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International Outcomes of Venture-funded Companies:

The Role of Acquisitions

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Working Paper

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Abstract

Startup acquisitions have become a central topic in the antitrust/competition policy debate. Critics of startup acquisitions argue that large companies acquire startups to eliminate potential competitors, or even to put them out of business. They also argue that the threat of "killer acquisitions" discourages investment in startups and hobbles innovation. Proposals to harden merger review policies start from the unfounded premise that if acquisitions are inhibited, more startups would become large, independent, public companies. The data show this is wrong. Only a small percentage of startups go public (less than 5% in the US and 8% in Europe). Acquisitions are central and essential to the startup ecosystem. Most startups are acquired (60% in the US and 58% in Europe).Acquisitions provide a valuable exit path for startups that are not able to go public or that are struggling to succeed on their own. Inhibiting startup acquisitions could lead to more startup failures, discourage investment in startups, and reduce innovation and competition.

1 Introduction

Startup acquisitions have moved to the center of the antitrust/competition policy debate. The voices alarmed about startup acquisitions believe that large companies buy startups to assure they do not become competitors, or even to put them out of business. Some policy makers believe that acquisitions should be blocked so that startups can grow into independent companies. The threat of so-called "killer acquisitions" is also thought to generally discourage investment in startups and to hobble innovation. The concern is especially focused on large platform companies such as Google, Apple, Facebook (Meta), Amazon, and Microsoft (the GAFAM companies).

The term "killer acquisition" refers to those acquisitions that take place solely to eliminate future competition by acquiring firms that are emerging or potential competitors to shut them down. The role of acquisitions in the startup ecosystem becomes relevant as they gain weight as an "exit strategy" for VC startups. There is however little empirical evidence on the importance of killer acquisitions. Cunningham et al. (2021) analyze pharmaceutical industry data and conclude that between 5 and 7 percent of acquisitions in their sample are killer acquisitions. Ivaldi et al. (2023) analyze "ex-post" a number of acquisitions scrutinized by the European Commission where the "killer acquisition" concern was raised. They find no factual evidence supporting the killer acquisition theory.

Suggested solutions go all the way from expanding the authority of antitrust regulators to review more deals, to blanket prohibitions on acquisitions by the largest platform companies. The UK will introduce specific notification thresholds for digital firms with "substantial and entrenched market power" (designated as firms with designates with "Strategic Market Status" under the draft Digital Markets, Competition and Consumer Bill), including transaction value thresholds. Germany introduced in 2017 a value-based threshold (in addition to the turnover thresholds) aimed at scrutinizing acquisitions in the digital economy that do not generate a particularly high turnover. The European Commission is considering changing the merger referral mechanism (i.e. the mechanism for re-attributing cases between the Commission and Member States) in order to capture below-threshold acquisitions that could raise competition concerns.

The recent decisions of the UK CMA show a more stringent approach to digital mergers than other jurisdictions such as Europe or the US. The new U.S. Draft FTC-DOJ Merger Guidelines states in its Guideline 4 that "Mergers Should Not Eliminate a Potential Entrant in a Concentrated Market". The draft does not make clear how the enforcement of such a guideline will evaluate the likelihood of successfully bringing a product to market by a startup in the absence of the acquisition under scrutiny.

This debate seems not to be well-informed. Acquisition critics imagine that if acquisitions are inhibited, more startups would become large, independent, public companies. The data show this is wrong. We present the facts about how few startups ever achieve the size and value that is needed to sustain the burdens of being a public company. Acquisitions are central and essential to the startup ecosystem. They are a way for good ideas from companies who are not candidates for a stand-alone life to be deployed and developed together with the portfolio of products and technologies of the acquiring company. They allow the founders and investors to gain from the development of these ideas. Acquisitions are also a way to salvage some value for startups that are not worth more than was invested in them. Overall, less than 5 percent of US venture-funded tech startups go public, 30 percent fail completely, and roughly 60 percent are not money-making ventures for founders or investors, because they either fail or are acquired at low values. For European tech startups the outcomes are quite similar, with just 8 percent going public, 38 percent failing completely, and 58 percent failing to exit at values higher than their venture capital investors put in.

Inhibiting acquisitions, by expanding the M&A review radar or by increasing the M&A review burdens, looks more likely to result in more total failures and to discourage creation of startups and investing overall than to encourage innovation and propel more companies into independence. We acknowledge that some startup acquisitions are likely to be anticompetitive and should be blocked. However, an overboard policy that blocks some procompetitive acquisitions could do more harm than good.

We will look at the data for both the US and for Europe. There are important differences by industry, particularly tech vs biotech. For the two industry groups, the outcomes for US and Europe are more alike than different, but venture investing in the US is larger.

We focus on the company exits for all venture-funded startups who exited from August 2002, the effective date for Sarbanes-Oxley (SarbOx), through March 2020, the beginning of the pandemic. This is not a sample; it is the universe. During this period, there were 13,220 startup exits for the US, and 4,786 for Europe. We document the different exit patterns for tech and biotech startups, which reflect the differences in their product and funding lifecycles.

The outcomes show the pivotal role of acquisitions in the functioning of the venture capital ecosystem. Contrary to popular impression, an IPO is a fairly rare exit for a venture-funded company. Most companies end their venture-funded phase too small and insufficiently valuable to be viable as public companies. Competition agencies and policymakers should design regulations with a realistic view of what startups are capable of. It is important to acknowledge the potential inhibitions on innovation if acquisition review becomes too great a burden.

2 The Lifecycle of Startups

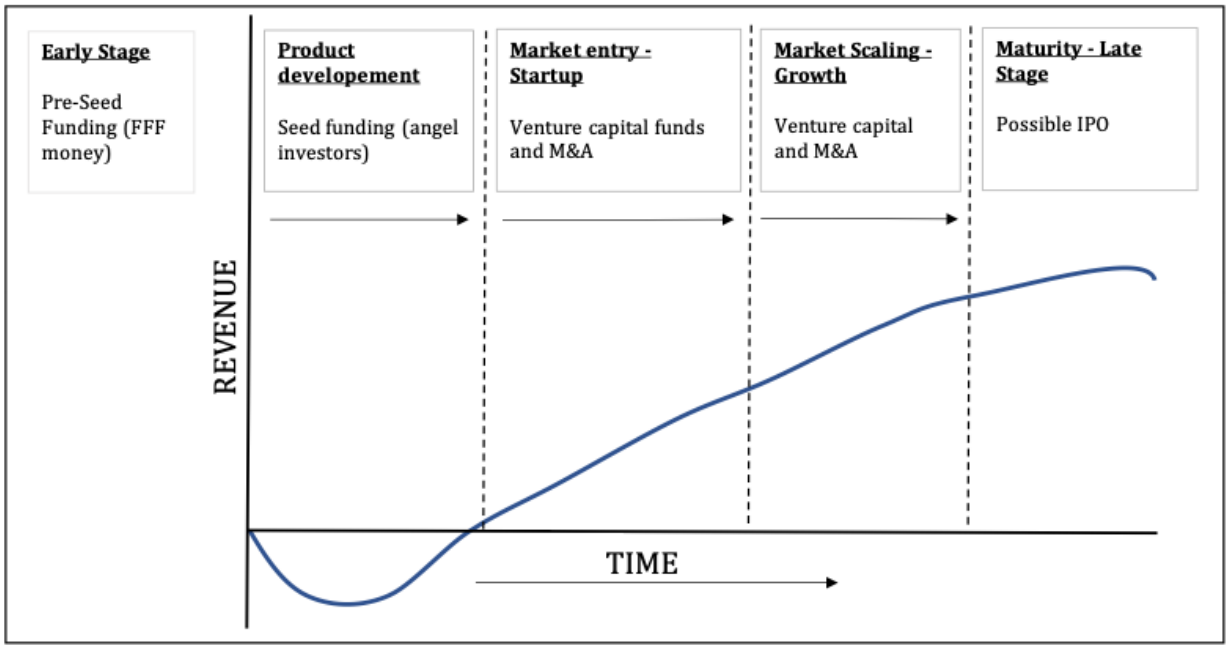
Startups are companies established by entrepreneurs to create a profitable business. Entrepreneurs and technology innovators seldom have sufficient personal resources to fund the development themselves. One path to financing projects is venture capital funding. To raise funding for their ideas, entrepreneurs will organize their ideas and seek out venture capital funds.

