

Mobilize the Modern Defense Industrial Base

A Commander's Guide to Why Corporations Do What They Do

John W. Raymond and Dan Berkenstock

I WANT YOU



A PUBLICATION OF THE HOOVER INSTITUTION



Today, hundreds of new companies are building capabilities for the warfighter—from startups to America's largest corporations.

Will this trend last? Maybe.

This briefing will teach you how investor expectations drive companies to do what they do, so that you can convince them to support the defense mission for the long term.



Corporations build the equipment that runs the US military. This briefing gives three lessons to lock in their talents for national security.

- 1 Whether a corporation is publicly or privately owned defines its appetite for risk versus reward.
- 2 Investors are the wizards behind the curtain; most companies' behavior can be traced to their ownership.
- 3 Understanding a company's stage and investor base is the key to driving its strategy toward national security needs.

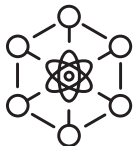
This isn't just academic.

Our strategic adversaries have an unfair advantage: They can force their whole economies to get behind national security objectives.

Military-Civil Fusion and the People's Republic of China

“Military-Civil Fusion,” or MCF, is an aggressive, national strategy of the Chinese Communist Party (CCP). Its goal is to enable the PRC to develop the most technologically advanced military in the world. As the name suggests, a key part of MCF is the elimination of barriers between China’s civilian research and commercial sectors, and its military and defense industrial sectors. The CCP is implementing this strategy, not just through its own research and development efforts, but also by acquiring and diverting the world’s cutting-edge technologies—including through theft—in order to achieve military dominance.

Key MCF Technologies



Quantum
Computing



Big
Data



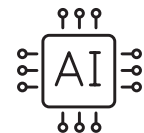
Nuclear
Technology



5G
Communications



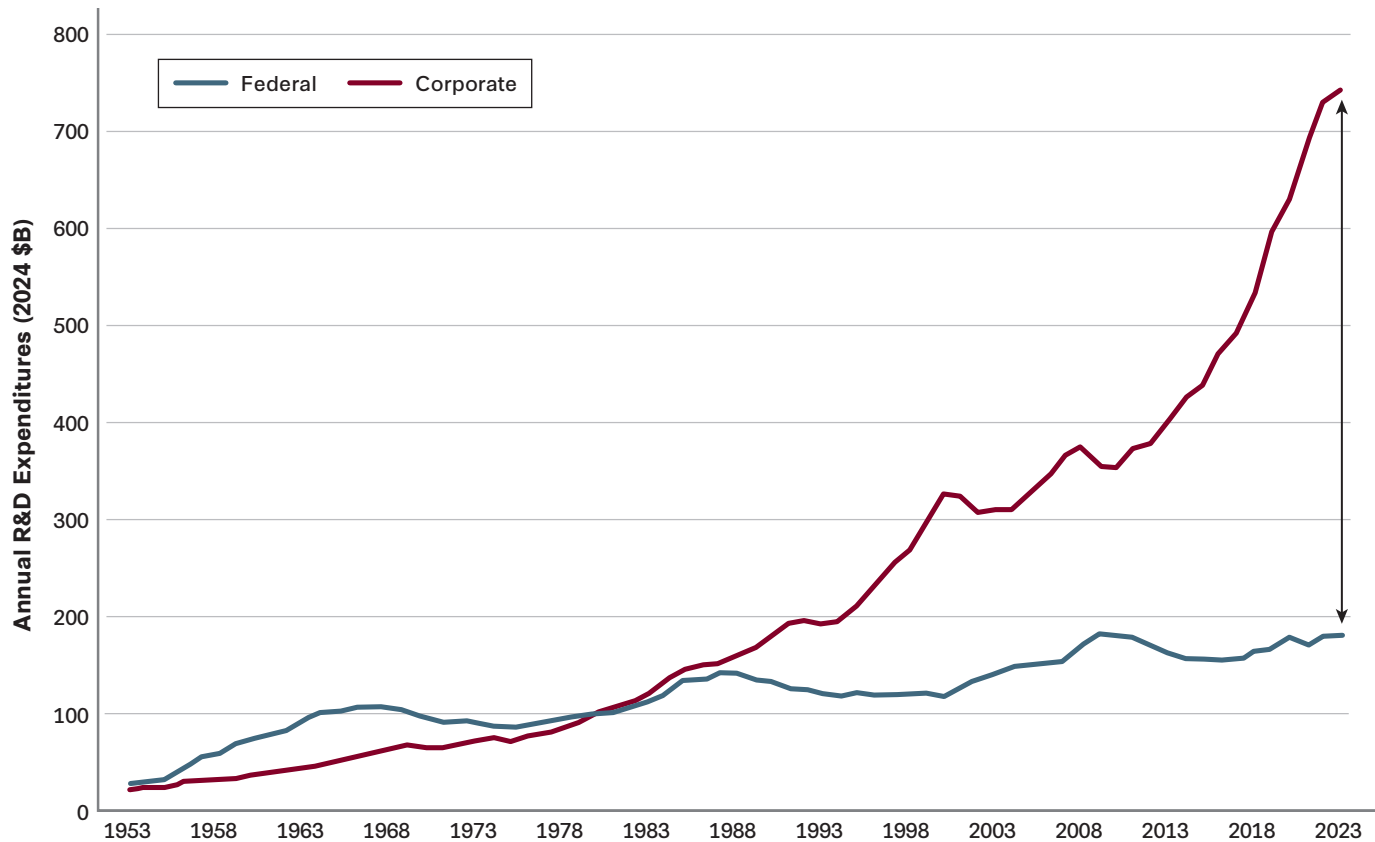
Aerospace



Artificial
Intelligence

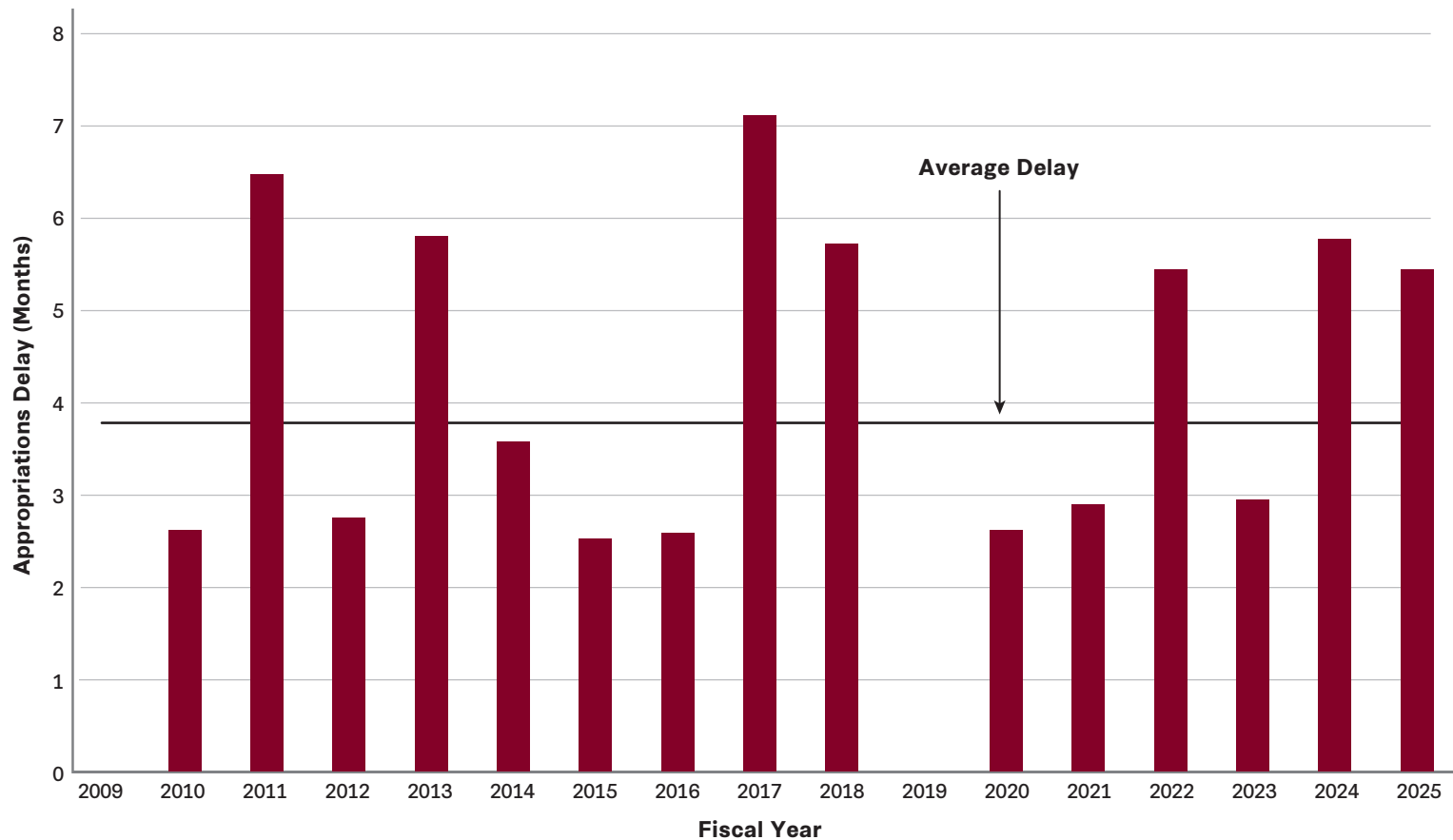
Source: US Department of State

Meanwhile, over the past forty years, research and development (R&D) in the United States has shifted decisively toward the private sector . . .



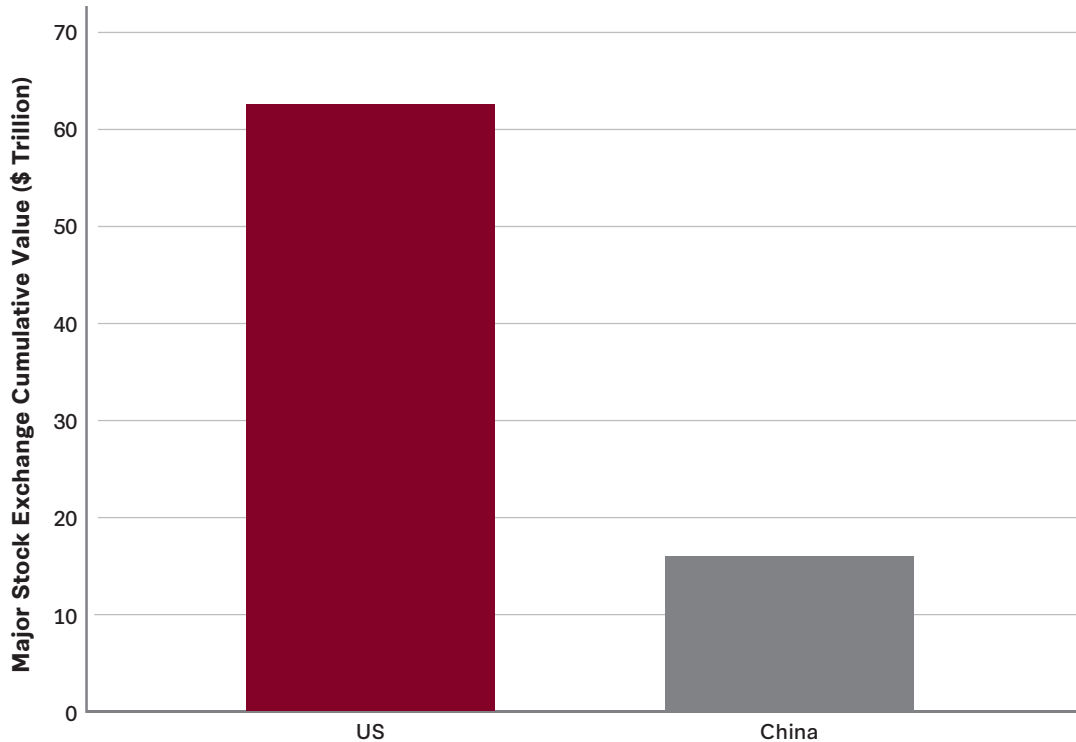
Source: National Center for Science and Engineering Statistics, "National Patterns of R&D Resources: 2022-23 Data Update"

... and the remaining government-funded development budget is delayed, on average, by nearly four months each year.



