One-way doors: irreversible actions in the primary market, and who presses them

单向门：一级市场里不可撤回的动作，以及谁来按下它

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Key Takeaways

1. **Reversible actions can be fast. Irreversible actions go one beat slower, and the principal presses.**
2. **Ask first whether it can be undone, then how important it is.**
3. **Irreversible actions all change other people.**
4. **Once a number is spoken, it becomes someone else's anchor.**

Abstract

Financing a company involves two kinds of actions. Some can be undone: revising the deck, changing a phrasing, meeting one more investor. Others cannot: signing an exclusive term sheet, accepting a valuation anchor, closing, or releasing a number that will later be quoted back. The two have different cost structures, yet in practice they are often handled at the same tempo. This paper argues that the first question about any such action is not how important it is, but whether it can be reversed. It answers two founder questions: how long exclusivity should run, and when to name a price.

We draw on three bodies of work: real-options theory on the value of waiting, the one-way and two-way door distinction from management practice, and venture-contracting research on how terms turn a price into commitments that outlast the round. We add three pieces of public evidence: a clause-by-clause comparison of the no-shop provision across three editions of the NVCA model term sheet; the provision frequencies reported by Kaplan and Strömberg, re-sorted by what each makes irreversible; and the unicorn term frequencies and valuation effects reported by Gornall and Strebulaev. From these we build a one-way-door register: fourteen actions, what each locks in, the cost of reversal, who presses, and three questions to ask first. The claim is stated as a falsifiable proposition with the evidence that would refute it. Four boundary cases close the paper, including reversibility that is only apparent and the sunk-cost pull on whoever pressed the button.

Keywords: primary market; irreversibility; real options; one-way doors; term sheet; exclusivity; decision rights

JEL Classification: G24（投资银行与创业投资）, D81（不确定性下的决策）, D86（契约经济学：理论）, G32（融资政策与企业价值）

表 1 / Exhibit 1 Actions in a financing process, classified by reversibility. The first three columns are this paper's classification; milestone codes follow the Glacier Institute's published "60-day benchmark cadence" [1][2]. The table contains no specific transaction.

Action	Reversible?	Where the cost of an error lands	Typical milestone
Revise the deck	Yes	The effort of one revision	D09
Change a phrasing	Yes	One revision; but those who saw the old version remember	D09, D18
Meet one more investor	Yes	Time; the list can be narrowed again	Before D26
Send the formal list with price expectations	Partly	Adjusting downward costs an explanation	D18
Sign an exclusivity clause	No	Other doors are shut for the period	D52
Accept a valuation anchor	No	The next round uses it as reference	D26
Release a number externally	No	It will be quoted and remembered	Any time
Close	No	Register and terms take effect from then on	D60

摘要 (Chinese abstract)

融资过程里的动作分两类。一类可以撤回：改材料、换一种说法、多见一家机构。另一类不能：签排他条款、接受一个估值锚、交割、给出一个日后会被引用的数字。两类动作的成本结构不同，实践里却常被同一种节奏处理。本文主张：判断一个动作，先问的不是它重不重要，是它能不能撤回。本文回答创始人常问的两个问题：排他期签多久合适，什么时候该报价。本文用三组文献说明机制，用三份公开文件做证据，在此基础上给出一张「融资单向门登记表」，把主张写成一个可以被推翻的命题，并给出四类边界。本文讨论的是动作的分类，不是任何一笔交易的过程；文中不出现任何交易记录，不出现庚辛自身的任何数字。

Keywords (Chinese): 一级市场；不可逆性；实物期权；单向门；条款清单；排他期；决策权归属

1. The Problem: One Tempo for Two Kinds of Action

A financing round runs sixty days over eight milestones, and involves many actions. Most can be corrected if wrong: revise the deck, change a phrasing, add one more name to the list. A few cannot: once an exclusivity period is signed you wait for it to expire; once a valuation anchor is given, the next round will quote it; once the round closes, the shareholder register has changed.

The two kinds have different cost structures. For the first kind, the cost of an error is roughly the effort of one revision. For the second, the cost is carried into every subsequent round. The Glacier Institute writes this into its "five pre-launch checks":

> 「发射之前，每修正一个错误，成本约等于零。发射之后呢？可干预的窗口期迅速收窄。燃料、密封、补给、同舟、加速度，任何一件出问题，都不在当天暴露，而在航程最远、最难补救的地方。所以绝大部分工夫，我们放在发射之前。这一条没有例外。」
>
> *Before launch, every error you fix costs roughly nothing. After launch, the window for intervention closes fast. Fuel, seals, supplies, crew, acceleration: whichever fails does not show up that day, but at the farthest, least recoverable point of the voyage. So we put most of the work before launch. No exceptions.*
>
> — Glacier Institute website, /institute.html [1]

In practice, however, the two kinds are often handled at the same tempo. The reason is simple: a round is driven by a schedule, the window is counted in weeks, and every action feels urgent. Under urgency people lose track of which action has an undo key and which does not. Two errors follow: reversible actions get treated as major decisions and re-discussed in meeting after meeting; irreversible actions get treated as procedure and waved through.

This paper answers two questions founders ask. First: how long should an exclusivity period run. Second: when should one name a price. They look like two questions; this paper treats them as two faces of one thing. The exclusivity clause is the only provision in a term sheet that binds from the day of signature, and a price is a number that cannot be taken back once spoken. Both are one-way doors. Section 10 gives the answers directly.

The route: Section 2 separates the two kinds of action; Section 3 explains why; Section 4 brings evidence from