The startup lifecycle begins with the formation of an idea and continues until the company goes public, is acquired, or fails. During the startup phase, the venture fund's investment in the startup is an asset of a venture capital portfolio. The "exit" will happen when 1) the company is so successful and promising that it can sell stock to the public,[1] 2) the company is valuable, but most valuable affiliated with another company through acquisition, or 3) the company is unable to raise more money, and is acquired if there are buyers, or fails completely if there are no buyers. All companies would prefer to raise more money and become more valuable. But only if they can persuade investors that this is a promising investment, will they be able to do this. For any outcome, the startup is no longer an asset of the venture fund portfolio after its exit.

Differences in company lives reflect the industry, the type of product, and other characteristics of the company. In general terms, the lifecycle of a tech startup can be summarized in five stages (see Figure 1): first, an initial idea that is likely to meet a necessity or solve a problem or be lots of fun ("market opportunity"); second, the transformation of such idea into a product ("product development"); third, entering the market and commercializing the product ("market entry"); fourth, scaling the business ("market scaling") and last, reaching maturity and turning a profit ("maturity").

[1] Though far less common, startups can also become publicly traded companies through a "reverse merger", which is described in more detail below.

Figure 1: Tech startup lifecycle and funding lifecycle



Source: Prepared by the authors adapting "T*he start-up lifecycle: An interpretative framework proposal*.", Passaro, R., Rippa, P., Quinto, I., & Thomas, A. (2016, octubre 13), p.8" and "*Development of a Life Cycle Model for Deep Tech Startups*", Schuh, G., Studerus, B., & Hämmerle, C. (2022). Journal of Production Systems and Logistics 2 (2022), p.13".

To seek venture capital funding, the would-be founders make their pitches. The common deal is for the founders to sell a share of their company, nearly always equity in their company, to the venture capital fund. Some seekers get funding, and many do not. We don't really know how many of the people seeking venture investments actually get funded. The only well-recorded efforts are for those who actually get money from a formal venture capital fund. As of late 2022, there are about 1,000 active venture funds in the US (NVCA figure), with about $300 billion cash available to invest as of September, 2022 (Pitchbook and NVCA).

The venture capital funds themselves must also make pitches and raise money, and they do, from pension funds, endowments, and (qualified) individual investors. When venture funds raise "a fund," they commit to returning investors' money from that fund within, typically, ten years. When the venture fund makes an investment in a company, it will be aiming to have the company exit, either via an IPO or by being acquired, within the ten-year life of the fund. Exits provide liquidity to the venture funds, who then distribute the proceeds to their investors. Thus, the life of startups is constrained by the deal the venture funds have with their investors, in particular, their commitment to return investments within ten years.

The venture funds typically make investments in their startups in stages. Each time a company seeks more money, it will likely appeal to several different venture funds. Usually, the number of funds investing in a single startup will be more than two, but smaller than ten. If the results of the first round of funding are promising, the company then seeks a second round of funding. Each time the company raises money, it sells another fraction of itself to the new investors, and the percent owned by founders falls. Note—even after a first or second round of funding, the company may not have many customers or any revenues, and it would be unusual for it to be profitable. If the company still looks promising after the second round, it may raise a third. A few companies will have such good ideas that they go public or are acquired after a first or second round. And some will be unable to raise more money after a first round and will fail or be acquired unprofitably. When companies are unable to raise more money, they fail or are acquired.

How are the venture funds paid? The fund is the "general partner", and the investors are "limited partners" in a fund. Part of the money raised for the fund is used to pay the general partners management fees for choosing and managing the companies in the portfolio. Here we are looking at companies in terms of whether their value, at exit, was greater than the money invested in them. This does not take account of the money paid to the general partners for management of the fund, and thus overstates the success of the individual company outcomes.

How frequent is each of the outcomes at various stages? We present below a "venture funnel" table showing rounds of funding and exits for about 30,100 US venture-funded startups from 1992 to 2017. This table shows how many companies went public, got acquired, failed, or—raised another round of funding—after a single round, two rounds, three rounds, and so on. One can see that the more rounds of funding a company has completed, the less likely it is to fail completely. Note that at each new round of funding, the startup must again persuade investors of its value and promise, and sell another piece of itself to those new investors.

How to interpret this table? On the first line, we see that after 1 round of funding, 2,237 companies were shut down, 1,117 were acquired and disclosed value (likely a good outcome), another 1,966 were acquired but did not disclose value (likely a loss), 183 went public, and 43 had a reverse merger after a single round. Another 11,509 companies went on to do another round. For those unexited companies without another round, 3,855 had their last round less than 8 years ago, and 702 had their last round more than 8 years ago. A company that had only one round of funding and has not had another round within the past 8 years nor exited is likely not still operating. These 702 companies are likely out of business, but there is no recorded exit and no news about them.

The interpretation of the second line is the same, for companies that did one round prior and went on to have a second funding round. After doing a second round, another 1,512 shut down, 1,100 were acquired for a disclosed value, 1,486 were acquired with no value disclosed, 276 went public

via IPO, and 41 exited via a reverse merger, while 7,094 stayed private and went on to do at least a third round of funding.

On line 8, we see that 16 companies were shut down after doing 8 rounds of funding, another 53 were acquired, and 29 went public via an IPO, and 2 had reverse mergers. Only one company is "lost" after doing 8 rounds of funding. Few companies do more than four rounds of funding before exiting.

Remember that at each round, the company must again make its case as to why investors should invest more with it.

