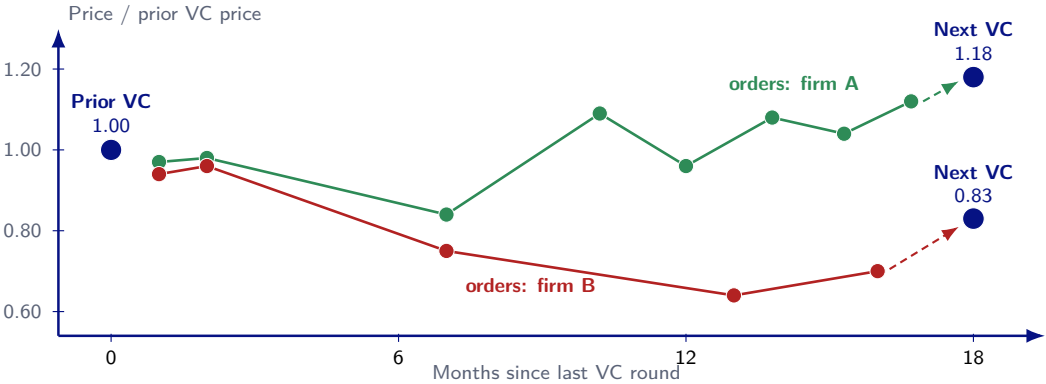
Sellers are insiders



The typical target is a late-stage startup



Are secondary prices informative?



- **What we do:** Predict changes in VC valuation with secondary market prices

Secondary prices predict future VC valuations

Dependent variable: log price ratio of *next* VC round to most recent VC round

	Baseline	Order type	Seller type
Secondary price ratio	0.547***	0.492***	0.548***
	(0.087)	*(0.094)*	*(0.093)*
... × 𝟙(Executed trade)		0.064	
		(0.107)	
... × 𝟙(Employee seller)			-0.227**
			(0.108)
𝟙(Executed trade)		0.175***	
		(0.046)	
𝟙(Employee seller)			-0.067
			(0.067)
Year-quarter FE	Yes	Yes	Yes
Observations	668	667	667

Forward-looking: a 10% higher secondary price predicts roughly a 5.4% larger step-up in valuation

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Trades matter too: Signals from orders predictive on their own

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Information varies: signals from employees weaker than from executives/institutions

Do mutual funds use pricing signals?

- Mutual fund update: M_q/M_{q-1} **No update in 31% of quarters**
- Secondary price baseline: P^{sec}/M_{q-1} **Fund-specific deviation**
- "Is it enough?" Do secondary prices predict the gap P^{VC}_{next}/M_q?

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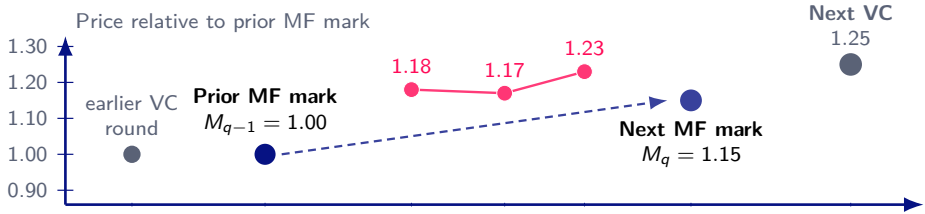

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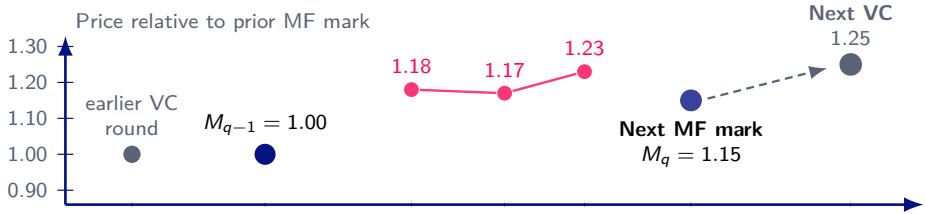

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Mutual funds use price signals, partially

Mutual fund-startup-quarter regressions; no VC round in quarter

	Update fund mark	% change in mark	Next VC price to fund mark
Secondary price ratio	0.162***	21.512***	0.308*
	(0.049)	*(5.103)*	*(0.167)*
× 𝟙(No executed trade)	-0.211***	-4.672	-0.324
	(0.071)	*(5.044)*	*(0.256)*
𝟙(No executed trade)	-0.098**	-3.810**	0.135
	(0.040)	*(1.734)*	*(0.111)*
Fund + firm + quarter FE	Yes	Yes	Yes
Observations	3,819	2,939	1,075