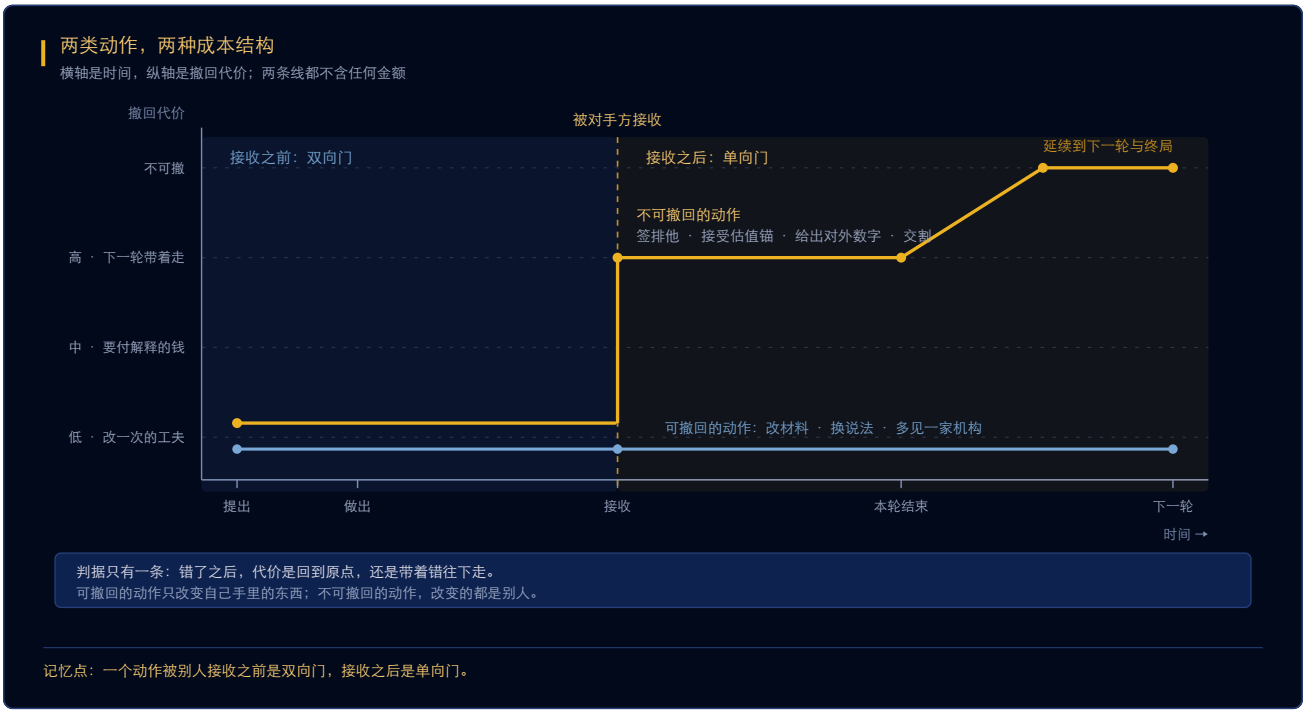

图 1 / Exhibit 2 How the cost of undoing runs over time for the two kinds of action. The figure is this paper's own synthesis; the split into two kinds and the four cost grades come from Table 1 in Section 2 and Table 5 in Section 6, and the line marked "received by the counterparty" comes from counter-example three in Section 8. The four grades on the vertical axis are categories, not amounts, and no transaction appears in the figure.

three public documents; Section 5 sets out the Glacier Institute's published practice; Section 6 gives a register a reader can use the next day; Section 7 states the claim as a proposition that can be refuted; Sections 8 and 9 mark the boundaries.

> Ask first whether it can be undone, then how important it is.

2. Classification: Two Kinds of Action, Two Kinds of Cost

Table 1 uses one criterion: after an error, is the cost a return to the starting point, or is the error carried forward? See Table 1: the first three rows cost "one revision"; the last four carry into the next round. The middle row, sending the formal list with price expectations, is marked "partly", and the Glacier Institute has a separate note on it:

> 「校准要在发问之前做，不是在被拒之后做——发出去的预期改一次，要付一次解释的钱。」
>
> *Calibrate before you ask, not after you are turned down. Every time an expectation that has gone out is revised, you pay for an explanation.*
>
> — Glacier Institute Working Paper GI-WP-2026-P2 [2]

This row is the boundary case of the classification: technically revisable, but in cost already close to irreversible. Counter-example three in Section 8 returns to it.

The four irreversible rows share one feature: they all change other people. An exclusivity clause changes the choices of other investors; a valuation anchor changes the reference frame of the next round's investors; an external number changes the market's memory; closing changes the shareholder register. Reversible actions only change what is in one's own hands. This distinction is more stable than "how important": importance changes with time; whether an action changes other people does not.

> Irreversible actions all change other people.

表 2 / Exhibit 3 The No-Shop / Confidentiality clause across three editions of the NVCA model term sheet. Taken verbatim from the three source files [19][20][21]; only the items bearing on reversibility are listed. Square brackets are blanks left for the parties to fill in.

Item	Older edition uploaded 2019 [20]	July 2020 edition [19]	Enhanced v3.0 (2022) [21]
How the period is written	"[_____] weeks"	"[_____] days"	"[_____] days"
Number of days given by the template	Blank	Blank	Blank
Liquidated damages	Optional bracket: "$[_____]" as liquidated damages	None	None
Binding statement	Yes: No Shop / Confidentiality [and Counsel and Expenses] provisions are binding	Yes: No Shop / Confidentiality provisions are binding	Same as 2020
Who is bound	"The Company and the Founders"	"The Company and the founders"	Same as 2020
Expiration clause	Yes	Yes	Yes

3. Mechanism: Why Irreversible Actions Go One Beat Slower

3.1 Waiting has value: real options

Economics has a mature result on irreversible actions: under uncertainty, an irreversible action should be taken later than the expected-value calculation suggests. Arrow and Fisher [4] and Henry [5] each proved this in 1974: as long as new information will arrive and the action cannot be recalled once taken, the choice of not acting now has value in itself. They called it quasi-option value. Bernanke [6] went further: the value of waiting depends only on the bad-news side. What decides whether to wait a little longer is not how likely things are to improve, but whether one can retreat if they worsen. Dixit and Pindyck [8] systematised the analysis: an irreversible investment is the exercise of an option, exercising means giving up the right to keep waiting, so the threshold must exceed the point where net present value is zero, and the greater the uncertainty, the higher the threshold.

Translated into financing language: signing an exclusivity clause, accepting a valuation anchor, closing, each gives up an option to "wait and see". Giving up an option is not necessarily wrong, but it must be compensated. If the compensation is insufficient, wait one more beat.

Bernanke's "look only at the bad news" is the same idea as a sentence from the Glacier Institute:

> 「做投资的第一要务是安全，不是赔率——在没有人先出价之前，大家都在观望，因为先出手的人要独自承担定价错误。」

> *The first duty in investing is safety, not odds. Until someone bids first, everyone watches, because whoever moves first bears the pricing error alone.*
>
> — Glacier Institute website, /institute.html [1]

Whoever moves first bears the pricing error alone precisely because a bid is irreversible. So pricing is naturally slow; it is not a question of anyone's efficiency.

3.2 One-way doors and two-way doors

Management practice has a plainer version. In the 2015 letter to shareholders, Bezos divided decisions into two types [3]. One type is consequential and irreversible or nearly so, like one-way doors: once through, you cannot come back; these must be made slowly, deliberately, with method. The other type can be changed and reversed, like two-way doors; these should be made quickly by individuals or small groups with good judgment. He noted that as organisations grow, a common ailment is applying the heavyweight one-way-door process to most two-way-door decisions, and the result is slowness, unthoughtful risk aversion, and diminished invention.