Table 1: Outcomes for VC-Funded US Companies who did a First Round from 1992 to 2017

Round Number	Shutdown	Acquired		IPO	Reverse Mergers	Still Private But Exits Later	No Known Exit	
		Value Known	Value Unknown				Had Round w/in 8 yrs	No Round for 8 yrs
1	2,237	1,117	1,966	183	43	11,509	3,855	702
2	1,512	1,100	1,486	276	41	7,094	3,152	275
3	926	889	932	360	39	3,948	2,150	105
4	473	579	519	327	16	2,034	1,289	39
5	220	307	292	248	4	963	709	26
6	92	174	162	130	3	402	375	6
7	41	72	39	53	3	194	180	0
8	16	28	25	29	2	94	93	1
9	6	18	12	19	0	39	58	0
10	3	6	4	7	0	19	15	0
11 or more	2	8	2	7	0	0	22	0
TOTAL	**5,528**	**4,298**	**5,439**	**1,639**	**151**		**11,898**	**1,154**

We see that roughly 40 percent (about 12,000 out of the 30,000) companies have not exited, and are likely still functioning as private companies, about 4 percent (1,154) are "lost" – the venture funding records have lost track of them, and we have not been able to find them or determine their fate. Most likely the companies failed, because, if they were a success, it would be in someone's interest – a founder, a fund, an investor – to advertise that success.

Whether a company goes public, is acquired, or fails depends primarily on how valuable it is, whether investors think it has promise, and whether it is more valuable stand-alone or in combination with other assets. The average value for tech companies that went public from August, 2002 through March, 2020 is $1.2 billion, which is substantially higher than the average value for tech companies that were acquired ($70 million). And for all companies that fail, the value is zero.

Only a few companies will be able to go public and be able to bear the burdens of being a public company. Even after going public, many companies still fail. The burdens of being public were never negligible, but they did become larger after the passage of Sarbanes-Oxley in 2002, which is why we begin our analysis in 2002. It is the start of the new era.

As mentioned before, startup product and funding lifecycles differ across industries and across startups within the same industry. These differences have consequences for exit patterns. The difference between biotech and tech startups is especially important:

(i) Regulation: biotech is highly regulated and its activities are highly scientific, but the outcomes have a shorter upper tail for possible values, and

(ii) Innovation dynamics: biotech firms work on solutions to a health problem, and they become valuable if they prove their product works. Tech firms try to bring to the market new products and technologies for general use. Their markets generally have more scale and scope, and the distribution of possible outcomes have larger upper tails (more very high values).

Tech startups need to prove success in the market before going public (i.e., need to have demonstrated substantial customer interest), while biotech startups need to prove that their product works in accordance with the established regulatory requirements. Tech companies are likely to have revenues, but often not profits, at the time of an IPO. Biotech startups are often pre-revenue, even in late-stage clinical trials.

Biotech startups use most of their venture capital in the trial phase, while tech startups use it in the market-scaling phase. For biotech startups, product uncertainty is resolved once they prove their product works in clinical trials.

The market size is limited for biotech startups by the target population with a specific medical problem. The possibilities for large scope and scale are greater for tech startups.

3 The Data

The policy debates regarding startup acquisitions, both in the US and Europe, seem unaware of the typical outcomes and options faced by startups. We will lay out the data on counts and values for IPOs, acquisitions, and failures (companies that are worthless at exit), including details on the acquiring firms. We provide details on the geography of acquisitions, noting which companies are acquired outside of their own national boundaries.

The data for our analysis originated from the Dow Jones VentureSource database of US and European venture funding.[2] This high-quality dataset was collected over decades through proprietary research, including surveys of venture capital firms and venture-funded companies, published news articles, and government filings. For many years, our firm, Sand Hill Econometrics, worked with VentureSource and Dow Jones to produce the Sand Hill Index of Venture Capital, an index constructed to measure the monthly value of a value-weighted portfolio of US-based VC-funded companies. This included estimating value for acquisitions in which value was not reported. During this time, we supplemented the data with additional information from our own research, using additional public and proprietary sources. As a result, we have high confidence in the accuracy and comprehensiveness of the exit data for US venture-backed companies.

For the European VC-funded startups, however, we have not conducted the same level of additional research. This is primarily due to three differences between the US and Europe. First Europe does not have the same level of local business journalism as does the US, where highly developed and widely accessible reporting has enabled us to track down the small exits that do not attract national attention. Second, many important business information in the US, such as annual reports and other public disclosures, have long been centrally collected and made available by the Securities and Exchange Commission (SEC). This allows for additional research on acquisitions by publicly traded companies. The European market, however, is more fragmented, with jurisdictions differing both in terms of their reporting requirements and the extent to which they make such information available to the public. Finally, while it has become less of an obstacle in recent years, the many different languages used across Europe have historically made it more difficult to locate useful information, especially for smaller VC-backed European startups.

[2] CB Insights purchased this database from Dow Jones in 2020.

Because of these differences, we have been unable to subject the European data to the same level of scrutiny we have applied to the US data. Nonetheless, we have no reason to believe that it is inaccurate or biased, though it is possible that some of the less profitable outcomes for the European data are missing.

4 International Outcomes of venture-funded startups

4.1 Outcomes of tech venture-funded startups in the US

a) General Overview

First, let's look at the exits for the tech companies in the United States. We have a total of about 10,900 exits. In addition, there are another 800 "lost" companies that are presumed failed because they have no documented exit but also had not raised any new money since 2012 (these are not included in our analysis summarized in Table 2). The lost companies might have had a formal acquisition or shutdown that was kept quiet, but if so, it was unlikely a good event for investors or founders.

Table 2: Exits for US VC-Funded Tech Firms, August 2002 - March 2020

Tech Companies – Exits	Number of Companies	Percent of Companies
IPOs (Including Reverse Mergers)	516	4.7%
Acquired	7,246	66.7%
Failed	3,105	28.6%
Total Exits	**10,867**	

Of these exits, 57% could be considered "unsuccessful" exits, where either the amount paid for the startup by the acquiring company was less than the amount raised from VC investors, or the startup failed completely. In either of these cases, the VC investors would have lost money on their investment. The remaining 43% of exits could be considered "successful" exits, where either the startup went public via an IPO or reverse merger, or the startup was acquired, and the amount paid for the startup was greater than the amount invested by VC funds. Note we are not taking account, here or elsewhere in this paper, of general partner management fees or carry. We are strictly looking at total invested in each company and its value at exit. From an investor's (limited partner) point of view, some exits where value is greater than money raised may not have had positive net present value. Exits are summarized in Table 3.

Table 3: Unsuccessful vs. Successful Exits for US VC-Funded Tech Firms, August 2002 - March 2020

Tech Companies – Exits	Number of Companies	Percent of Companies
Unsuccessful Exits	**6,183**	**56.9%**
Acquisitions at Value < $ Raised	3,078	28.3%
Failed	3,105	28.6%
Successful Exits	**4,684**	**43.1%**
IPOs and Reverse Mergers	516	4.7%
Acquisitions at Value > $ Raised	4,168	38.4%
Total Exits	**10,867**	

Overall, the success of a startup in terms of its value at exit relative to the VC funding it receives varies considerably by exit type[3], as shown in Table 4. For US tech firms that went public, the average amount raised was $169 million, and the average exit value was just over $1.1 billion, for an exit multiple of 6.6. For acquisitions, however, the exit multiple was just 2.3, with successful acquisitions having an exit multiple of 5.3 and unsuccessful acquisitions an exit multiple of just 0.4.