Source: Congress.gov, appropriations bills by year

However, we do have one critical advantage: American commercial companies and the capital markets that fund them.



Source: World Federation of Exchanges, "Market Statistics—March 2025"

These private-sector companies, and their investors, are defining and funding the capabilities that will support the US national security enterprise for the foreseeable future.

It is no longer possible to field a dominant military without understanding the motivations and constraints of the commercial companies that will build the defense technologies of the future.

Want to harness this American superpower? Study the drivers that attract or limit its capabilities.

**“On the fields of friendly strife
are sown the seeds that on
other days and other fields
will bear the fruits of victory.”**

—General Douglas MacArthur

US investment capital represents many multiples of the annual US defense budget. It is a vital strategic resource.

Lesson

①

Whether a corporation is **publicly or privately owned** defines its appetite for **risk versus reward**.



Incorporation is a legal idea allowing a company to shield its owners during bankruptcy—bringing innovation without personal risk.

“Corporations are entities that act as a single, fictional person. Much like an actual person, a corporation may sue, be sued, lend, and borrow. Additionally, a company which has been incorporated can easily transfer ownership through stock sales.”

Source: law.cornell.edu

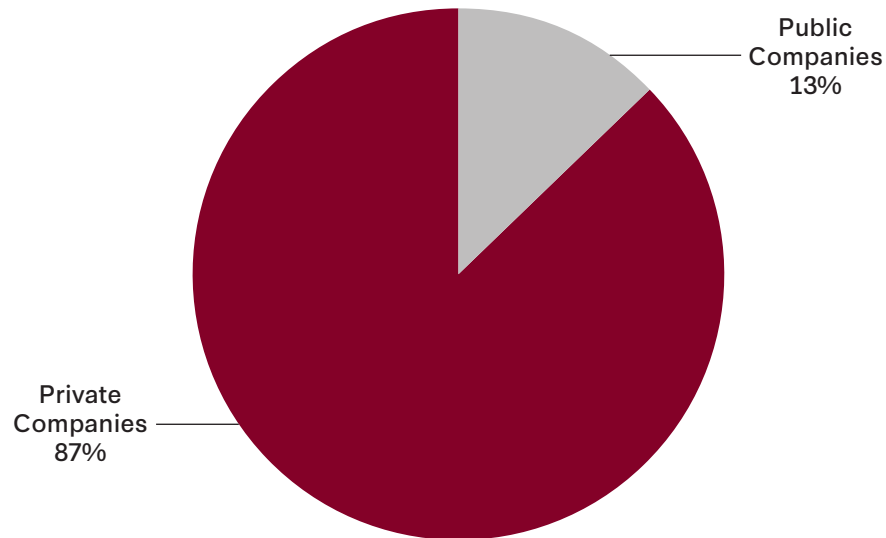
Stock, typically owned by both employees and investors, gives influence over a corporation's activities.

A majority shareholder may be able to:

- 1 Dictate the composition of the governing board of directors
- 2 Trigger a change in the executive team
- 3 Force, or block, the sale of the company

Corporations can be categorized in many ways; the most important is whether they are publicly or privately owned.

Breakdown of US Companies with Revenues Greater than \$100M (2024)



Source: PitchBook Data Inc.

The general public can purchase or sell stock in a publicly owned company . . .

Ownership in **public companies** is bought and sold via public stock exchanges (such as the New York Stock Exchange or Nasdaq).

There are **significant public reporting requirements** for these companies to periodically disclose their **financial results** and **anticipated business operations**.

This is important because **anyone** can buy shares of stock in a publicly traded company, and regulators want to protect investors, especially “amateur” investors, from the risk of losses in fraudulent companies.

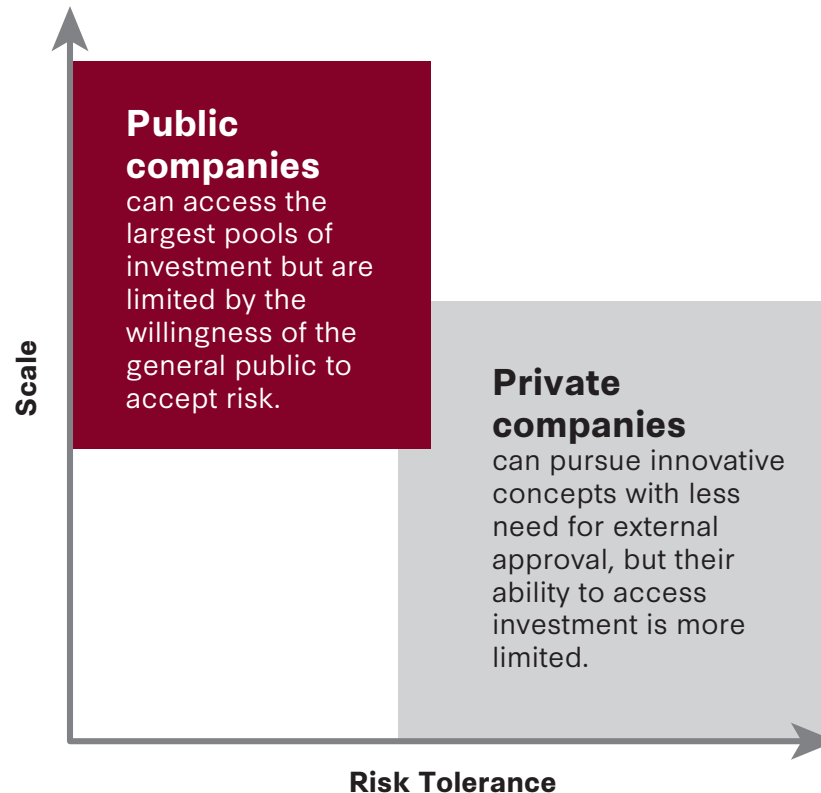
... but privately owned companies can only sell shares to a smaller pool of “accredited” investors.

Ownership in **private companies** is bought and sold directly between the company and investors.

There are **no public reporting requirements** for these companies.

This is allowed because, generally, **only accredited investors** (typically defined as those having more than \$1M in assets for an individual or \$5M in assets for an organization) **can purchase** shares of stock in a private company. Regulators see these investors as “professionals” that should be able to better assess investment risk than members of the general public.

Being publicly or privately held has a significant impact on the overall scale and risk tolerance of a company.



Takeaways

- 1 Corporations are legal entities that protect owners' personal assets in the case of the company failing.
- 2 Corporations are owned through stock; owning more stock usually leads to more influence.
- 3 Private companies can usually take more risk, but operate at a smaller scale, than public companies.

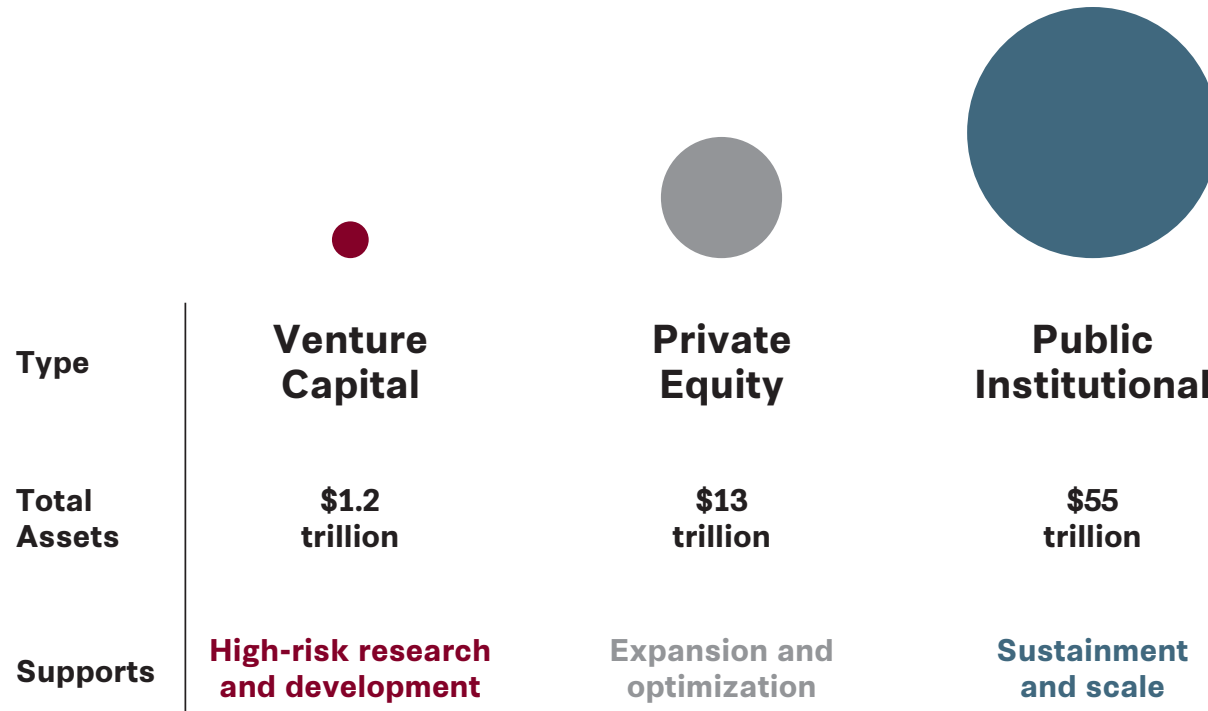


Lesson

②

Investors are the **wizards** behind the curtain; most companies' **behavior** can be traced to their **ownership**.

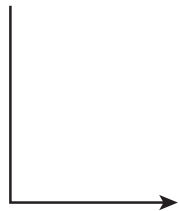
There are three main groups that dominate US investment activity, each supporting a different phase of a company's growth . . .