The contribution of this distinction to the present paper is to tie "who decides" and "how fast" to "can it be undone": two-way doors are fast and distributed, one-way doors slow and concentrated. Most actions in a round are two-way doors; a few are one-way doors; the two should not share one tempo.

表 3 / Exhibit 4 Frequency of venture contract provisions, re-sorted by what each provision makes irreversible. Frequencies are taken item by item from the NBER working paper version of Kaplan and Strömberg [23] (Tables 5 and 8, PDF pages 56, 59 and 62); the journal version is [10]. The last column is this paper's reading.

Provision	Frequency (full sample)	Source in [23]	What it makes irreversible
Liquidation preference at least equal to the investment	98% (below the investment in only 2.2%)	Table 5 Panel A, PDF p. 56; text PDF p. 19	Who gets money back first in a liquidation
Anti-dilution protection	94.8% (weighted average 75.4%, full ratchet 19.4%)	Table 8 Panel B, PDF p. 62	The formula by which this round's price passes to the next
Automatic conversion	93.9%	Table 8 Panel A, PDF p. 62	Preferred must convert to common at IPO
Redemption / put rights	84.3% (median maturity 5 years)	Table 5 Panel C, PDF p. 59	The date on which repayment falls due
Cumulative dividends	46.2%	Table 5 Panel A, PDF p. 56	The amount accruing each year into the liquidation claim
Founder vesting	41.9% (54.5% pre-revenue, 33.0% post-revenue)	Table 8 Panel C, PDF p. 62	What a founder takes when leaving
Participating preferred	39.4%	Table 5 Panel A, PDF p. 56	Principal first, then a pro-rata share, at liquidation
Non-compete clauses (by company, N=84)	70.2%	Table 8 Panel D, PDF p. 62	Where a founder may go after leaving

3.3 The contract layer: terms turn a price into commitments

Venture-contracting research gives irreversible actions their concrete shape. Kaplan and Strömberg [10], reading venture contracts one by one, found that contracts allocate cash-flow rights, voting rights, board seats and liquidation rights separately, and make them contingent on performance. A term sheet, once signed, is therefore not a price but a set of rights allocations that continue into the next round and even to the company's final outcome. Gornall and Strebulaev [11] prove the same point from the other direction: once the protective terms given to later investors are taken into account, the gap between headline valuation and fair value is large. A price can be negotiated; terms, once signed, follow the company. Section 4 re-sorts the figures from both studies by this paper's criterion.

Staged financing is a product of the same logic. Gompers [9] showed that venture capital splits funding into tranches to preserve the right to re-evaluate between them, which is exactly breaking one large irreversible action into several small ones with a waiting option between each. The large-sample survey of venture capitalists [12] also shows that their willingness to concede varies across terms, with some terms almost never negotiated. The ones not negotiated are often the ones that persist into every later round.

The Glacier Institute puts it more briefly:

> 「条款是唯一会在这一轮结束之后继续生效的东西。价格只影响这一轮，条款影响后面每一轮。」
>
> *Terms are the only thing that keeps operating after this round ends. Price affects only this round; terms affect every round after.*
>
> — Glacier Institute Working Paper GI-WP-2026-P2 [2]

3.4 External numbers: the anchor that is remembered

The fourth kind of irreversible action is the easiest to overlook: giving out a number that will later be quoted. Technically it can be revised at any time; in practice it cannot, because those who heard it remember it. The anchoring experiments of Tversky and Kahneman [13] show that once people are exposed to an initial value, later judgments drift toward it, even when they know the value was random. The Glacier Institute puts it in two sentences:

> 「所以硬拉估值意义不大。价格能被拉高一次，但是拉不住第二次。」
> *So forcing the valuation up means little. A price can be pulled up once; it cannot be held up a second time.*

表 4 / Exhibit 5 Frequency of terms given to the latest round of unicorn investors, and each term's contribution to valuation inflation. Frequencies are from Table 4 of the NBER working paper version of Gornall and Strebulaev [24] (PDF p. 48, N=135; this paper converts counts to percentages by dividing by 135); contributions are from Table 1 of the same paper (PDF p. 45), an illustrative company raising $100 million at a $1 billion post-money valuation, baseline overvaluation 30%. The journal version is [11]. The last column is this paper's reading.

Term	Given to the latest investors	Overvaluation in the illustrative company, from 30% to	What it makes irreversible
Senior to all existing shareholders	43 companies, 32%	36%	The queue at exit
Liquidation multiple above 1X	8 companies, 6%	1.25X: 42%; 2X: 94%	The multiple taken first at exit
Participation	17 companies, 13%	No cap: 53%; 2.5X cap: 50%	Principal first, then a pro-rata share
IPO ratchet	19 companies, 14%	At 1X: 56%; at 1.25X: 75%	Extra shares if the IPO prices below the agreed level
Automatic conversion exemption (any form)	94 companies, 70%	Below 1X: 55%; below 0.5X: 48%	Investors need not convert in a low-priced IPO
Cumulative dividends	9 companies, 7%	Not separately listed in Table 1	The claim accruing each year
Any major protection	75 companies, 56%	—	—

> 「这张牌不争，估值的锚就被别人先钉住了。」
>
> *If you do not contest this card, someone else nails the valuation anchor first.*
>
> — Glacier Institute website, /institute.html [1]

The first says that an anchor you give cannot be taken back; the second says that an anchor someone else gives cannot be taken back either. Together they are this paper's reason for placing "release a number externally" among the irreversible actions.

> Once a number is spoken, it becomes someone else's anchor.

4. Evidence: One-Way Doors in Three Public Documents

Section 3 covered mechanism. This section looks at three documents anyone can download, to see what one-way doors look like on paper. They are: three editions of the NVCA model term sheet [19][20][21]; Kaplan and Strömberg's statistics on 200 venture financing rounds [10][23]; and Gornall and Strebulaev's statistics on the charter terms of 135 U.S. unicorns [11][24]. All three tables are re-sorted by this paper from public figures; the method is described in the writing notes. None of the tables contains any figure of the Glacier Institute's own.

4.1 How the template writes exclusivity: the no-shop clause in three NVCA editions

The model term sheet of the NVCA (National Venture Capital Association) is the standard template for U.S. Series A financings. This paper obtained the text of three editions: an older edition uploaded in 2019 (a .doc file whose document metadata shows a last save in January 2019) [20]; the July 2020 edition [19]; and the Enhanced Model Term Sheet v3.0 produced by NVCA with Aumni (June 2022) [21]. See Table 2, which compares the no-shop clause of the three editions clause by clause.