Table 4: Exits Multiples for US VC-Funded Tech Firms, August 2002 - March 2020

	Avg Raised ($M)	Avg Exit Value ($M)	Exit Multiple
IPOs (Including Reverse Mergers)	168.5	1,110.4	6.6
Acquisitions (Total)	29.0	67.0	2.3
Successful Acquisitions	19.8	103.9	5.3
Unsuccessful Acquisitions	41.5	17.1	0.4

a) US Tech Companies - IPOs

Fewer than 5% of the tech companies that exited did so through an IPO; nonetheless, the value created by venture startups that did go public and thrive is staggering. Between Sarbanes-Oxley and 2020q1, the IPO companies raised almost **$85 billion** while private. They went public at a total value of **$563 billion** (pre-money), and as of late 2021, had a value of more than **$5.6 trillion**.

[3] This is partly endogenous since, as it will be seen later, more valuable startups are more likely to go public.

This is the sum of the current market caps (as of late June 2021) of companies still public plus the acquisition values ($326 billion) of those acquired after their IPO. Venture outcomes are highly skewed. A huge fraction of the value created by venture capital investing comes from a small fraction of the outcomes. The acquired companies raised $210 billion while private, and they were acquired for a total of $486 billion. The average exit multiple for IPO transactions is almost 3 times the exit multiple of acquisitions (1.3 times if we only consider profitable acquisitions).

IPOs became more rare after the passage of Sarbanes-Oxley in 2002. This legislation was intended to increase the responsibilities of being a public company, and it did. After Sarbanes-Oxley through the first quarter of 2020, fewer than 5 percent of the exiting startups went public. Before Sarbanes-Oxley (1992-2002), closer to 20 percent of companies did an IPO. This prior period of course includes the dotcom boom of 1999-2001.

Even after an IPO, life is still risky for young companies. Among these venture startups that did an IPO, more than half are no longer public: 7 percent have failed completely, and 45 percent have been acquired. Of the 463 companies that did an IPO, (not a reverse merger), 209 have been acquired, and of these, 36 were acquired by private equity funds. Another 31 companies have failed, and 223 were still listed and trading as of late 2021.

b) US Tech Companies - Shutdowns

A total of 3,105 companies failed, 29 percent of the total, with no value at exit. Think of them as valueless, but usually not "bankrupt". They were wound down in an orderly way, staff and creditors are paid, and except in a few rare cases, there was no court proceeding (Chapter 11 or Chapter 7) to close them. Their venture funders generally arrange this orderly dissolution as part of their own reputation protection. In these companies, investors lose their entire investment, and founders get nothing. Total money raised by the failed companies was $82 billion, or just under $27 million each.

c) US Tech Companies - Acquisitions

There were 7,246 companies acquired during the period we study. The average company had raised $29 million, and the median $14 million, from VC investors. The average acquisition value was $67 million, and the median $13 million. The average exit multiple is 2.3. Of these, 58% were bought for an amount greater than the total raised, and 42% for less. When a company is sold for less money than it raised, the founders get nothing, and its investors recover only part of their original investment.

The acquirers are other companies and private equity funds. Slightly more than half of the acquirers were public companies. Foreign companies made up just over 15 percent of the acquirers for US tech startups, and of these foreigners, almost 60% are public companies, but generally they

are large organizations. The startups acquired by public companies are, on average, far more valuable at exit than those acquired by private (non-public) companies ($106 million vs. $26 million per acquisition).

Private equity funds acquired 6 percent of the acquired companies. Being acquired by a private equity fund is a disappointment for most venture startups. It means they are not "done yet," but will still have general partners to answer to, who will likely exert even more control over them than did their venture general partners. Private equity funds are financial investors and thus there are no synergy gains with the acquired firm (Bargeron et al., 2008). The goal of the private equity fund is generally to buy the company, fix its problems, and re-sell it.

Acquisition by a non-public company is generally a bad sign, as the values for which they are acquired are so much lower than the values they fetch when acquired by public companies. On the contrary, large public companies offer the most valuable acquisition exits for venture-funded startups. An acquisition by a large public company provides the products and technologies access to complimentary technologies and scale. These opportunities are less likely to be present in acquisitions by private equity funds and small, non-public, companies. This is reflected in the acquisition values.4

Of the top 25 acquirers (by count), all were public companies except for Vista Equity Partners, a private equity fund. Of the top 25 acquirers, only two (SAP and Thomson-Reuters) were foreign companies. The top foreign acquirer was SAP, tied with Groupon at number 21, with 18 acquisitions. Here are the top acquirers and the number of companies they acquired.

[4] This is consistent with other research using alternative databases. Bargeron et al. (2008) find that the average premium when the acquirer is a private operating company is 40.9%, and it is only 28.5% when the acquirer is a private equity firm. Moeller et al. (2004) find that targets receive larger premiums from larger public bidders. In particular, the mean (median) premium for acquisitions by large firms is 68% (61%). In contrast, the mean (median) premium for acquisitions by small firms is 62% (52%)."

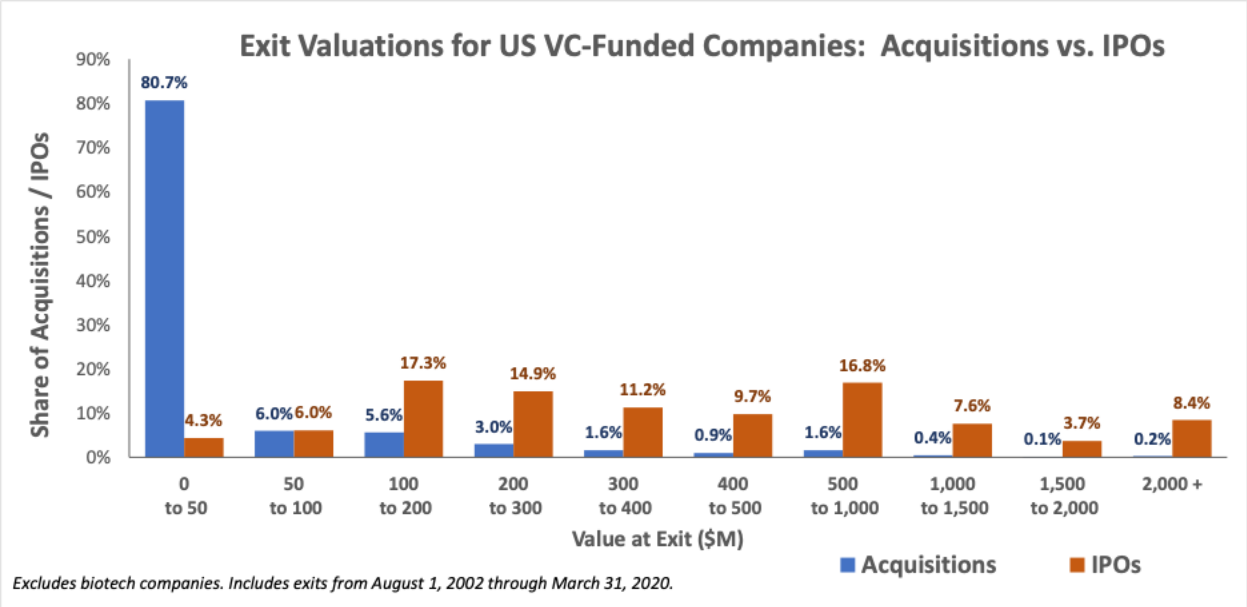
Table 5: Top Acquirers of US VC-Funded Tech Companies