... but with the common objective of “buying low, selling high” in order to realize a profit on their investment.

All classes of investor seek to buy, hold, and, ultimately, sell stock for a profit or “capital gain.”

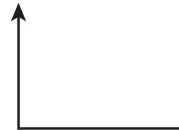
The perceived value of a company will go up or down based on its business performance.



Share price =

Company value

Total shares of stock



These basic parameters

drive hundreds of billions of dollars of annual US investment activity and are the keys to determining which commercial entities will emerge as “winners.”

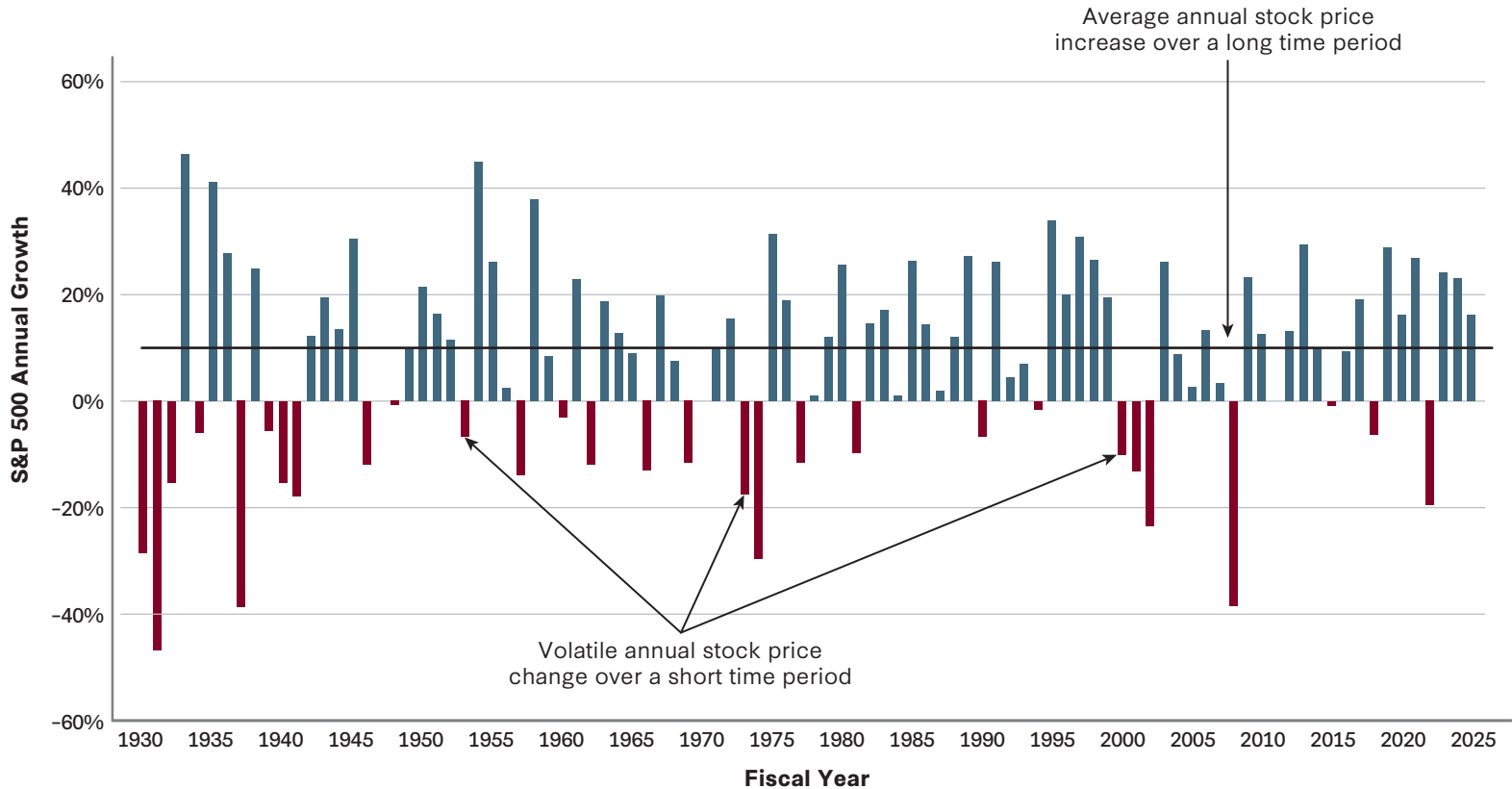
A company may issue new stock to raise investment or buy back existing stock to increase share price.

What motivates **investors**?

Public institutional investors

manage hundreds of billions of dollars, primarily in retirement savings. They invest in public companies and seek steady returns with relatively low risk.

Over time, the average annual growth of the five hundred largest US public stocks has been about 10 percent, with big annual swings.

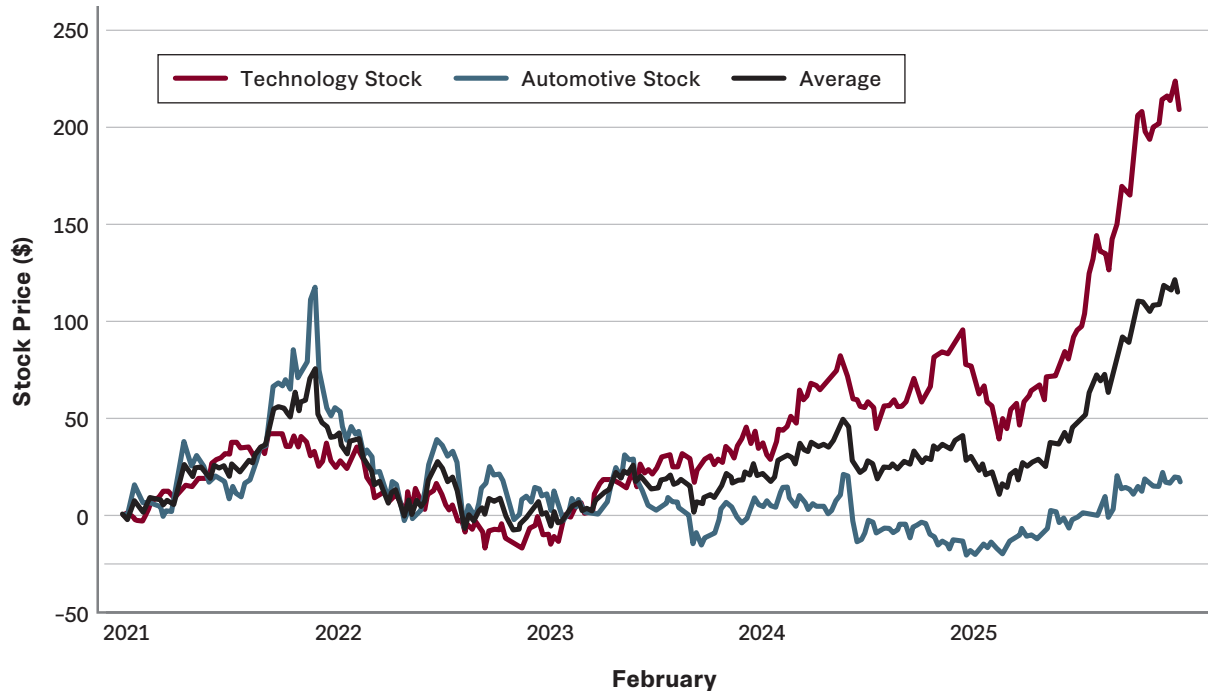


Source: S&P Capital IQ, includes content supplied by S&P Capital IQ; copyright ©S&P Capital IQ, 2026. All rights reserved

To mitigate this volatility, public investors reduce their risk through diversification.

Diversification is a strategy to spread investments across various industries under the belief that while some sectors may perform better and others worse, investors' overall average return will still be close to the historic market average.

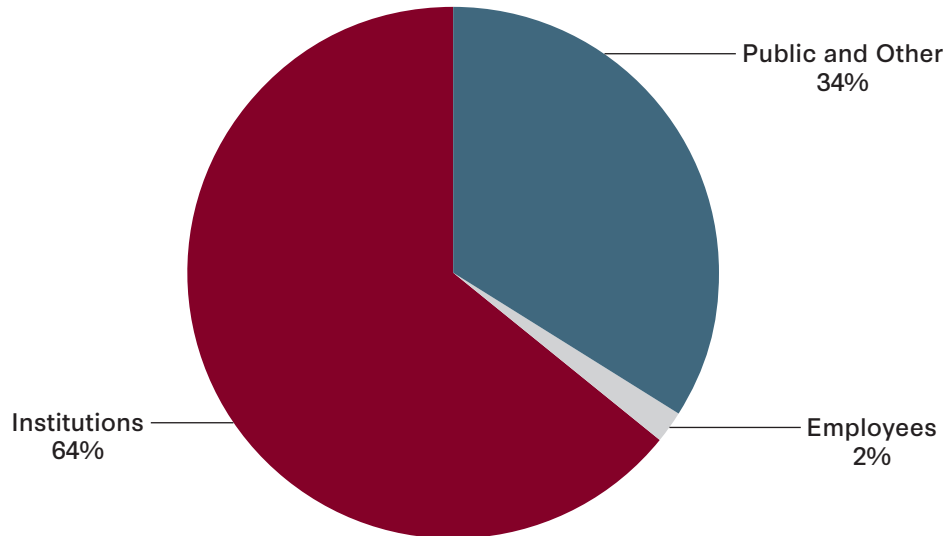
A diversified portfolio includes different sectors of the economy, lessening the impact of outliers on total returns.



Source: S&P Capital IQ, includes content supplied by S&P Capital IQ; copyright ©S&P Capital IQ, 2026. All rights reserved

Public institutional investors often use their large ownership to influence companies to grow stock price vs. other priorities . . .

Representative Public Company Ownership



Source: S&P Capital IQ, includes content supplied by S&P Capital IQ; copyright ©S&P Capital IQ, 2026. All rights reserved

Institutional investors often, cumulatively, own large stakes in public companies, which they can sell if they disagree with the company's strategic direction, resulting in broader sell-offs and a bigger drop in stock value.

... leading companies to pursue strategies that may target short-term gain over broader, long-term growth. They do this by:

- Predicting and achieving **consistent quarterly and annual growth** in key business metrics
- **Maximizing sales of current product lines** that are highly profitable
- **Minimizing internal costs**, including research and development
- Using available capital to reduce the total number of outstanding shares through **stock buybacks**

These investor-driven behaviors may not be consistent with your mission.