The binding statement in the 2020 edition reads:

> "In consideration of the time and expense devoted and to be devoted by the Investors with respect to this investment, the No Shop/Confidentiality provisions of this Term Sheet shall be binding obligations of the Company whether or not the financing is consummated. No other legally binding obligations will be created until definitive agreements are executed and delivered by all parties."
>
> — NVCA Model Term Sheet, July 2020 edition [19]; identical in Enhanced v3.0 [21]

Table 2 yields four facts. First, none of the three editions fills in a number of days. The template leaves "how long" to negotiation; no edition has ever written a default. So the question "how long should exclusivity run" has no answer in the most widely used template; the answer must be derived from mechanism. Second, the unit

表 5 / Exhibit 6 The one-way-door register for a financing round. Fourteen actions ordered from lowest to highest cost of reversal. Four grades: low = the effort of one revision; medium = an explanation must be paid for; high = carried into the next round; irreversible = cannot be recalled within the period, or ever. "Who presses": the advisor may act for the company, or the principal. The fifth column gives the three questions to ask before pressing. This table is this paper's synthesis; term facts are in Tables 2 and 3 and in [19]–[24].

Action	What it locks in	Cost	Who presses	Three questions to ask first
Send the first deck	The first impression of the narrative; versions can change, impressions cannot	Low	Advisor may act	Sent to whom / Does it contain numbers / Will the next version be compared against it
Meet one more investor	Time; the list can be narrowed again	Low	Advisor may act	Are we inside an exclusivity period / Is the order of meetings right / Will the list collide
Sign an NDA	The boundary of information flow	Low	Principal signs; advisor may draft	Does it expire / How wide is the scope / Does it bundle exclusivity
Send the formal list with price expectations	Everyone's expectations	Medium	Advisor may act; principal sets the expectation	Was calibration done / Can the expectation be met / What does one revision cost in explanation
Fix the option pool	Who bears the dilution	High	Principal	Pre- or post-money / Enough to reach the next round / Whose share does the pool come from
Give the first valuation range	The next round's reference frame	High	Principal	Was calibration done before asking / Is the floor acceptable / Will the other side repeat it
Quote a price verbally	An anchor	High	Principal	Who bids first / Did the other side write it down / Does it match what is in writing
Sign the exclusive term sheet (no-shop)	All other doors for the period; the only clause in the template binding from signature [19]	Irreversible (for the period)	Principal (the template says "the Company and the founders" [19])	How many days / Where is the expiry date / How long does the lead's diligence need
Accept the lead's pricing	This round's price and the next round's reference	Irreversible	Principal	Do we have all the terms / Does the price include the option pool / Can it be explained to the next round
Sign the SPA and charter (liquidation preference, anti-dilution, redemption)	Rights allocations that run to the end; anti-dilution and liquidation preference appear in over ninety percent of the sample [23]	Irreversible	Principal	Which clauses still operate in the next round / Full ratchet or weighted average / Redemption due in how many years
Close	Register and charter take effect from now	Irreversible	Principal	Are the conditions precedent met / One closing or several / When do the funds arrive
Announce the financing	The market's memory	Irreversible	Principal; advisor may draft	Disclose to which level / Are all parties' statements consistent / Where does the number come from
Announce the valuation figure	An anchor for the next round, employees and the press	Irreversible	Principal	Must it be said at all / Pre- or post-money / How to explain a flat round later
Quote numbers in a press interview	A number stripped of context	Irreversible	Principal	Can it be a range instead / Will the reporter verify / Does it match the announcement

changed from weeks to days. The older edition counts in weeks; from 2020 it counts in days. A finer unit suggests the market has become more sensitive to this stretch of time. Third, the liquidated-damages bracket of the older edition was deleted in 2020. After the deletion, the consequence of breaching exclusivity is no longer an amount written on paper, but whatever general contract law provides. Fourth, and most important for this paper: all three editions make no-shop and confidentiality the only binding provisions of the term sheet; everything else creates "no other legally binding obligations until definitive agreements are executed". In the whole term sheet, this is the only clause that is a one-way door from the day of signature. And the party bound is written as "the Company and the founders", which is exactly what this paper calls the principal.

图 2 / Exhibit 7 The fourteen actions of the one-way-door register, placed on two axes — cost of undoing, and who presses. The figure is this paper's own synthesis; the fourteen actions, the four cost grades and the two answers to "who presses" are taken cell by cell from Table 5 in Section 6. Position within a cell carries no order, priority or ranking, and no transaction appears in the figure.

记忆点 · KEY POINT

Only one clause in a term sheet binds from signature, and it is exclusivity.

4.2 What terms make irreversible: the Kaplan–Strömberg sample

Kaplan and Strömberg [10] studied 200 investments by 14 venture capital firms in 118 companies, reading each contract. Their Tables 5 and 8 report the frequency of each class of provision in the sample. This paper changes no figure and adds one column: what the provision makes irreversible. See Table 3. Page numbers refer to the publicly downloadable NBER working paper version [23].

How to read Table 3: the higher the frequency, the closer the provision is to an industry default, and the less it is on the negotiating table. Anti-dilution, automatic conversion and liquidation preference are all above ninety percent; nearly every contract has them. What they change is not this round's price but the formula by which price is carried forward: anti-dilution decides how much compensation this round's investors receive if the next round prices lower; liquidation preference decides who is paid first at exit; automatic conversion decides who must give up preference on the day of the IPO. Signing these three is walking through three one-way doors. Further down, founder vesting and non-compete lock the founder personally: what one takes when leaving, and where one may go afterwards.

4.3 What terms do to valuation: the Gornall–Strebulaev unicorn sample

Gornall and Strebulaev [11] extracted terms from the certificates of incorporation of 135 U.S. unicorns, reconstructed their capital structures, and computed fair values by option pricing. The abstract of the NBER working paper version [24] gives the result: reported post-money valuations average 50% above fair value, and 65 of the 135 lose unicorn status when recomputed at fair value. Their Table 4 reports how often each class of term is given to the latest round of investors; their Table 1 uses an illustrative company to compute each term's contribution to overvaluation. This paper merges the two into one; see Table 4.

Table 4 is the other face of the same thing. Table 3 says terms are industry defaults; Table 4 says terms have a price. In the illustrative company, a 2X liquidation

multiple pushes overvaluation from 30% to 94%, and a 1.25X IPO ratchet pushes it to 75%. These numbers appear nowhere on the day of signature; they appear only in the next round's pricing and in the distribution at exit. This is what Section 2's "the cost carries into the next round" looks like in data.

The three tables together answer one question: why does the term sheet make only exclusivity binding, while the other terms deserve even more care? Because exclusivity locks a few dozen days; terms lock everything to the company's final outcome.