Rank	Acquirer	Number
1.	Alphabet/Google	87
2.	EMC/VMWare	75
3.	Cisco	74
4.	Microsoft	67
5.	IBM	61
6.	Oracle	55
7.	Yahoo	40
8.	Apple	33
(tie)	Facebook/META	33
10.	Amazon	31
(tie)	Hewlett-Packard	31
(tie)	Salesforce	31
13.	Symantec	24
(tie)	Vista Equity Partners	24
15.	AOL	22
(tie)	Citrix Systems	22
(tie)	Intel	22
18.	Qualcomm	20
(tie)	Twitter	20
20.	Motorola	19
21.	Groupon	18
(tie)	SAP	18
23.	Broadcom	17
(tie)	eBay	17
(tie)	Nuance	17
(tie)	Thomson Reuters	17

d) US Tech Companies -IPOs vs. Acquisitions

The distributions of exit value for acquisitions and IPOs differ sharply. More than 80 percent of US tech startups are acquired for less than $50 million. By contrast, more than 80 percent of tech IPOs are valued at more than $150 million (all values are pre-money, that is, before adding any money raised in the IPO), the median startup IPO is $361 million, and the average is a bit above $1.2 billion. Figure 2 shows the distributions of exit values for venture startups that were either acquired or went public.

Figure 2: Exit Valuations



These figures are key to understanding why more startups cannot be expected to become public companies. Most are simply too small and are not valuable enough to sustain the burdens of a public company. While tech startups going public are at the stage where they are revenue-generating, acquisitions may happen at every stage of a startup lifecycle, even at early stages where their value is uncertain.

The median startup IPO has more than 25 times the value of the median acquisition. An acquirer only needs to have a useful purpose for the assets of the startup to justify a transaction, such as adding value to an existing operation or product. By contrast, IPO investors anticipate the company is valuable enough be bear the burdens of a public company, a higher threshold than most startups ever meet. When an IPO is not feasible, an acquisition can make sense.

The disparate fortunes of acquired vs IPO companies is reflected in the share of transactions that occur at values below the total capital raised. More than 42 percent of acquired companies were sold for less than the money they raised. This is a clear sign that they are failing as independent enterprises. Even a few IPOs, about 4%, went public for less than they raised while private. The table below shows a breakout by value quintile.

Table 6: Percent of Companies with Exit Values Less than Money Raised, by Quintile of Exit Value

	Acquisitions		IPOs	
Quintiles by Exit Value	**Quintile Range**	**Amt Raised < Acq Value**	**Quintile Range**	**Amt Raised < Acq Value**
First Quintile	Up to $5.6M	49%	Up to $156.5M	13%
Second Quintile	$5.6M to $10.0M	51%	$156.5M to $276.3M	3%
Third Quintile	$10.0M to $17.2M	54%	$276.3M to $462.2M	4%
Fourth Quintile	$17.2M to $46.3M	52%	$462.2M to $992.7M	1%
Fifth Quintile	Greater than $46.3M	6%	Greater than $992.7M	0%
Overall		42%		4%

d) US Tech Companies - Reverse Mergers

A reverse merger is an alternative path to becoming a publicly-traded company. In a reverse merger, the company seeking to go public merges with a company that is already public but is very small, often because it has failed, but is still listed and registered with the SEC, but not traded on the stock exchanges like Nasdaq or the NYSE. Reverse mergers allow startups to go public without meeting the requirements of an IPO, and allows them to make "forward-looking" statements, which is not allowed for IPOs. These transactions have become somewhat fashionable recently and have been re-christened SPACs for Special Purpose Acquisition Company.

Reverse mergers are not equivalent to IPOs and are not a sign of success. The outcomes of reverse mergers are mainly a sorry tale. These companies begin their lives as public companies as strugglers. Of the tech 53 companies announcing reverse mergers, 3 were never consummated, 27 failed after listing, 6 were acquired, and only 17 of the 53 companies (32%) are now listed and trading. Nine are traded on foreign exchanges because they did not meet US listing standards.

Table 7: Status of Reverse Mergers for US Tech Companies, August 2002 - March 2020

Status of Tech Company Reverse Mergers	Number of Companies	Percent of Companies
Not consummated	3	5.7%
Failed after listing	27	50.1%
Acquired	6	11.3%
Listed today	17	32.1%
Total	**53**	

4.2 Outcomes of biotech venture-funded startups in the US

a) US Biotech Companies - General Overview

The biotech firms are unique among venture startups. They account for 18 percent of all startup exits post-SarbOx, but more than half of the IPOs. Despite this, the average value at IPO (net of cash raised at the IPO) for biotechs is $272 million, vs $1.2 billion for the non-biotechs. We find a total of 2,353 exits for biotech companies during the SarbOx-to-Pandemic period.

Biotech value potential is limited by the nature of the biotech business. Nearly all biotech startups are attempting to develop a drug or medical device to address a particular disease. Their potential market is defined by the disease they target, limiting their scope and scale compared to what the tech companies can reach for. The biotech with the highest exit value in our window from Sarbanes-Oxley to the Pandemic is Moderna, which went public in 2018, for a value of $7 billion, and had a market capitalization of about $60 billion at the beginning of April 2023. By contrast, there are 14 tech companies with exit values higher than $7 billion. Of the tech IPOs, 20% (91 of 463) had pre-money valuations of $1 billion or more, versus just 3% of the biotech IPOs (14 of 497).

Biotech founders nearly all have PhDs or MDs or both. After all these years in school, and most do finish school, they tend to be older than founders of tech firms. The people on their boards of directors are also mainly technical experts with PhDs and/or MDs, and are therefore usually granted more credibility by both VC investors and public market investors. (Three red flags here for Theranos – the founder was not a PhD/MD, was a drop-out, and the board had no biotech expertise.) From a social point of view, virtually all the projects that biotechs attempt are worth trying. Whether they succeed depends on whether the trials of the drugs they develop are successful, not so much on the competence or skill of the founders. The risk they present to investors is not so much market risk –everyone knows the potential market – but technical risk: will the product work?

As biotech companies move through their clinical trials, the risk for investors falls. Regulatory obligations are compelling at every step. For a drug or device that works, there will be patents giving years of protection from competitors.

Tech companies usually do not try to go public until they have substantial revenues and customers (but not necessarily profits). Biotechs, by contrast, typically go public when they reach late-stage clinical trials but are still without revenues. Of the biotech IPOs from 2001 to 2022, only 11 percent had positive earnings, and 39 percent had revenues of zero. (These figures courtesy of Jay Ritter). The markets trust the biotech firms for the integrity of their scientific reporting rather than for the audited cash flow. Information resolution for biotechs comes in bursts with the results of each trial (Works in mice? Works in people?), rather than continuously in revenue growth or numbers of users. The market for biotech startups is even more international than the market for tech companies. Among the US biotechs who were acquired, 25 percent were acquired by non-US companies. Among the US tech companies, 16 percent were acquired by non-US companies.