Extensive margin: price deviations make fund updates more likely

Full table

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Intensive margin: funds revise marks in the direction of secondary prices

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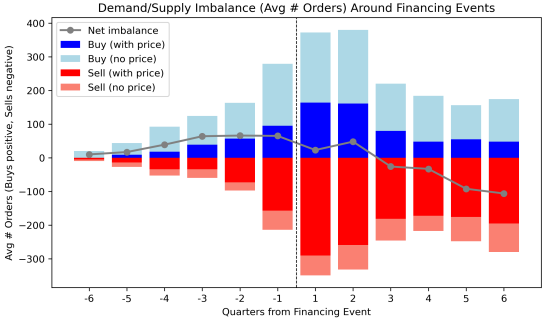
Partial adjustment: secondary prices still predict the remaining gap to the next VC round

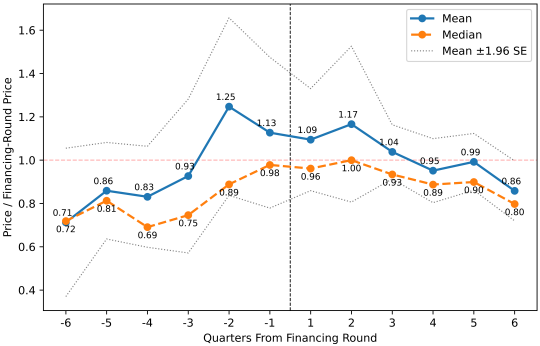
Full table

Taking stock

1. **Prices contain informative signals**
   - They predict direction and magnitude of VC step-up valuations
2. **Mutual funds incorporate price signals, partially**
3. **Next up**: What drives activity and cross-sectional variation in prices?

Prices and activity increase around VC financing rounds

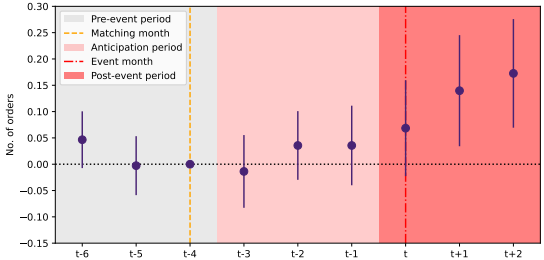




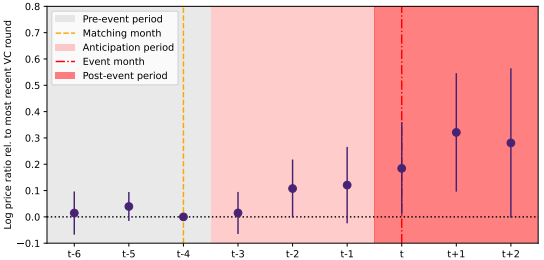
Event study approach

- **VC rounds informative — but timing not random**
  - Secondary market activity may reflect "hot" VC markets
  - Need to separate event effects from market-wide conditions
- **Matched controls provide counterfactual**
  - Match on pre-event characteristics:
    - Stage, industry, funding raised
    - Secondary market activity
  - Compare startups with VC rounds to similar non-event startups
- **Event-study design traces dynamic response**
  - Track order flow and prices before and after VC rounds
  - Test for anticipation and post-event effects

Orders and prices respond to and anticipate VC rounds



No. of orders



Log Price Ratio

Table | Full figure | Treated vs. control means

What drives secondary market prices?

Dependent variable: log secondary price ratio relative to most recent VC round

$\mathbb{1}$(Buy order)	-0.209***
	(0.018)
$\mathbb{1}$(Executed trade)	-0.177***
	(0.035)
Log no. orders, past 90 days	-0.002
	(0.016)
Demand imbalance, past 90 days	0.038*
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Avg. price ratio, past 90 days	0.438***
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$\mathbb{1}$(Common stock)	-0.095***
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Firm FE + quarter FE	Yes
Controls	Yes

Full table

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Order type: large gap between sell quotes and bids and trading prices

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Liquidity: higher prices when demand is buyer-tilted

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Market signals: anchoring at recent prices

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Share class: preferred shares command premium