记忆点 · KEY POINT

Exclusivity locks a few dozen days; terms lock the road to the end.

5. The Glacier Institute's Practice: Reversible Fast, Irreversible by the Principal

What follows is the Glacier Institute's published practice. The sentences are taken from the website and from published working papers without rewording; what this paper adds is a re-ordering by reversibility.

5.1 Put the work before launch

The website uses a rocket metaphor:

> 「创业没有草稿。签下第一份协议那一刻，倒计时开始——组织、股东结构、资本路径，在飞行途中逐条载入，回不到发射前。」
>
> *There is no rough draft in founding a company. The moment the first agreement is signed, the countdown starts: organisation, shareholder structure, capital path are loaded one by one in flight, and there is no going back to before launch.*

> 「有去无回，是这个比喻的要害。……发射之前，修正一个错误的成本约等于零。但是发射之后，可干预的空间迅速收窄。也就是说，早改便宜。」
>
> *No return: that is the point of the metaphor. ... Before launch, fixing an error costs roughly nothing. After launch, the room to intervene narrows fast. In other words, early fixes are cheap.*

> 「所以我们把绝大部分工作放在发射之前：事实、表述、结构、顺序，一项一项过。……判断、调研、协调与合伙人的注意力，都是不可再生资源。正因为有去无回，这艘船才必须造得比「够用」更好。」
>
> *So we put most of the work before launch: facts, wording, structure, sequence, item by item. ... Judgment, research, coordination and partners' attention are non-renewable resources. Precisely because there is no return, this ship must be built better than "good enough".*
>
> — Glacier Institute website, /institute.html [1]

The structure of these three passages matches the real-options result of Section 3.1: before the irreversible action, the reversible ones should be done in full. One more revision of the deck before launch costs roughly nothing; a revision after launch is no longer a change on paper. So "reversible actions can be fast" does not mean "reversible actions can be few". Precisely because they are cheap, do more of them.

5.2 Who presses: you set the direction, we close

On who presses the irreversible actions, the Glacier Institute has a fixed formulation:

> 「企业保留所有重大事项的最终裁决权……交给我们统筹主导的，是交易信息流、核心价值叙事、目标资方匹配、交易推进节奏、关键关系协调和交割落地。所谓全托管，就是责任整体归到一边。说白了，方向你定，收口我们做。」
>
> *The company keeps the final say on all major matters. ... What is handed to us to coordinate and lead is the flow of deal information, the core value narrative, matching with target investors, the tempo of the process, coordination of key relationships, and getting to closing. Full mandate means responsibility sits wholly on one side. Plainly: you set the direction, we close.*
>
> — Glacier Institute website, /institute.html [1]

Read through this paper's classification: the six things handed to the advisor, information flow, narrative, matching, tempo, relationship coordination, closing logistics, are all reversible or iterable actions, so they can be delegated and can be fast. "The final say on all major matters" stays with the company, and the major matters are precisely the one-way doors: whom to sign with, at what price, when to close. Reversible is delegated; irreversible is pressed by the principal. This matches the template in Table 2: the no-shop binds "the Company and the founders", not the advisor.

The advisor's side keeps one key in the opposite direction:

> 「交易一旦启动，桌上所有人的激励都指向尽快成交，这时候很少有人方便开口说结构有问题。站远一点会慢

> ，但是慢下来才看得见结构。我们刻意站远，是为了保留说「停」的那一票。按过吗？按过。换来的是敢把风险讲透。代价是少一单。」
>
> *Once a deal starts, everyone at the table is incentivised to close fast, and few find it convenient to say the structure is wrong. Standing back is slower, but only when you slow down can you see the structure. We stand back on purpose, to keep the one vote that says "stop". Have we used it? We have. What it buys is the nerve to spell out the risk. The price is one deal fewer.*
>
> — Glacier Institute website, /institute.html [1]

"Stop" is a reversible action: after stopping, one can restart. So it can be pressed by the advisor. "Close" is irreversible, so only the principal can press it. The two keys sit on two sides precisely because one has an undo and the other does not.

5.3 An everyday example: registering persistent identifiers for working papers

On 21 September 2026, the Glacier Institute registered persistent identifiers (DOIs) for its published working papers. The registry's rules are public: anyone can create, edit and delete a draft; once published, the identifier is kept permanently, and even a later withdrawal only replaces the content with a tombstone page while the identifier and the original address remain [17][18].

The Institute's division of labour followed: the assistant creates the draft, the assistant fills in the metadata, the responsible person presses publish. Not because the key is hard to press, but because that press has no undo. This is the same rule as the deal division in the previous subsection, applied to a paper instead of a transaction: reversible actions are delegated and fast; irreversible actions are pressed by the principal, one beat slower.

The example is small, and that is the reason to include it. A rule that holds only for big things is usually not a rule but an after-the-fact explanation. That it also holds for something as small as registering a paper's identifier shows that the criterion for the division is not the size of the matter, but whether it can be undone.

> Reversible actions can be fast. Irreversible actions go one beat slower, and the principal presses.

6. A Tool: The One-Way-Door Register for a Financing Round

The conclusions of the first five sections compress into one table that someone in the middle of a round can use the next day. Table 5 lays out fourteen actions in a round, ordered from lowest to highest cost of reversal. Each row has five cells: what the action locks in, the cost of reversal in one of four grades, who presses, and three questions to ask before pressing. The four grades are: low (the effort of one revision); medium (an explanation must be paid for); high (carried into the next round); irreversible (cannot be recalled within the period, or ever). "Who presses" has only two answers: the advisor may act on the company's behalf, or the principal. The term facts in the table come from Tables 2 and 3 and from [19]–[24]; the actions and milestones follow Table 1 and [2].

See Table 5: the first four rows can be delegated to the advisor; of the remaining ten, nine can only be pressed by the principal. This is not a preference about roles; it follows from the cost of reversal: whoever bears the cost presses. The three questions in each row are short because they have to be asked in the few minutes before pressing. If after asking one still has to press, then press. This paper does not judge whether any door should be walked through.

One more word on the "exclusive term sheet" row. In Table 2 it is the only clause in the template that binds from signature, yet Table 5 marks it "irreversible (for the period)" rather than "irreversible": when exclusivity expires, the door reopens. That is why all three questions in that row are about time: how many days, where is the expiry date, what must be finished within the period. Signing an exclusivity clause with no number of days is deleting the words "for the period".

记忆点 · KEY POINT

Whoever bears the cost presses.

7. A Proposition That Can Be Refuted

The claim of this paper can be written as a proposition, together with the evidence that would refute it.