The venture-funded biotech companies are less likely to be total failures, but also far less likely to be spectacular successes, as shown in Table 8 and Table 9. Biotech firms have a much higher rate of going public (25% vs. 5% for tech), a similar rate of total failure (31% vs. 29% for tech), and are overall more likely to have a successful exit (53% vs. 43% for tech).

Table 8: Exits for US VC-Funded Biotech Firms, August 2002 - March 2020

Biotech Companies – Exits	Number of Companies	Percent of Companies
IPOs (Including Reverse Mergers)	580	24.6%
Acquired	1,046	44.5%
Failed	727	30.9%
Total Exits	**2,353**	

Table 9: Unsuccessful vs. Successful Exits for US VC-Funded Biotech Firms, August 2002 - March 2020

Biotech Companies – Exits	Number of Companies	Percent of Companies
Unsuccessful Exits	**1,102**	**46.8%**
Acquisitions at Value < $ Raised	375	15.9%
Failed	727	30.9%
Successful Exits	**1,251**	**53.2%**
IPOs and Reverse Mergers	580	24.6%
Acquisitions at Value > $ Raised	671	28.5%
Total Exits	**2,353**	

Table 10: Exits Multiples for US VC-Funded Biotech Firms, August 2002 - March 2020

	Avg Raised ($M)	Avg Exit Value ($M)	Exit Multiple
IPOs (Including Reverse Mergers)	102.8	245.7	2.4
Acquisitions (Total)	39.0	118.9	3.0
Successful Acquisitions	35.7	175.6	4.9
Unsuccessful Acquisitions	44.9	17.4	0.4

b) US Biotech Companies - IPOs

Of the total 2,353 biotech exits during the period from 2002 to 2020, 497 companies, or 21 percent, went public via an IPO. Their values at IPO are much lower on average than the values of the tech IPO companies. The highest-valued company was Moderna, worth $7 billion at exit (vs the highest valued tech exit, Facebook, at $74 billion). The average biotech IPO company raised $112 million while private and had an average IPO value of $272 million (net of money raised at the IPO). The median IPO biotech raised $92 million, and the median pre-money value at IPO was $185 million.

Among the biotech IPOs, we find that 326 are still operating as publicly traded companies. Of the 200 companies no longer traded, 26 became shell companies for other companies to perform reverse mergers, 38 have failed and ceased operations, and 136 were acquired. The list of

companies who acquired biotech startups after their IPO is similar to the list in Table 11 below; all were large public companies and specialized in pharmaceuticals or medical devices.

The number of biotechs still public is surprisingly large given that most of them were in late stage clinical trials when they went public, not operating companies with revenues and customers. Given the single-focus of their products on a given disease, and how rare it is for a very large pharma company to have a single product, it is likely that they will eventually be acquired.

b) US Biotech Companies - Shutdowns

Among the biotechs, a total of 727 companies, 31 percent of all exits, failed. This is comparable to the 29% of US tech startups that failed. The failed biotech startups had raised an average of $29 million each.

c) US Biotech Companies - Acquisitions

Of the 1,046 acquisitions of venture-funded biotech startups, 715 were acquired by public companies. The biotech acquisitions were more likely to be successful than those for tech companies, with 64 percent acquired at prices above the total that the companies had raised. And the biotech market is very international -- just over a quarter of the companies, 264, were acquired by companies *outside* the United States. A total of 154 were acquired by European companies.

The list of top acquirers of US biotech startups is a testimony to how international the biotech market is. Six of the top 16 acquirers are European companies (in bold).

Table 11: Top Acquirers of US VC-Funded Biotech Companies

Rank	Company	Country	Number
1.	Medtronic	US	25
2.	Boston Scientific	US	23
3.	Johnson & Johnson	US	17
4.	Allergan	Ireland	14
5.	Roche	Switzerland	12
6.	Pfizer	US	11
7.	Abbott Laboratories	US	10
(tie)	Stryker	US	10
9.	Merck	US	9
(tie)	Novartis	Switzerland	9
11.	Covidien	Ireland	8
12.	Becton Dickinson	US	7
(tie)	Teleflex	US	7
14.	Bristol-Myers Squibb	US	6
(tie)	Shire	Ireland	6
(tie)	Smith & Nephew	UK	6

e) US Biotech Companies – Reverse Mergers

Biotechs are more likely to attempt a reverse merger than the tech companies, and their outcomes are on average quite a bit better than tech reverse mergers. There were 83 reverse mergers by the biotechs, just under 4 percent of the total. Of those 83 companies, 42 are still alive and trading, while 4 became shells for other subsequent reverse mergers, 19 have been acquired, and 17 have failed. Among the still-alive biotech reverse mergers, there are six companies worth more than a billion dollars each.

4.3 Outcomes of tech and biotech venture-funded startups in Europe

a) General Overview

Venture capital is smaller overall in relation to the economy in Europe than in the US. In 2020, US venture capital deals reached $156.2 billion[5], four times bigger than in Europe (€42.8 billion

[5] Source: "Venture Monitor" by Pitchbook. To see more: https://files.pitchbook.com/website/files/pdf/Q4_2020_PitchBook_NVCA_Venture_Monitor.pdf

or $48.8 billion)[6], but the outcomes are similar except that we do not see the spectacularly valuable companies we have seen in the US. The most valuable venture exit among the European venture investments over our interval of interest, from Sarbanes-Oxley (August, 2002) to the beginning of the pandemic (March, 2020), was Spotify, which did an IPO in 2018 and was worth $33 billion net of funds raised, and next after that, Adyen, a Dutch payments company, worth $8 billion at its IPO, also in 2018. Among just under 5,000 exits (vs 11,000 in the US), the companies on average raised $15 million and were worth $50 million at exit. These averages include the failed companies. Table 12 summarizes the outcomes for European startups who exited in our period.

Table 12: European Venture Outcomes

Exit Type	Total	Biotech	Tech	% of Exits Biotech	% of Exits Tech
IPO	488	213	275	22.9%	7.1%
Acquired	2,483	373	2,110	40.1%	54.7%
Reverse Mergers	31	15	16	1.6%	0.4%
Failed	1,784	330	1,454	35.4%	37.7%
Total Exits	**4,786**	**931**	**3,855**		

The fraction of tech companies doing an IPO is slightly larger in Europe than in the US (7.1% vs 4.3%), but on the same order of magnitude, that is, somewhat rare. As in the US, the biotech startups are more likely than the tech startups to do an IPO. Of the total 488 IPOs, 37 went public on NASDAQ in the US. In both groups, reverse mergers are infrequent. As in the US, biotech reverse mergers are more successful than those for tech companies. The fraction of companies failing completely is also similar to the US, roughly 35 percent.

One notable difference is that European startups were more likely to be acquired abroad. Similar to the US, the biotech companies were even more likely than the tech companies to be acquired abroad. Table 13 provides a list of the top acquirers of European tech startups; US companies are in bold.

[6] Source: "European Venture Report" by Pitchbook. To see more: https://files.pitchbook.com/website/files/pdf/2020_Annual_European_Venture_Report.pdf.