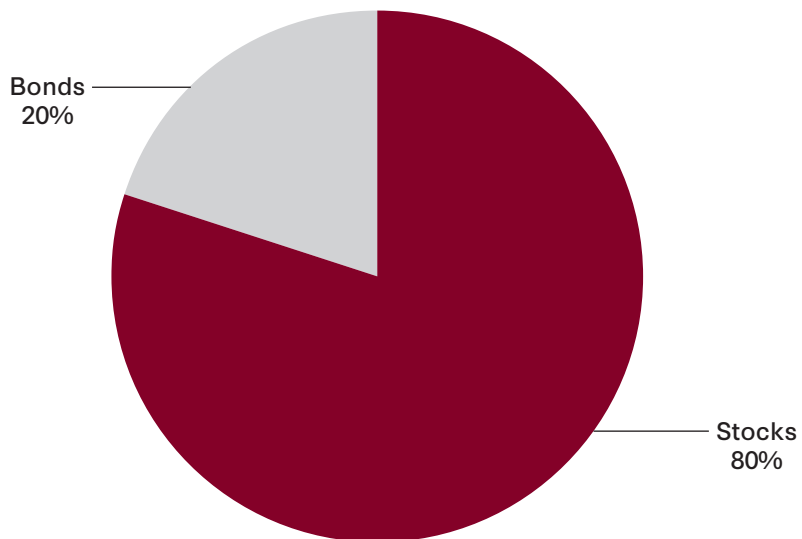
The expectations of public investors influence companies to create predictable, incremental growth—which makes it harder to pursue big, bold bets.

Venture capital investors

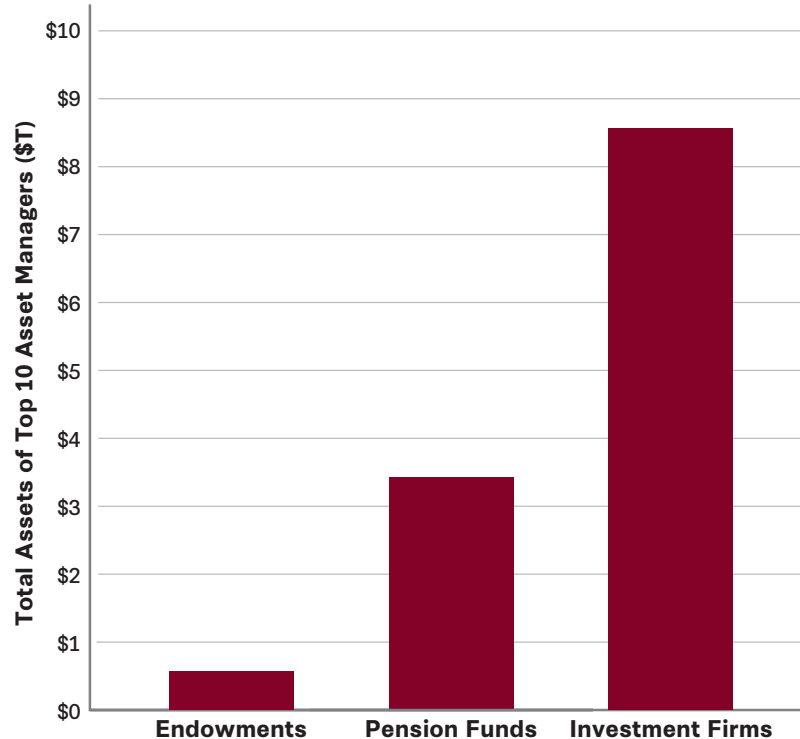
support private companies from incorporation through initial production and profitability. These investors look for high-risk, high-reward opportunities.

When individuals set up retirement portfolios, they typically choose relatively simple strategies for balancing risk and reward . . .

Representative Retail Investor Retirement Fund Allocation



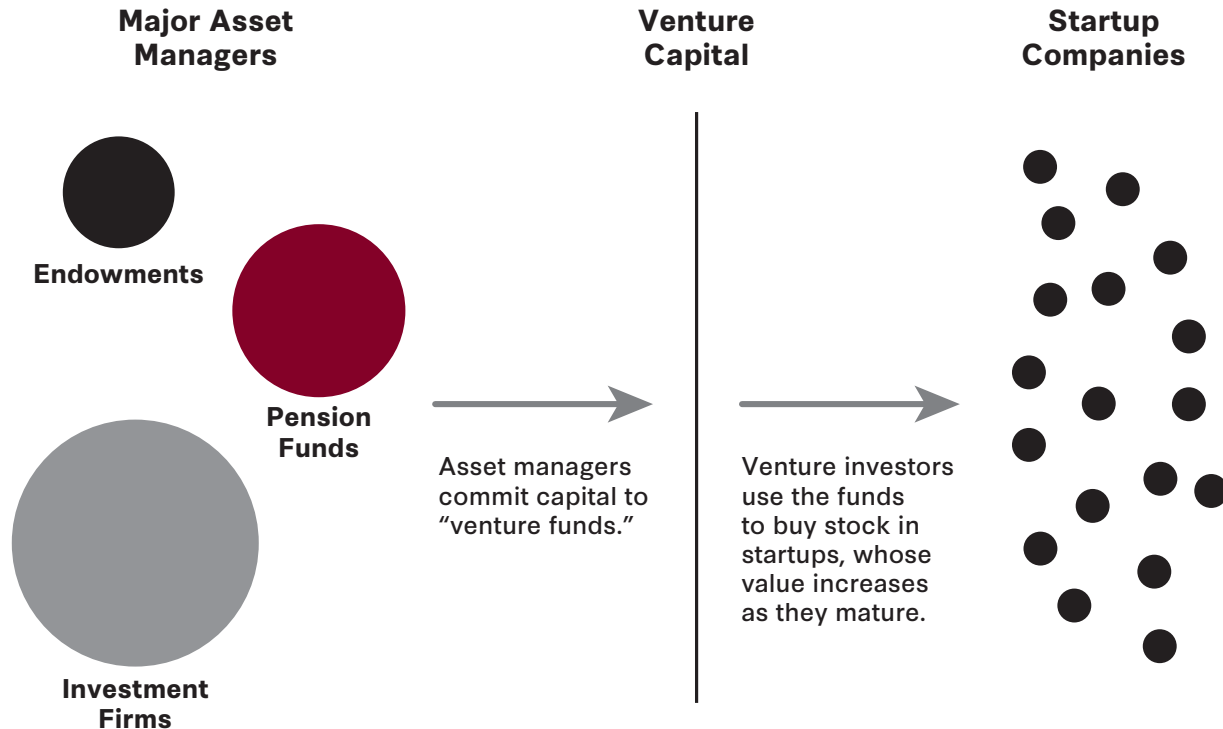
... but the largest asset managers operate at too large a scale to employ the same techniques, forcing a broader approach.



Source: PitchBook Data Inc.

These investors can afford to place different kinds of “bets.” That might mean having capital locked up for an extended period (7-10 years) or an investment strategy with a large minimum buy-in.

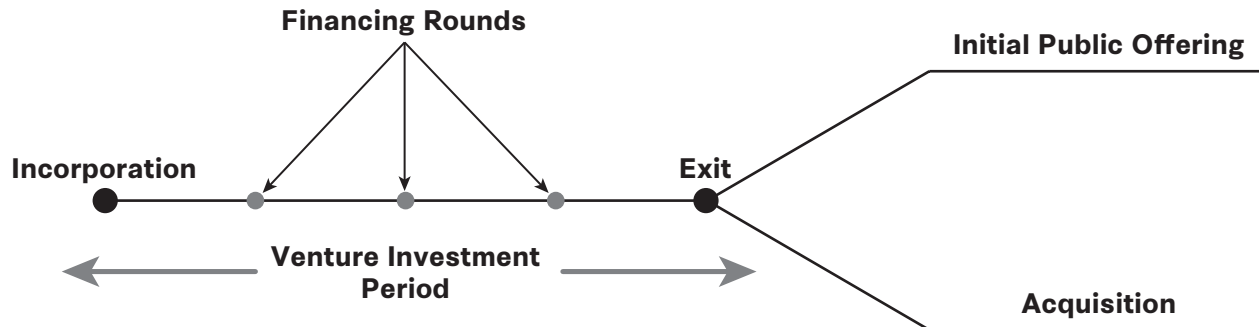
Venture investors pool capital from these major asset managers to invest in early-stage, technology-driven private companies . . .



... in which they invest with increasingly larger commitments over time, as companies reduce technical and market risk ...

An initial public offering (IPO)

is a process that allows a company to begin raising capital from the general public. After completing an IPO, a company is considered a "public company."

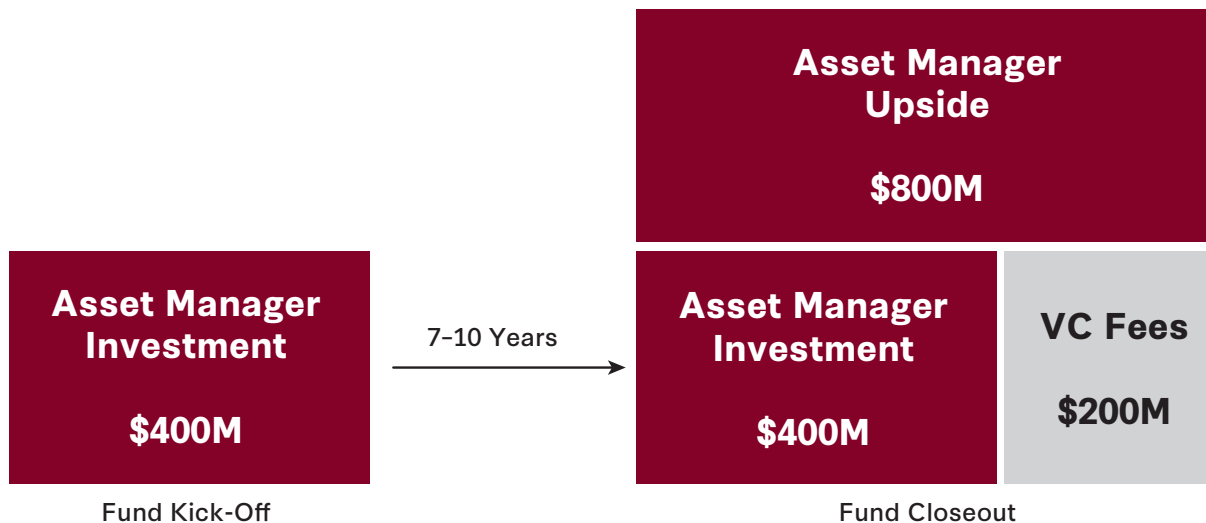


Starting at incorporation, venture investors buy stock over the course of several "financing rounds." Successful companies will give investors a chance to sell that stock for a profit when they "exit" the venture capital phase, either being purchased by a larger company or transitioning to public ownership.

An acquisition

occurs when a separate corporation acquires the assets, intellectual property, and employees of a company, usually to improve their own business, advance a strategic priority, or remove a competitor. The acquiring company may itself be a public or private company.

... with the goal of returning three times their investors' initial capital over a seven- to ten-year period, as companies mature.



The median US venture fund has **\$400M under management; the largest funds have **\$3-5B**.**

Venture investors can't consistently pick winners; most new ideas will fail, leaving a small percentage to "return the fund."

- **80 out of 100** venture investments will **fail**.
- **15 out of 100** venture investments will return **no profit** to investors.
- **5 out of 100** venture investments will provide **significant** returns (5-10x the initial investment).