Proposition. If an action can be reversed at zero cost before the counterparty receives it, then in practice it should be handled faster and in a more distributed way than an irreversible action: less time from proposal to

decision, fewer people involved, fewer meetings. Conversely, irreversible actions should be handled more slowly, in a more concentrated way, and by the party that bears the consequences.

Corollary one (template level). If a standard financing template gives binding force to a single provision, that provision should be of the irreversible kind. Table 2 shows that all three NVCA editions give binding force only to no-shop and confidentiality, consistent with the corollary. If any edition of a template were to make a reversible action binding, say the deck version or the investor list, corollary one would be refuted.

Corollary two (process level). In a sample of financings with process records, the median handling time of reversible actions (revising the deck, extending the list, changing a phrasing) should be significantly shorter than that of irreversible actions (signing exclusivity, accepting pricing, closing, announcing a number), and the number of people involved should be smaller. If the two kinds show no significant difference in handling time and number of participants, or if irreversible actions are handled faster and in a more distributed way, the claim of this paper does not hold.

Corollary three (after the fact). If "the principal presses" only assigns responsibility without changing outcomes, then irreversible actions pressed by the principal should show no lower tendency to attract further investment intended to prove them right (the sunk-cost effect [14]) than actions pressed by others. If actions pressed by the principal attract less such follow-on investment, the worry in counter-example four of Section 8 can be set aside; if more, counter-example four stands, and "the principal presses" must be paired with "someone keeps the vote to say stop".

Section 9, item six, already says half of what evidence would refute the proposition: a sample with process records is needed, and process records are mostly confidential. What this paper can do is state the proposition clearly, so that those who have such samples can test it. Corollary one has been tested once against public documents and was not refuted; corollaries two and three remain untested.

> Reversible: fast and distributed. Irreversible: slow and concentrated. The reverse would refute this paper.

8. Boundaries and Counter-Examples

A classification with only positive examples is not to be trusted. The following four cases are where this classification is known to fail, or has to be read the other way round.

Counter-example one: some irreversibility is chosen. Irreversibility is not always a cost; sometimes it is a tool. Schelling [15] pointed out long ago that in bargaining, cutting off one's own retreat can strengthen one's position, because the other side knows you will not back down. Elster [16] calls this kind of self-binding precommitment: Odysseus tied to the mast does not lose freedom; he uses one irreversible action to buy immunity from the sirens' song later. The exclusivity period in financing is exactly such a device: the company gives up the right to approach other investors for a time, in exchange for the lead investor's willingness to commit diligence resources. The template in Table 2 is worded the same way: the consideration for the binding force is the investors' time and expense "devoted and to be devoted". The Glacier Institute treats deal rules in the same spirit:

> 「我们的做法很朴素：规则先立好，写在纸上，对所有人一样；早进来的人拿到该拿的那一点便宜。这一条我们不让步。公平的交易环境其实就是一台加速器。」
>
> *Our approach is plain: set the rules first, write them on paper, the same for everyone; those who come in early get the small advantage they are due. On this we do not yield. A fair trading environment is in fact an accelerator.*
>
> — Glacier Institute website, /institute.html [1]

"On paper" and "do not yield" both narrow one's own room for choice on purpose. So this paper's claim is not "avoid irreversibility" but "irreversible actions are pressed by the principal, one beat slower", and that applies equally to irreversibility that is chosen.

Counter-example two: the cost of waiting too long. Real options say waiting has value, but that value has a ceiling. Dixit [7] showed that irreversibility creates hysteresis: conditions have passed the point at which one should act, yet people keep waiting, and a gap opens in which nobody moves. In financing this gap has a specific shape: everyone waits for someone else to bid first. The Glacier Institute's response is not "wait longer" but to find the one party willing to bid first [1]; and it has also said plainly:

> 「顺序能不能让？不能。但是快慢可以。有的环节会来回三轮，有的两周就过。窗口没来的时候，就得等。这是节奏，不是承诺。」
>
> *Can the sequence yield? No. But the pace can. Some stages go back and forth three times; some pass in two weeks. When the window has not come, one waits. This is tempo, not a promise.*
>
> — Glacier Institute website, /institute.html [1]

Bezos gives the corresponding warning in the same letter: applying the one-way-door process to two-way doors costs slowness and timidity [3]. On the same day, the Glacier Institute had a small internal incident of exactly this shape: in one deployment, four tasks each waiting for "someone else to finish first" counted each other, none moved first, and all four stood still for three hours without a single error line in the log. Waiting raises no error; that is exactly why it is expensive.

Counter-example three: "reversible" is sometimes an illusion. In Table 1, "change a phrasing" is marked reversible, on one condition: nobody remembers the old version. Once something is said externally, especially a number, reversibility holds only in a technical sense. Anchoring [13] shows that listeners do not forget because you have corrected yourself. The Glacier Institute puts this bluntly:

> 「被催着签字的人，迟早会想起被催的那一刻。信任就在那一刻打折。催得动一次，催不动第二次。」
>
> *Whoever is hurried into signing will sooner or later remember the moment they were hurried. Trust is discounted at that moment. You can hurry someone once; you cannot hurry them twice.*

> 「为了拿下委托 (mandate)，估值难免说高一档，周期说短一截，难度说轻一分。短期看是赢了一单，长期看是签了一张迟早要兑付的空头支票。到兑付那天，赔掉的不是一单生意，是这个名字。名字只有一个。」
>
> *To win the mandate, the valuation gets stated a notch high, the timeline a bit short, the difficulty a shade light. In the short run a deal is won; in the long run a cheque has been written that will one day be presented. On that day, what is lost is not one piece of business but the name. There is only one name.*
>
> — Glacier Institute website, /institute.html [1]

So the classification of Table 1 needs one amendment: whether an action is reversible depends not only on the action itself but on whether someone else has received it. Before it is received, it is a two-way door; after, a one-way door. This is the whole reason for "calibrate before you ask". The last three rows of Table 5, announcing the financing, announcing the valuation, giving interviews, all fall under this amendment.

Counter-example four: the principal can press wrongly too. "The principal presses" settles responsibility, not correctness. On the contrary, behavioural research suggests that someone who has personally taken an irreversible action is more inclined to keep investing to prove it right; Arkes and Blumer [14] call this the sunk-cost effect. So "the principal presses" must be used together with "one beat slower" and "someone keeps the vote to say stop"; used alone, it turns an irreversible action into an unquestionable one. Corollary three of Section 7 puts this in testable form.

> Before someone else receives it, an action is a two-way door; after, a one-way door.