Table 13: Top Acquirers for European VC Tech Startups

Rank	Company	Country	Number
1.	**Apple**	US	10
2.	**Cisco**	US	7
(tie)	**Microsoft**	US	7
(tie)	**Oracle**	US	7
5.	**Alphabet/Google**	US	6
(tie)	ARM	UK	6
(tie)	Nokia	Finland	6
(tie)	Recruit Holdings Co.	Japan	6
9.	Accor	France	5
(tie)	**Carlyle Group**	US	5
(tie)	**eBay**	US	5
(tie)	**Intel**	US	5
(tie)	SAP	Germany	5
(tie)	Thomson Reuters	Canada	5
15.	**Airbnb**	US	4
(tie)	**Amazon**	US	4
(tie)	**Amdocs**	US	4
(tie)	Dassault Systems	France	4
(tie)	**Facebook/META**	US	4
(tie)	Rakuten	Japan	4
(tie)	Reed Elsevier/RELX	UK	4
(tie)	Samsung Electronics	South Korea	4
(tie)	Siemens	Germany	4
(tie)	**Unity Technologies**	US	4
(tie)	Vodafone	UK	4

In addition, there are 40 more acquiring companies tied, all having made 3 acquisitions of European VC-funded tech firms. Of those, ten are US companies.

For the biotechs, the list of the top acquirers for the 373 acquired biotech startups, and their number of acquisitions is provided in Table 14.

Table 14: Top Acquirers for European Biotech Firms

Rank	Company	Country	Number
1.	AstraZeneca	UK	6
(tie)	Roche	Switzerland	6
3.	**Abbott Laboratories**	US	3
(tie)	Avacta	UK	3
(tie)	Bayer	Germany	3
(tie)	**Becton Dickinson**	US	3
(tie)	**Cambrex**	US	3
(tie)	**GlaxoSmithKline**	US	3
(tie)	**Johnson & Johnson**	US	3
(tie)	Orexo	Sweden	3
(tie)	**PerkinElmer**	US	3

Following these, there are 31 companies who acquired two startups each, of which 8 are US companies.

European venture startups are often acquired by entities not within their home boundaries. The most valuable European acquisition was Veeam, acquired by Insight Partners, an American private equity fund, in 2020 for $5 billion US. Insight then moved the St. Petersburg and Switzerland-based company headquarters to Columbus, Ohio. The two Russian founders had met in school at Ohio State. Veeam is rumored to be planning an IPO. The two next-most-valuable acquired European startups are Skype (a household word everywhere now), a Luxembourg company, by eBay for $2.5 billion in 2005, and Acerta Pharma, from the Netherlands, acquired in 2015 by the UK pharma powerhouse Astra-Zeneca, also for $2.5 billion. In fourth place is iZettle, a Swedish startup, acquired by Paypal in 2018 for $2.2 billion.

Among the total 2,483 European acquisitions, only 40 percent were acquired by a company within the country where the startup was founded. About 60 percent were acquired by a European company. Thirty percent (30%), were acquired by a US company. The remaining 10 percent were acquired by companies elsewhere in the world, including Canada, Japan, China, Australia, and India, plus others.

A statistical regression analysis identifies the following factors as related to whether a European startup is acquired outside of Europe:

1) Industry sector: Tech companies are more likely than biotech to be acquired away from home.

2) Value: More valuable companies were much more likely to be acquired outside of Europe.

3) Presence of US Venture Investors: Companies with a US investor in at least one of its venture rounds were more likely to be acquired abroad.

4) Use of English (which might be correlated with other variables such as "educational system" or "innovation ecosystem"): Companies founded in countries using more English were more likely to be acquired abroad. We tried two different measures of the use of English. They indicated similar-size effects. We also note that virtually all European startups either have English names or names that are made-up words derived from English.

In sum, it seems that the more international the venture capital interest, the more international is the market for the resulting company.

b) Differences and similarities between the lifecycles of startups in Europe and the USA

Despite the US venture capital market being more than twice the size of that in Europe, both in company numbers and dollars invested, US and European venture outcomes are more similar than different, both in the failures and successes, and in outcomes for tech vs biotech. More than half of VC-funded startups either fail or are acquired for less than the amount of VC money invested. The share of unsuccessful startups is of course larger when the "lost" companies are added. A far higher percentage of biotech companies go public than tech companies. We believe this is because of the high quality of their scientific disclosures and the regulatory constraints on reporting outcomes of their clinical trials. Nonetheless, there are far fewer spectacular successes among the biotechs, whose markets are limited by the scale of the pathologies they target.

Table 15: Venture Capital Outcomes for the US and Europe, 2002-2020

	Number of Exits	IPOs & Reverse Mergers	ACQs	Failed	"Unsuccessful" (Failed or ACQ Value < $ Raised)
US VC-Backed Firms					
Tech	10,867	5%	67%	29%	57%
Biotech	2,353	25%	44%	31%	47%
Tech + Biotech	13,220	8%	63%	29%	55%
European VC-Backed Firms					
Tech	3,855	8%	55%	38%	52%
Biotech	931	24%	40%	35%	50%
Tech + Biotech	4,786	11%	52%	37%	51%

The exit multiple for European VC-backed startups is typically higher than US startups. This is true for both tech firms (3.7 vs. 2.8) and for biotech firms (2.6 vs. 2.2), as shown in Table 16.

Table 16: Exit Multiples for the US and Europe, 2002-2020

	Number of Exits	Total Value Raised ($B)	Total Value At Exit ($B)	Exit Multiple
US VC-Backed Firms				
Tech	10,867	379.5	1,059.6	2.8
Biotech	2,353	121.6	268.0	2.2
Tech + Biotech	13,220	501.1	1,327.5	2.6
European VC-Backed Firms				
Tech	3,855	49.4	183.1	3.7
Biotech	931	21.3	54.6	2.6
Tech + Biotech	4,786	70.7	237.6	3.4

5 Beyond Venture Startups

Our analysis here is intended to inform the possible impact of different acquisition review rules on venture-funded startups. There are good reasons to expect that the burden will extend beyond venture-funded companies and be even greater for the non-venture-funded startups, who are even less likely to go public than the venture startups.

Venture-funded startups are well-documented for many reasons. The companies, their investors, the amounts invested, and their outcomes are followed by several organizations, for example Crunchbase, and by the business press. The best outcomes are, of course, the best documented, while losses and failures are more difficult to learn about. Recall that we are talking about roughly 30,000 companies in the US from 2002 to 2020, and another 12,000 in Europe.

Less is known, much less, about tech companies who are funded by their founders or by a few investors outside of venture capital. These are not just any small businesses. In the US, there are about 5.7 million firms with employees. Of these, about 5 million have fewer than 20 employees. Note that the venture-funded companies, numbering only about 30,000, are only six-tenths of one percent of those small companies. The big difference between them and other small businesses is the presence of outside investors, which the ordinary small business does not have.