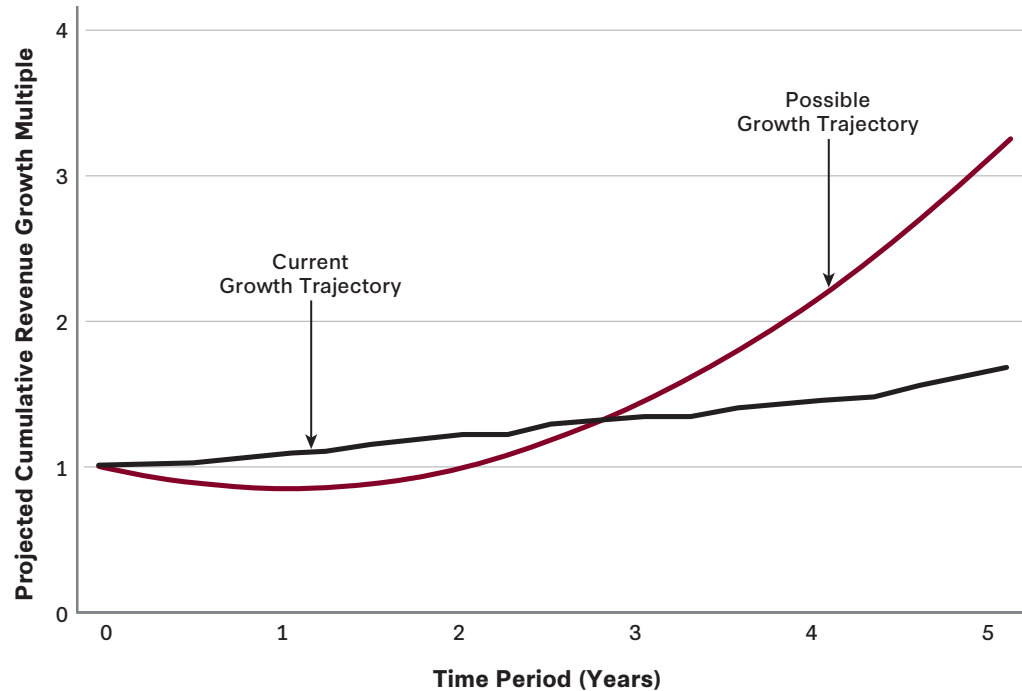
1 out of 5,000 venture investments will provide staggering returns (100-1,000x the initial investment).

**Venture capital investors
influence companies to go big.
This is the *perfect* period in
a company's life cycle to
pursue big, bold bets.**

Private equity investors

support private companies through periods of restructuring, combination, and efficiency maximization. This class of investors looks for low-risk, medium-reward opportunities.

Often, both private and public companies will face situations where short-term consistency conflicts with long-term potential.



These companies may be profitable and showing consistent growth but could be on a better path if they could:

- Manage according to a **five-year plan** instead of quarter to quarter
- Pursue **research and development** to move to their next product
- **Consolidate** with similar companies in their sector

In these cases, a PE firm will acquire the company and may:

- Onboard a growth-minded management team
- Increase the company's profitability
- Improve access to US markets
- Acquire and combine multiple companies

**Private equity investors
provide the capital
to give companies
breathing room to grow
and become more
efficient.**

Takeaways

- 1 Public institutional investors want companies to pursue predictable, incremental growth—without major surprises.
- 2 Venture capital investors want companies to pursue big, bold bets that have the potential to return their fund.
- 3 Private equity investors want companies to maximize efficiency and opportunity by merging companies and cutting costs.



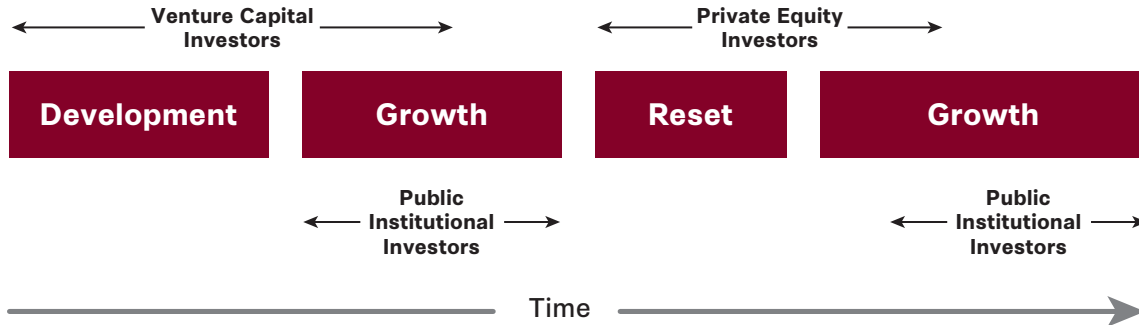
Lesson

③

Understanding a company's stage and investor base is the key to driving its strategy toward national security needs.



Corporations have a different set of investor-driven needs at each stage of their evolution.



- **Young** companies need **validation** of future markets.
- **Maturing** companies need **consistent** revenue growth.
- **Resetting** companies need a **flexible** customer base.

Let's consider how this all works through the life cycle of a fictional example—Arcturus Inc.

Four aerospace engineering graduate students team up.



They envision hypersonic drones for both defense and commercial customers.

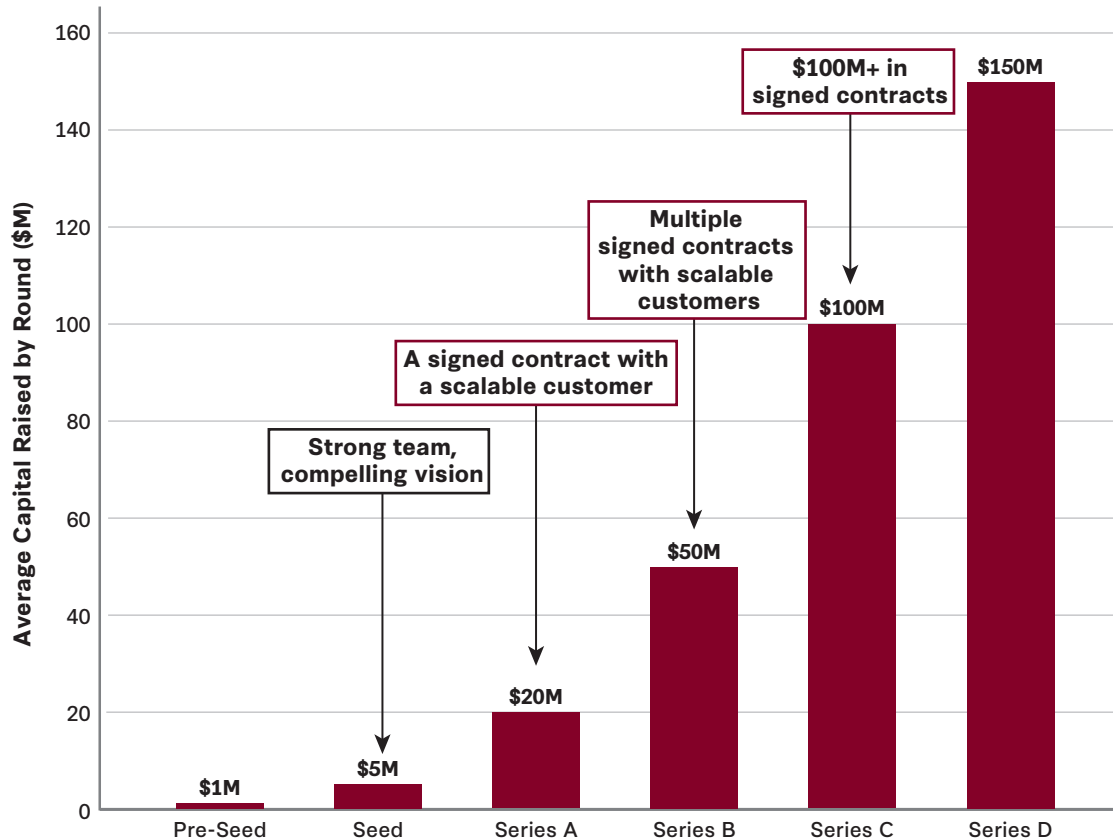


A Silicon Valley attorney completes the incorporation paperwork and Arcturus Inc. is born.



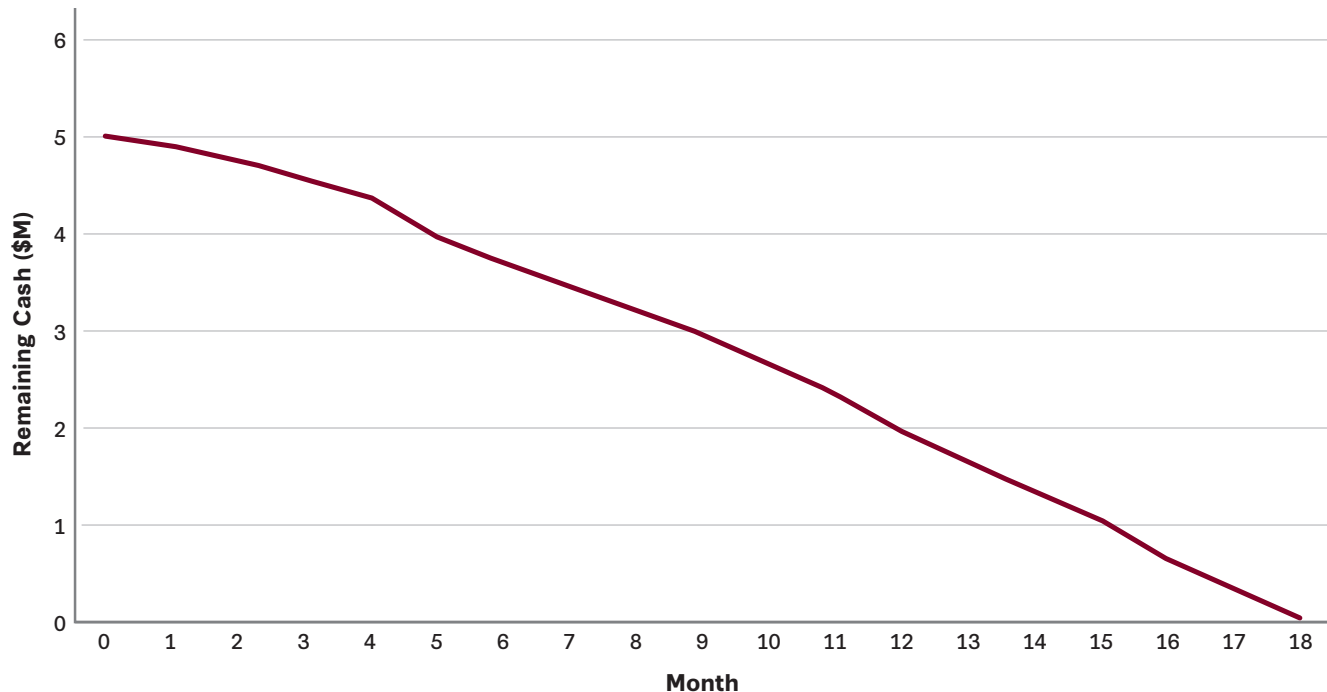
**The Arcturus team
calculates that they
will need **\$325M** in total
investment to deliver an
operational product.**

The average venture-backed defense tech company raises \$325M from founding to production, split over a handful of funding rounds.