9. Where This Classification Holds

One: scope. This paper concerns actions in an equity financing process, from building the factual base to the arrival of funds. Mergers, debt financing and IPOs also have one-way doors, but the doors are in different places, and this paper does not extrapolate. The data in Tables 2 to 4 come from U.S. templates and samples; the names and frequencies of provisions do not transfer directly to other jurisdictions. This paper uses them to show the shape of "what terms lock in", not the frequencies themselves.

Two: the definition of "irreversible". This paper uses the operational definition from economics: after the action, the cost of returning to the prior state is not of the same order as the cost of taking the action. Physical impossibility of reversal is not required. Tables 1 and 5 classify by this definition; the boundary cases are discussed in Sections 2 and 8.

Three: the definition of "principal". In this paper, the principal is the party that bears final responsibility for the action: the company in a transaction, the responsible person in registering a paper. It is not a title but a position of responsibility. Whoever bears the irreversible consequence presses. The NVCA template binds the no-shop on "the Company and the founders" [19], consistent with this definition.

Four: strength of evidence. The real-options and contracting literature [4]–[12] is peer reviewed and supports the mechanism. Tables 2 to 4 are re-sortings by this paper of public documents and published data; no figure was changed, and one column, "what it makes irreversible", was added; that column is this paper's reading, not the original authors' conclusion. The classification table (Table 1) and the register (Table 5) come from the Glacier Institute's published statements and this paper's synthesis, and have not been independently tested. The Bezos letter [3] is a practitioner's own account, not research. The two platform policies [17][18] are public rules, used to establish the facts of the example, not for argument.

Five: what it cannot do. This paper does not judge whether any door should be walked through, whether any transaction should be signed, and it does not constitute investment advice. It does one thing: before the key is pressed, sort the keys into two kinds. The three questions in Table 5 are questions, not answers.

Six: an honest gap. What this paper has not done is to use a traceable sample of transactions to measure how often, and at what cost, irreversible actions are handled as if reversible. That requires samples with process records, and process records are mostly confidential. Until that work is done, this paper's classification is a working hypothesis that can be falsified; Section 7 puts it in testable form.

> Whoever bears the irreversible consequence presses.

10. Conclusion

Actions in a financing round come in two kinds. Reversible: revise the deck, change a phrasing, meet one more investor. Irreversible: sign exclusivity, accept an anchor, close, release a number that will be quoted. The cost of an error in the first kind is one revision; in the second, it is carried into every later round.

Real-options theory says an irreversible action should be taken later than the expected-value calculation suggests, because waiting itself has value. Management practice says one-way doors should be slow and concentrated, two-way doors fast and distributed. Contracting research says that terms, once signed, follow the company. Three public documents say that the template gives binding force to exclusivity alone, while more than ninety percent of contracts carry anti-dilution, liquidation preference and automatic conversion, terms that in the illustrative company push overvaluation from thirty percent to ninety. The Glacier Institute's practice reduces these to one division of labour: reversible is delegated, irreversible is pressed by the principal.

Back to the two questions of Section 1.

How long should exclusivity run. The template gives no number; all three editions leave it blank. This paper's answer is derived from mechanism: exclusivity is the price the company pays, by shutting the other doors, for the lead investor's commitment of diligence; its length should therefore equal the time the lead needs to complete diligence, and no longer; it must carry an expiry date, after which the door reopens if no deal has closed; and an exclusivity clause without a number of days deletes the words "for the period" and should not be signed. The specific number of days depends on what that round's diligence has to examine; it is not a constant that can be given in advance.

When to name a price. Before the counterparty receives it, a number is a two-way door; after, a one-way door. So the time to quote is neither "as early as possible" nor "as late as possible" but "after calibration, before asking": finish calibrating, then speak, and treat what is spoken as unrecoverable. Whoever moves first bears the pricing error alone, so let the party willing and able to bid first do so.

Three sentences summarise the paper:

1. Ask first whether it can be undone, then how important it is.
2. Irreversible actions all change other people; once an action has been received by someone else, there is no undo.
3. Reversible actions can be fast; irreversible actions go one beat slower, and the principal presses.

References / 参考文献

Format: Author (year). Title. Journal / publisher, volume(issue), pages. DOI or accessible link. Grouped by source grade: primary material is the Glacier Institute's own public statements; secondary literature is peer-reviewed work, monographs, public policy documents and public template documents. Every entry below was verified reachable on 2026-09-22; no unverified entry is listed.

Primary material (Glacier Institute public statements; all quoted sentences are from [1][2], unaltered)

[1] 庚辛研究院 Glacier Institute (2026). Glacier Institute website (sections "five pre-launch checks", "six dimensions of full mandate", "60-day benchmark cadence", and essays). Glacier Capital official website. https://glacier.mba/institute.html (accessed 2026-09-22)

[2] 庚辛研究院 Glacier Institute (2026). 60 天八节点：融资过程的节拍 [Sixty Days, Eight Milestones: The Cadence of a Financing Process]. Glacier Institute Working Paper GI-WP-2026-P2. https://doi.org/10.5281/zenodo.22869123 (landing page https://glacier.mba/research/GI-WP-2026-P2.html, accessed 2026-09-22)

Secondary literature (decision practice, real options, venture contracting, behavioural research and platform policy)

[3] Bezos, J. P. (2016). 2015 Letter to Shareholders. Amazon.com, Inc., Form 8-K, Exhibit 99.1, April 2016. https://www.sec.gov/Archives/edgar/data/1018724/000119312516530910/d168744dex991.htm (also https://s2.q4cdn.com/299287126/files/doc_financials/annual/2015-Letter-to-Shareholders.PDF; accessed 2026-09-22)

[4] Arrow, K. J., & Fisher, A. C. (1974). Environmental Preservation, Uncertainty, and Irreversibility. The Quarterly Journal of Economics, 88(2), 312–319. https://doi.org/10.2307/1883074

[5] Henry, C. (1974). Investment Decisions Under Uncertainty: The "Irreversibility Effect". The American Economic Review, 64(6), 1006–1012. https://ideas.repec.org/a/aea/aecrev/v64y1974i6p1006-12.html (also https://www.jstor.org/stable/1815248; accessed 2026-09-22)

[6] Bernanke, B. S. (1983). Irreversibility, Uncertainty, and Cyclical Investment. The Quarterly Journal of Economics, 98(1), 85–106. https://doi.org/10.2307/1885568

[7] Dixit, A. (1992). Investment and Hysteresis. Journal of Economic Perspectives, 6(1), 107–132. https://doi.org/10.1257/jep.6.1.107

[8] Dixit, A. K., & Pindyck, R. S. (1994). Investment under Uncertainty. Princeton University Press. https://doi.org/10.1515/9781400830176