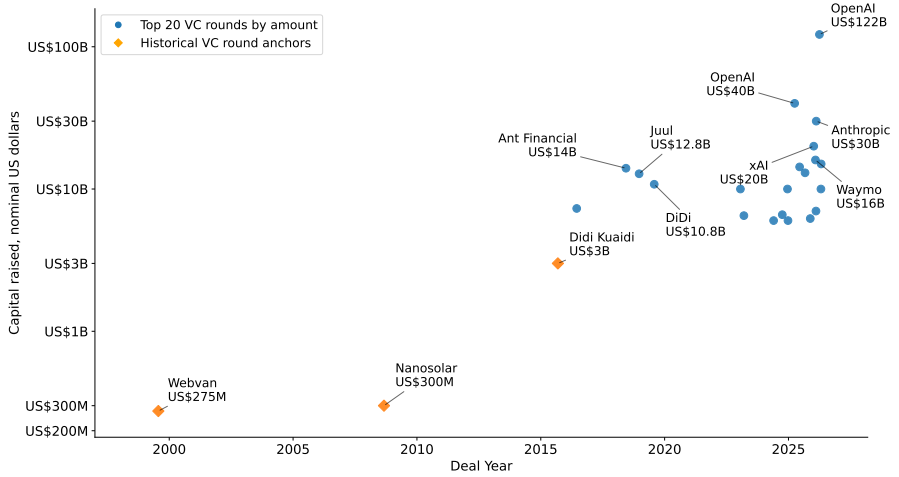
Full table

Conclusion

- **Secondary markets are a response to firms staying private longer**
  - They provide liquidity, access, and price signals for opaque shares
- **Pricing reflects both frictions and information**
  - Discounts large, but narrow when buyer demand is strong
  - Prices respond to VC financing events and other secondary market signals
- **Secondary prices are informative and used by institutions**
  - They predict future VC valuations
  - Mutual funds incorporate the information, albeit incompletely
- **Looking forward: A well-functioning secondary market**
  - May expand the investor pool
  - Could make equity compensation more attractive to employees

Appendix

Largest VC rounds ever clustered in recent times



Back

Institutional details: private shares are not public shares

Secondary market

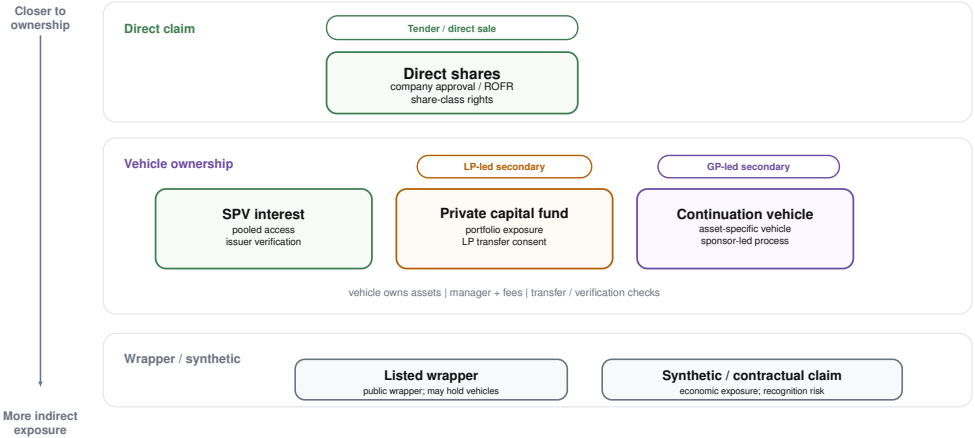
- Decentralized OTC transactions
- Accredited / qualified buyers
- Company approval and transfer restrictions
- Sparse public disclosure
- Delayed and uncertain settlement

Public market

- Centralized exchanges
- Broad investor access
- Continuous disclosure and trading
- Standardized shares
- Fast settlement

Back

Multiple ways to get exposure to startups



Activity and prices respond to VC rounds

Difference-in-differences estimates relative to matched controls; reference month is $t-4$

	No. of orders	No. of buy orders	No. of sell orders	Log price ratio
Pre-event $[t-6, t-5]$	0.022	0.019	-0.004	0.027
	(0.028)	*(0.026)*	*(0.020)*	*(0.038)*
Anticipation $[t-3, t-1]$	0.019	0.039	-0.030	0.081
	(0.033)	*(0.029)*	*(0.021)*	*(0.054)*
Post-event $[t, t+2]$	0.127**	0.089**	0.040	0.262**
	(0.049)	*(0.037)*	*(0.036)*	*(0.123)*
Firm-by-cohort FE	Yes	Yes	Yes	Yes
Month-by-cohort FE	Yes	Yes	Yes	Yes
Observations	6,570	6,570	6,570	306

More activity: order flow increases after financing rounds.

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Buyer response: the effect is strongest on the buy side.

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Price response: secondary prices rise around the financing signal.

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