The Arcturus team learns that **market** (more than technical) milestones are usually the key to unlocking each new venture funding round.

Based on their relevant aerospace industry experience and academic background, the Arcturus team raises a \$5M seed round.



The founders build a financial model that predicts the \$5M will run out after eighteen months, at which point they will need another \$20M.

Compared with the seed round, convincing investors to buy into the following funding rounds takes concrete progress.

BEFORE RAISING THE ...	ARCTURUS WILL NEED TO SHOW ...	BY SPENDING CUMULATIVELY LESS THAN ...
Seed Round (\$5M)	Positive customer interviews and a product concept	\$1M
Series A (\$20M)	A signed contract and a conceptual design	\$5M
Series B (\$50M)	\$10M+ in signed contracts and a subsystem prototype	\$25M
Series C (\$100M)	\$100M+ in signed contracts and revenue from a prototype product or service	\$75M
Series D (\$150M)	\$100Ms in signed contracts and significant revenue from a production product	\$175M

In this chapter of the company's life cycle, its core requirement is meeting the (mostly market-based) milestones that will drive the next funding round. Otherwise, game over.

At first, Arcturus pursues research and development grants, but soon it switches to contingent contracts.

Dollars Today

Companies at their Seed or Series A stage will try to get immediate research and development dollars (1) to extend their current cash runway, and (2) as a proxy to validate long-term customer interest. These grants alone usually aren't enough to close their next funding round.

Dollars Tomorrow

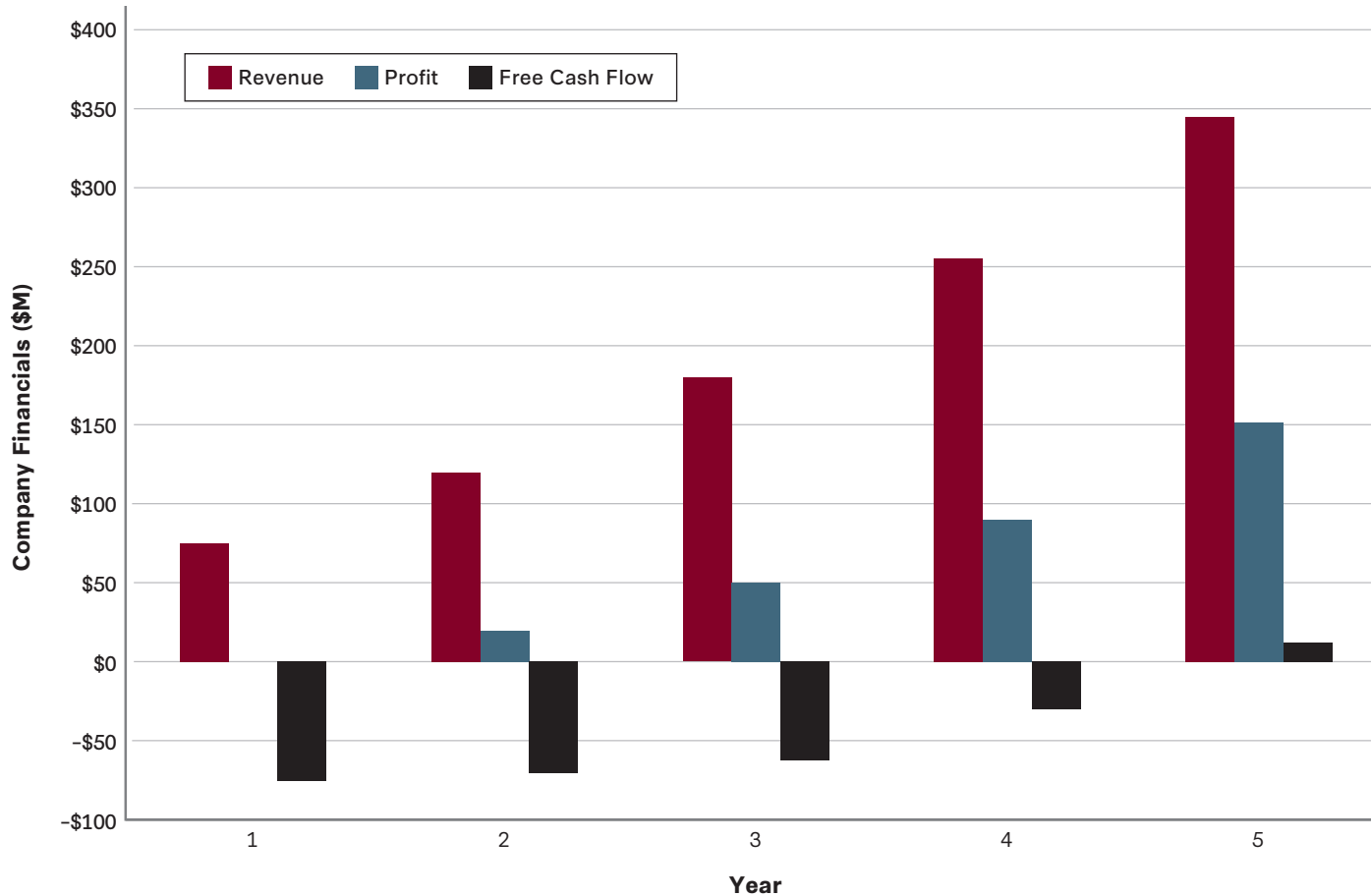
As soon as their product offerings are defined, companies will start marketing contingent contracts where a customer commits (years ahead of time) to a defined multiyear purchase of the final product (usually at a discount). These contracts are the key to funding a company from prototype to production.

Contingent contracts
are a buy-now-pay-later
option for **influencing**
a product's features
while **investors fund** its
development.

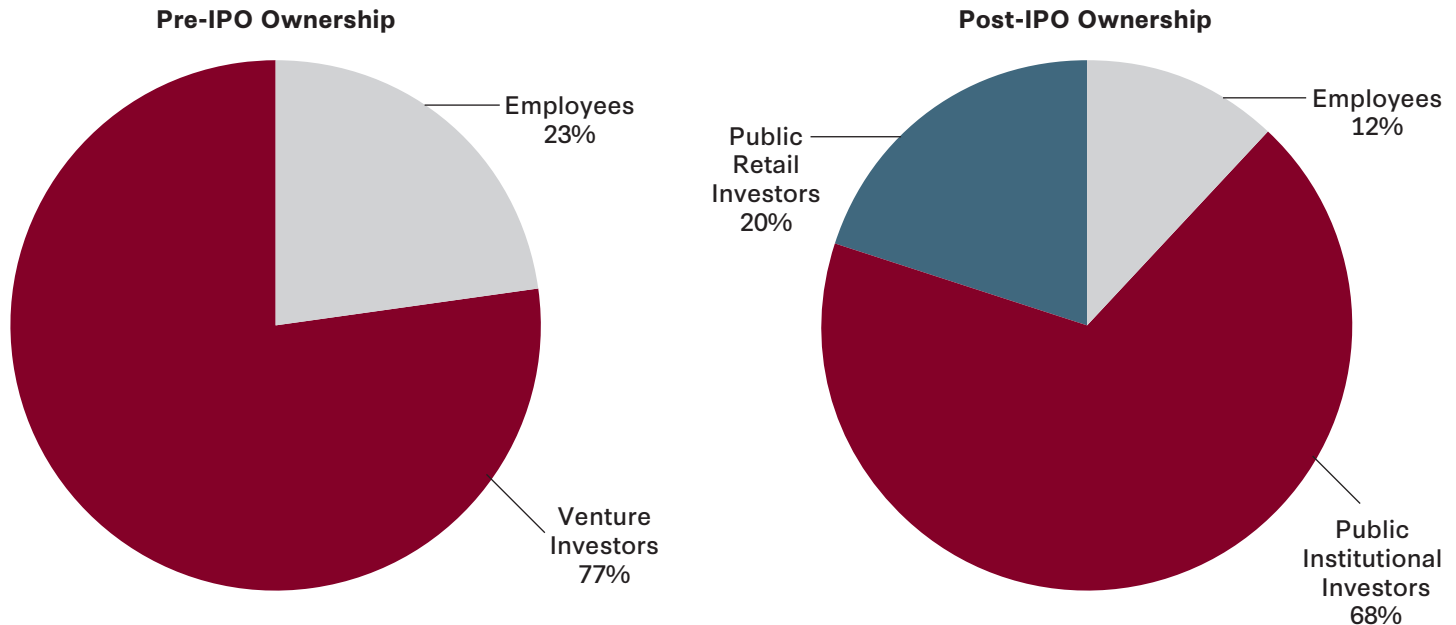
The Arcturus team signs commercial agreements with international logistics operators and manages to build five operational units.



The management team creates a five-year plan—scaling out to thirty operational units, \$300M+ in annual revenue, and positive cash flow.

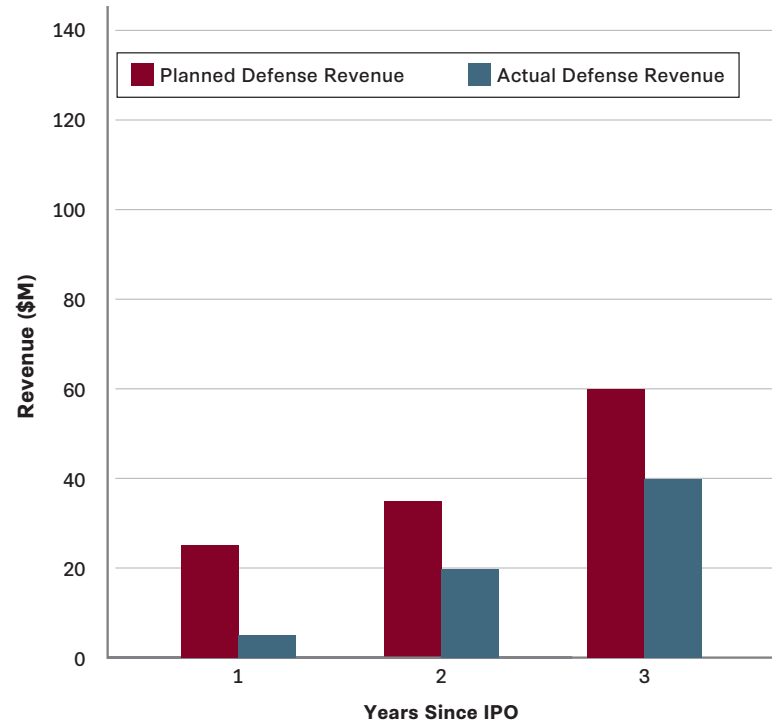
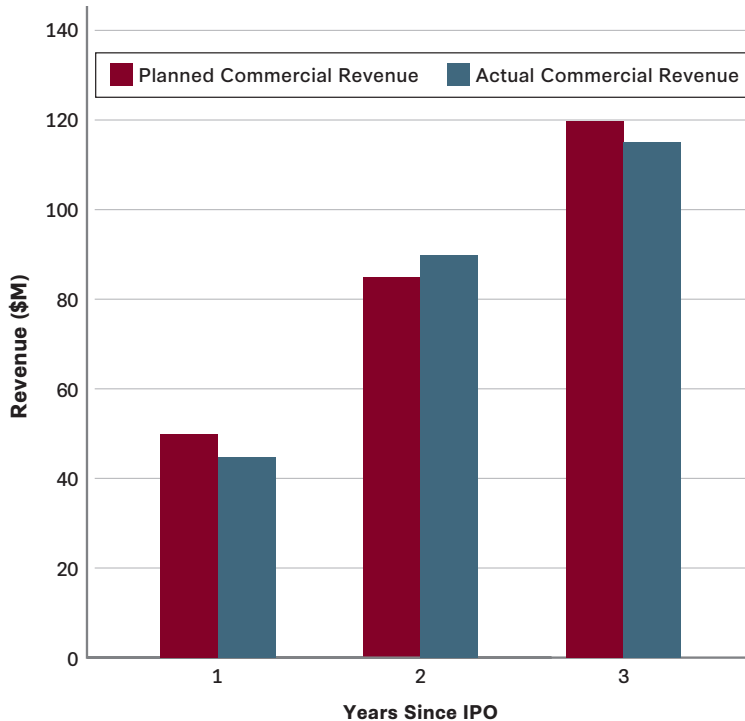