[9] Gompers, P. A. (1995). Optimal Investment, Monitoring, and the Staging of Venture Capital. The Journal of Finance, 50(5), 1461–1489. https://doi.org/10.1111/j.1540-6261.1995.tb05185.x

[10] Kaplan, S. N., & Strömberg, P. (2003). Financial Contracting Theory Meets the Real World: An Empirical Analysis of Venture Capital Contracts. Review of Economic Studies, 70(2), 281–315. https://doi.org/10.1111/1467-937X.00245

[11] Gornall, W., & Strebulaev, I. A. (2020). Squaring Venture Capital Valuations with Reality. Journal of Financial Economics, 135(1), 120–143. https://doi.org/10.1016/j.jfineco.2018.04.015

[12] Gompers, P., Gornall, W., Kaplan, S. N., & Strebulaev, I. A. (2020). How Do Venture Capitalists Make Decisions? Journal of Financial Economics, 135(1), 169–190. https://doi.org/10.1016/j.jfineco.2019.06.011

[13] Tversky, A., & Kahneman, D. (1974). Judgment under Uncertainty: Heuristics and Biases. Science, 185(4157), 1124–1131. https://doi.org/10.1126/science.185.4157.1124

[14] Arkes, H. R., & Blumer, C. (1985). The Psychology of Sunk Cost. Organizational Behavior and Human Decision Processes, 35(1), 124–140. https://doi.org/10.1016/0749-5978(85)90049-4

[15] Schelling, T. C. (1960). The Strategy of Conflict. Harvard University Press. https://www.hup.harvard.edu/books/9780674840317 (accessed 2026-09-22)

[16] Elster, J. (2000). Ulysses Unbound: Studies in Rationality, Precommitment, and Constraints. Cambridge University Press. https://doi.org/10.1017/CBO9780511625008

[17] Zenodo (n.d.). Zenodo Policies (Withdrawal and Longevity). CERN. https://about.zenodo.org/policies/ (accessed 2026-09-22)

[18] DataCite (n.d.). Tombstone Pages. DataCite Support. https://support.datacite.org/docs/tombstone-pages (accessed 2026-09-22)

Public template documents and working-paper versions (added in the second draft; sources of the figures in Tables 2 to 4)

[19] National Venture Capital Association (2020). NVCA Model Term Sheet (Series A Preferred Stock Financing), July 2020 edition. https://nvca.org/wp-content/uploads/2020/07/NVCA-2020-Term-Sheet.docx (index page https://nvca.org/model-legal-documents/; accessed 2026-09-22)

[20] National Venture Capital Association (2019). NVCA Model Term Sheet (Series A Preferred Stock Financing), older edition uploaded June 2019 (document metadata: last saved 2019-01-23). https://nvca.org/wp-content/uploads/2019/06/NVCA-Model-Term-Sheet-1.doc (accessed 2026-09-22)

[21] National Venture Capital Association & Aumni (2022). Enhanced Model Term Sheet v3.0 (2022-06-14). https://nvca.org/wp-content/uploads/2023/10/Aumni_Enhanced_Model_Term_Sheet___V3.0___06142022.docx (v2.0 release note https://nvca.org/press_releases/new-enhanced-model-term-sheet-v2-0/; accessed 2026-09-22)

[22] UK Private Capital (formerly BVCA) (2025). Model Documents for Early Stage Investments (February 2025 edition, including the Summary of Terms). https://www.ukprivatecapital.co.uk/policy/industry-guidance-standardised-documents/model-documents-for-early-stage-investments.html (accessed 2026-09-22; the Summary of Terms itself requires registration to download; this paper cites only the public description on that page)

[23] Kaplan, S. N., & Strömberg, P. (2000). Financial Contracting Theory Meets the Real World: An Empirical Analysis of Venture Capital Contracts. NBER Working Paper 7660. https://doi.org/10.3386/w7660 (PDF https://www.nber.org/system/files/working_papers/w7660/w7660.pdf; accessed 2026-09-22; page numbers in Table 3 refer to this version)

[24] Gornall, W., & Strebulaev, I. A. (2017). Squaring Venture Capital Valuations with Reality. NBER Working Paper 23895. https://doi.org/10.3386/w23895 (PDF https://www.nber.org/system/files/working_papers/w23895/w23895.pdf; accessed 2026-09-22; page numbers in Table 4 refer to this version)

Verification note: [1][2] and [15][17][18][19][20][21][22] were fetched over HTTP on 2026-09-22 and found accessible; for [4]–[14][16][23][24], title, journal, volume, issue, pages and year were checked item by item against Crossref metadata and every DOI resolves; the SEC archive page for [3] is served after the visitor identification the SEC publicly requires, and a publisher mirror PDF is given as well; [5] has no DOI and its title was checked against the RePEc index page; the Summary of Terms under [22] requires registration to download, was not downloaded, and only the public description on its index page is cited.

Appendix: Source Passages Quoted from the Glacier Institute Website

All website quotations are from [1] https://glacier.mba/institute.html and [2] https://glacier.mba/research/GI-WP-2026-P2.html (fetched 2026-09-22; plain text after stripping comments, scripts, styles and tags). The Chinese originals are given in the body, each followed by an English rendering in italics; the renderings are this paper's and are not the Institute's official English text. The passages are:

- The "five pre-launch checks" (「发射之前，每修正一个错误，成本约等于零……这一条没有例外」「创业没有草稿。签下第一份协议那一刻，倒计时开始」「有去无回，是这个比喻的要害」「所以我们把绝大部分工作放在发射之前」)
- "Full mandate" (「企业保留所有重大事项的最终裁决权」「方向你定，收口我们做」)
- "The outsider" (「做投资的第一要务是安全，不是赔率」「我们刻意站远，是为了保留说『停』的那一票」)
- "Classify first, then price" (「硬拉估值意义不大。价格能被拉高一次，但是拉不住第二次」「这张牌不争，估值的锚就被别人先钉住了」)
- Deal rules and tempo (「规则先立好，写在纸上，对所有人一样」「顺序能不能让？不能。但是快慢可以」)
- Trust (「催得动一次，催不动第二次」「名字只有一个」)
- Working Paper GI-WP-2026-P2 (「发出去的预期改一次，要付一次解释的钱」「价格只影响这一轮，条款影响后面每一轮」)

Disclosure: Glacier Institute is the research arm of Glacier Capital, and this paper is issued under the name of Glacier Institute. In the course of its business, Glacier Capital acts as financial adviser to a number of technology companies and invests its own capital in some of them; such relationships may overlap with the industries discussed here. This paper does not concern any specific mandate and uses no non-public information; all company, industry and data references are drawn from public sources and cited individually. The authors received no third-party compensation for this paper.

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