This growth plan requires another \$250M in capital; the current investors encourage raising funds through an initial public offering.



The management team spends months on a “road show,” presenting their growth plans to prospective public institutional investors, before becoming listed as “ARCT” on the New York Stock Exchange.

After the IPO celebration, the Arcturus team gets back to work, trying to meet the expectations they've set with public investors.



Over the next three years, Arcturus generally meets their commercial revenue goals, but defense sales are significantly lower than predicted.

Public investors sell off ownership as the company continually misses defense revenue targets, driving the stock price lower.



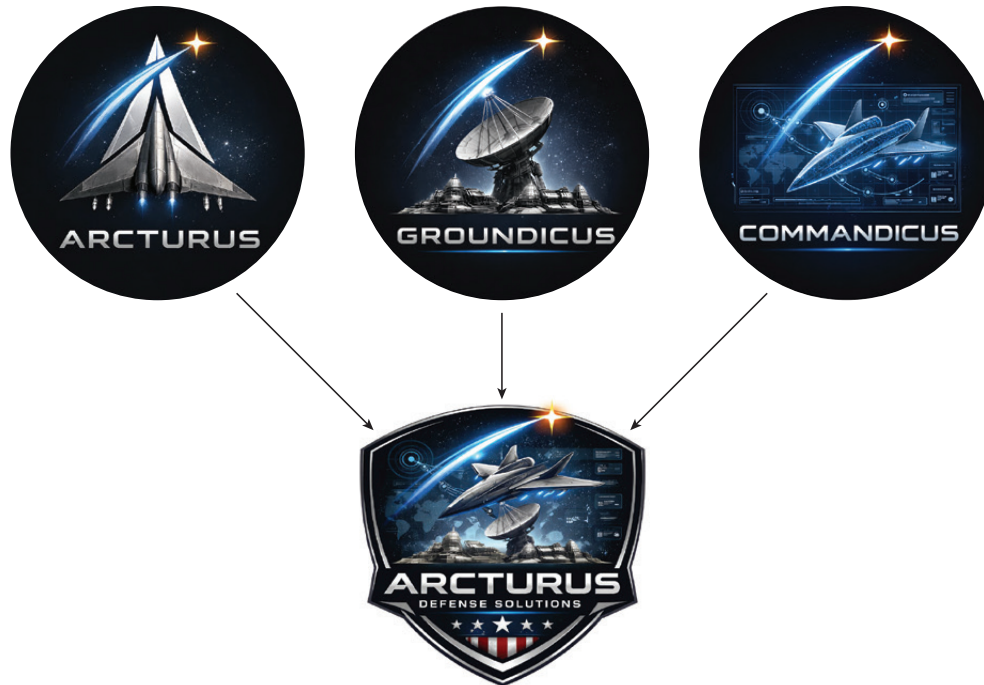
After thirty-six months, the company's value is down nearly 90 percent.

The company believes it could substantially expand sales if it had the time and resources to meet broader defense requirements.



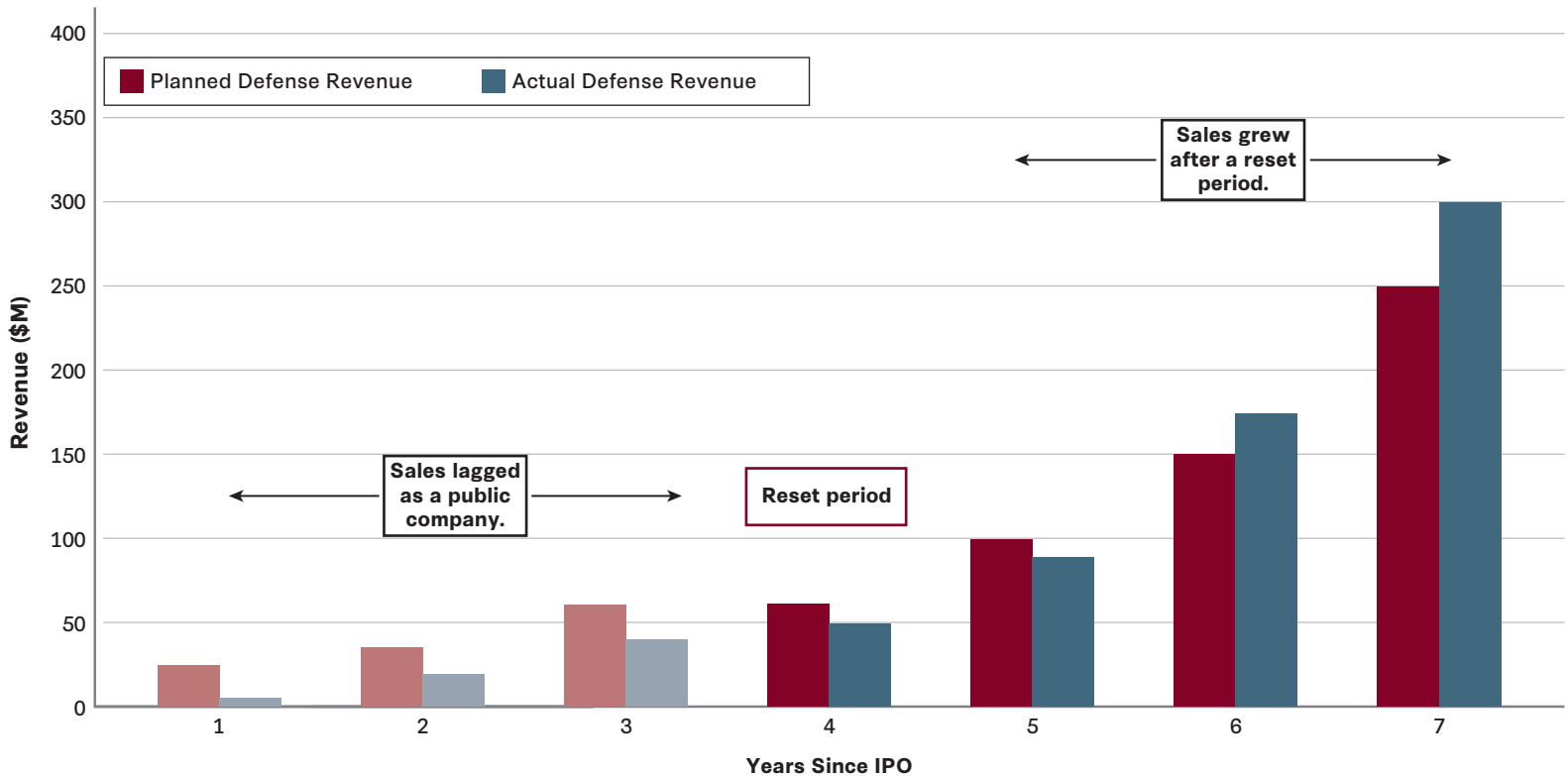
In order to move beyond research and development contracts, defense customers request Arcturus 2.0, with a weapons bay, reduced radar cross section, and secure communications.

A private equity firm acquires Arcturus as part of a consolidation of several companies through a broader drone strategy.



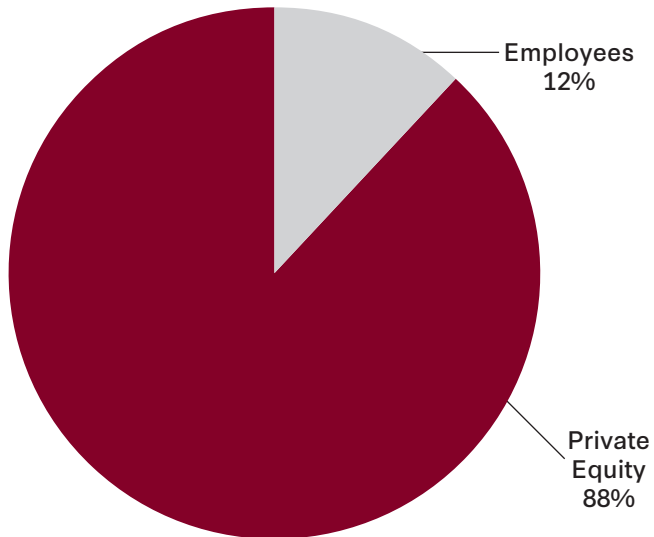
This roll-up combines three companies into one larger systems company with a defense-specific offering. Arcturus becomes a private company once again.

After a year without public company quarterly reporting requirements, sales of the new defense-specific company soar.

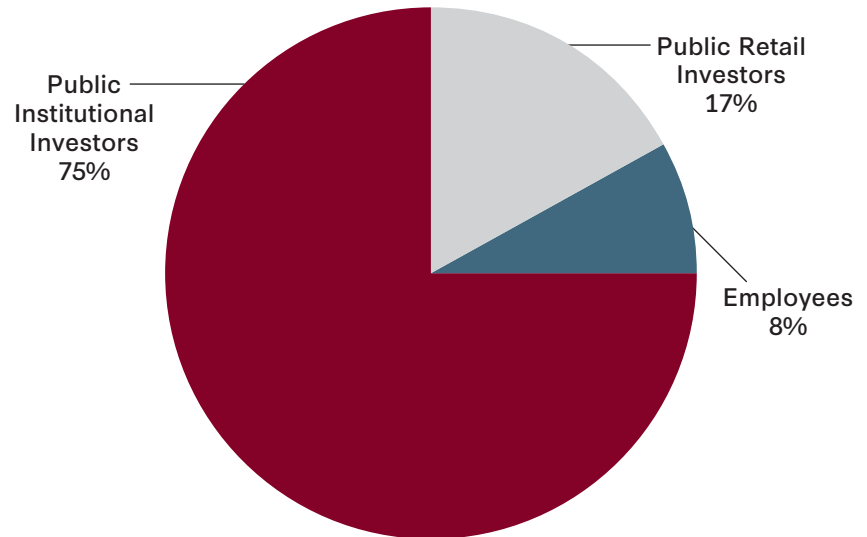


Arcturus Defense Solutions achieves consistent, reliable growth, and the private equity firm announces a second initial public offering.

Pre-IPO (Take 2) Ownership

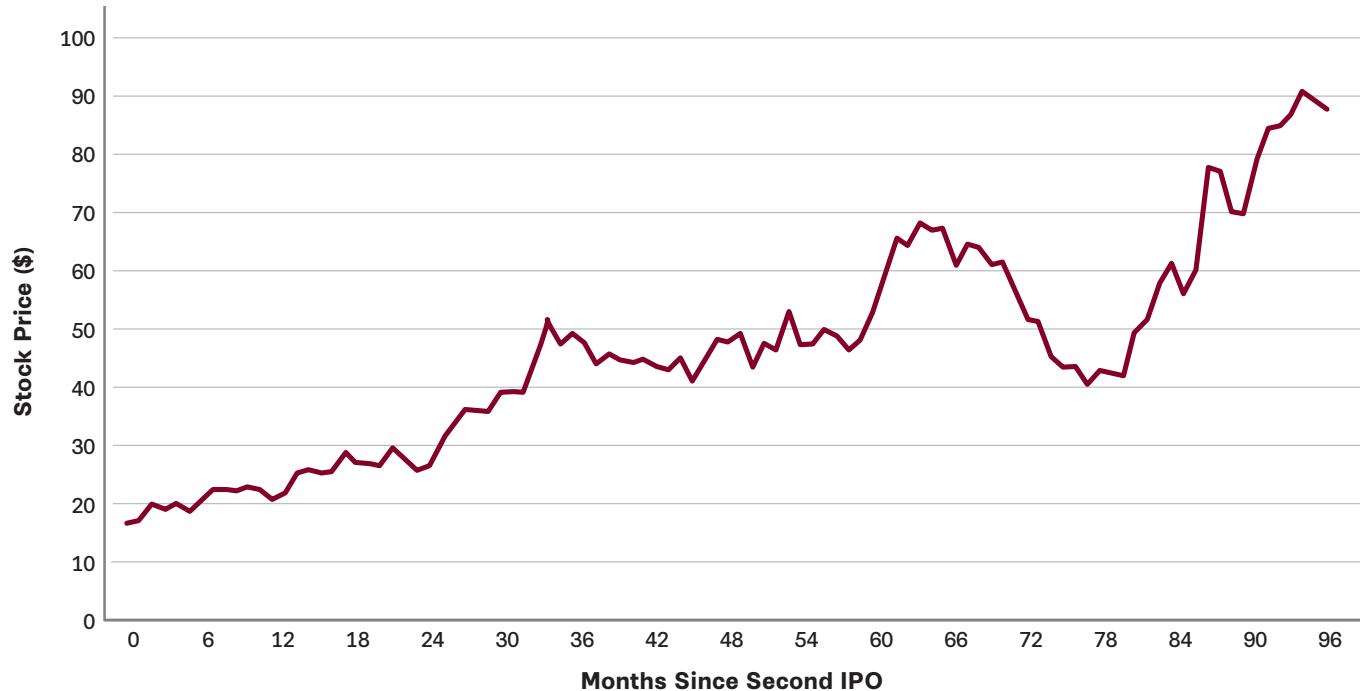


Post-IPO (Take 2) Ownership



The private equity firm exits its investment and realizes a threefold return on the capital it spent to acquire Arcturus, Commandicus, and Groundicus.

Arcturus Defense Solutions is able to continue meeting its revenue and growth targets, with continued stock growth.



The company sees generally sustained revenue and stock price growth over the next decade, iterating its products and services and growing as a program of record.

Takeaways

- 1 Young companies need contingent contracts—future promises can be more valuable than immediate dollars.
- 2 Going public is the beginning of a precarious phase; missing quarterly revenue projections can be disastrous.
- 3 A return to private ownership can bring room to reset—but only works if it drives real business growth.



This briefing provided three lessons on why companies do what they do, in order to help you motivate them to build for national security.

- 1 Whether a corporation is publicly or privately owned defines its appetite for risk versus reward.
- 2 Investors are the wizards behind the curtain; most companies' behavior can be traced to their ownership.
- 3 Understanding a company's stage and investor base is the key to driving its strategy toward national security needs.

Going forward, when you research, visit, or receive briefings from these companies, consider asking the following questions.

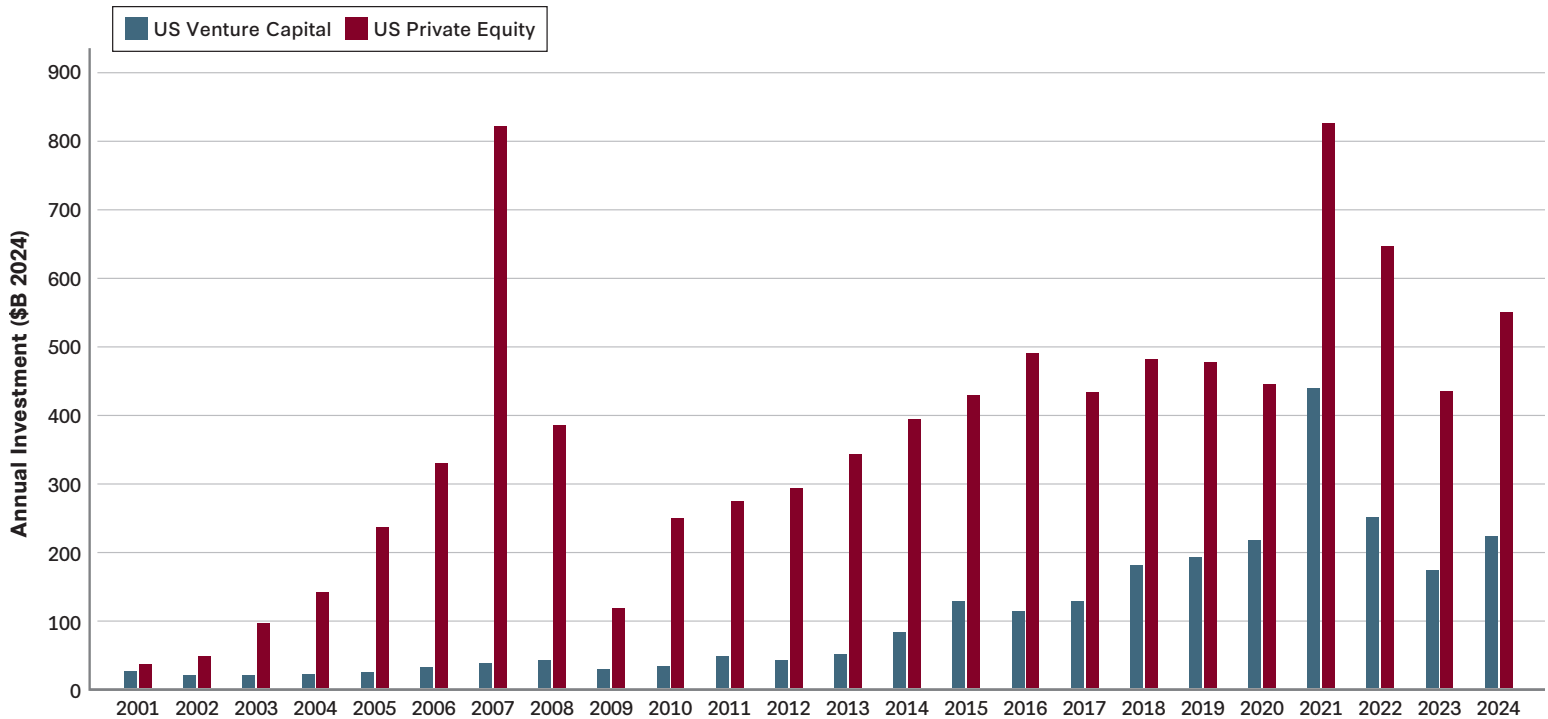
Open your response with:

“Thanks for describing all of your company’s great capabilities. Can you tell me more about your business? For starters, are you a public or a privately owned company? If privately owned, are you backed by venture capital or private equity?”

Then, follow up with:

Public Company	<ul style="list-style-type: none">• At what multiples is your stock currently trading? How do these compare to your sector at large?• What assumptions are you expecting around profit margin and other key performance metrics with respect to defense business, and are these substantially different from the ones you use to evaluate your commercial business?
Venture-Backed Company	<ul style="list-style-type: none">• How much capital have you raised to date? At what valuations?• How much do you need to raise to become cash-flow positive? When will you raise that capital? How much contracted backlog are you telling investors you will have by that point?
Private Equity-Backed Company	<ul style="list-style-type: none">• How long ago was your company acquired by the private equity firm? What are its expectations around timing an exit and the business goals that need to be met beforehand?• What is the broader strategy for your company? Will you be able to offer a broader product or service in the future, and if so, when?

US private capital annually invests nearly the equivalent of the US defense budget. Harness it for economic overmatch.



Source: PitchBook Data Inc.



The Project for Accelerating Defense Tech Innovation

Mobilize the Modern Defense Industrial Base is a product of the Project for Accelerating Defense Tech Innovation, an initiative housed within the Hoover Institution's Technology Policy Accelerator.

The Project for Accelerating Defense Tech Innovation seeks to enhance US national security by collaborating with leading entrepreneurs, investors, and defense policymakers to improve and accelerate the development of innovative defense capabilities.

This effort encompasses a combination of primary research and education. In particular, the project seeks to bridge the divide between entrepreneurs and the Department of War through initiatives designed to teach entrepreneurs how to engage most effectively with government stakeholders, and government stakeholders how to better understand and partner with entrepreneurs.

For more information, please follow the QR code here or email accelerating-defense-tech@stanford.edu.



The Hoover Technology Policy Accelerator

Mobilize the Modern Defense Industrial Base is a publication of the Hoover Institution's Technology Policy Accelerator, which conducts research and develops insights that help government and business leaders better understand emerging technology and its geopolitical implications so they can seize opportunities, mitigate risks, and advance American interests and values.

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Dan Berkenstock

Dan Berkenstock is a distinguished research fellow at the Hoover Institution, where he studies the intersection of space entrepreneurship, venture-backed defense tech companies, and defense acquisition reform. Previously, Berkenstock was the founding CEO of the venture-backed company Skybox Imaging. He holds a PhD in aeronautics and astronautics from Stanford University.



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