What about tech startups not funded by venture capital? Would they bear the burden also? Surely, yes. We know this from at least two sets of data. The first is IPOs. In Jay Ritter's careful compilation of IPO data[7], he reports that about 24% of the companies who did an IPO between 2001 and 2022 were not backed by venture capital or private equity (PE-backed companies are much less likely to be tech companies), while 46 percent were venture-backed.

The second set of data of interest was produced by the Federal Trade Commission when it asked the five GAFAM companies to report all of their acquisitions valued at $1 million or more for the period 2010 through 2019, not just those that were more valuable than the Hart-Scott-Rodino (HSR) threshold. The FTC's main interest was in whether, if it used a different threshold and calculation for the value of the acquisition by including debt and contingent compensation, the value by the more comprehensive measure would be above the HSR threshold.

For the FTC's 2010-2019 period, the GAFAMs acquired 619 companies, 94 of which were above the HSR threshold that triggers an FTC review of the acquisition. Adding debt to the value calculation adds another 3 companies, and adding contingent compensation adds another 9, for a total of 106 companies instead of 94.

[7] See https://site.warrington.ufl.edu/ritter/ipo-data/

Also interesting is that across all of the GAFAM acquisitions, about 80 percent did have contingent compensation arrangements (also known as "earnouts"). A contingent compensation arrangement gives founders and employees of the acquired company additional incentives to perform well. An acquisition with a provision for additional compensation based on performance is not by definition a "killer" acquisition, but one which both acquirer and acquired expect and hope to live and thrive.

Based on our venture records, we believe that 206 US-based venture startups are among the GAFAM acquisitions, and another 22 European venture startups were acquired by the GAFAM, for a total of 228. These 228 represent 37 percent of the GAFAM acquisitions. This implies, of course, that among the 619 companies acquired by the GAFAMs, 391, or 63 percent, were *not* venture funded.

The focus of our paper here is to give the reader some idea of the burden that banning or inhibiting acquisitions or adding scrutiny to a higher number of startup acquisitions would add to the fortunes of venture-funded startups. What we do not, and cannot, assess, except in this broad way, is the scope of the burden to non-venture-funded startups. The FTC data on all GAFAM acquisitions demonstrate that the burden to these other startups must be substantial, possibly even larger than the burden on the venture startups, simply because of 1) their greater numbers, and 2) their even lower likelihood of becoming public companies. The non-venture companies are roughly twice as numerous, and only half as likely to become public. They are even more solidly stuck in the market for acquisitions.

6 Conclusion

The pattern of exit outcomes of VC-funded startups shows the essential role of acquisitions in venture capital investing. Contrary to popular impressions, an IPO is a rare exit for a venture-funded company. Most companies complete their venture-funded phase too small and insufficiently valuable to be viable as public companies. The data also show how much risk is present in startup investing. For some companies, an acquisition represents a profitable outcome, and for others, it is the opportunity to avoid a total loss. Competition policymakers should heed this data and understand that overburdening M&A review could be a significant risk to innovation, competition, and the health of the startup ecosystem.

Different product and funding lifecycles determine different exit patterns for VC-funded startups

Startup product and funding lifecycles differ across industries and across startups within the same industry. These differences have relevant consequences for exit patterns:

1. Biotech startups go public more often than tech startups. Only a small proportion of VC-funded tech startups go public (5% in the US, 8% in Europe), while almost a quarter of biotech startups go public (25% in the US, 24% in Europe).
2. Tech startups that go public reach substantially higher values than biotech startups, but tech IPOs are rare. For US startups during the period analyzed, the value of tech firms at IPO was $1.1 billion, while the value of biotech firms at IPO is only $246 million. Similarly, the exit multiple for tech IPOs was 6.6, while it was only 2.4 for biotech IPOs.
3. Even within the tech startup ecosystem, there is, however, a high variability of outcomes. For example, forty percent of tech startup acquisitions are unprofitable, which shows that there is not a "standard lifecycle" for all tech startups.

IPOs are exceptional in the tech startup ecosystem

IPOs constitute an exit strategy for only 4 percent of US VC-funded tech startups and 8 percent of European VC-funded tech startups. The substitutability some regulators imagine between IPO and acquisition is not present. Only a small fraction of VC-funded startups will be in a position to choose between going public or being acquired.

Acquisitions and IPOs occur at different stages of the startup lifecycle. Tech startups can only consider going public when fairly mature. However, they can be acquired at any stage of their lifecycle.

The data show that the value of startups at IPO is substantially higher than values at acquisition.

The identity of the buyer has an impact on the acquisition price of a startup

Across acquisitions, the nature of the buyer matters to the startup valuation. Startups acquired by public companies are generally more valuable than startups acquired by private companies and private equity funds. Acquisitions by large public companies generally provide products and technologies better access to scale, to a complementary and synergistic portfolio of products, to additional development funding, and to a critical mass of users. These opportunities are less likely to be present in acquisitions by non-public companies. This is reflected in the value of the acquired startup.

Being acquired by a large public company is good news for startups, not only because the startup owners will get a higher price, but also because their products and technologies are more likely to succeed. And as we know from the FTC study, they are not only acquired for higher values but are more likely to have additional upside potential.

Being acquired by a large public company offers much greater opportunity than being acquired by a smaller public company, a private company, or a private equity fund. Startup innovation and products are more likely to succeed when a startup is acquired by a large public company.[8]

The VC market in Europe is much smaller than the US markets, but outcomes are similar

US and European venture outcomes are more similar than different, both in the failures and successes, and in outcomes for tech vs biotech. The US has more venture-funded companies and more money invested, yet the patterns are similar. More than half of venture investments are unprofitable. The unprofitable fraction is larger when the "lost" companies are added. Far more biotech companies go public than tech companies. We believe this is because of the high quality of their scientific disclosures, and the regulatory constraints on reporting outcomes of their clinical trials. Nonetheless, we will find far fewer spectacular successes among the biotech startups, whose markets are limited by the scope of the diseases they target.

[8] Bargeron et al., (2008).

Competition Policy Main Takeaways

- **VC-funded companies' diverse outcomes call for a case-by-case regulatory review of acquisitions**

Regulatory reviews of acquisitions should take into account the particularities of startup lifecycles and the diverse exit patterns that characterize each industry.

The impact of a startup acquisition once the product has been developed is not the same in biotech as it is in the tech industry. While the market impact of the acquisition can be generally anticipated in the case of biotech startups (where the size of the affected market can be estimated and the number of competitors identified), the high degree of uncertainty facing tech startups makes it difficult to anticipate the impact of the acquisition. This calls for a deep, detailed and bespoke analysis of the circumstances and impact of each acquisition, taking into account how dynamic competition will be affected by each specific transaction.

- **Tech IPOs are seldom an alternative to tech acquisitions**

Most startups looking to be acquired as an exit strategy are not candidates (neither now nor in the future) for an IPO. Tech startups with potential for an IPO are already at the product market phase and generate revenues. Startups going public are full-fledged businesses while startups being acquired range from early-stage ideas to mature products. Very few startups reach maturity and go public. Even those startups reaching maturity are often more valuable acquired than as an independent company. Most startups will not reach the IPO phase and will navigate between acquisition or failure.

- **Startup failures are bad for everyone, not just investors and founders**

For everyone involved—consumers, investors, and acquirers—an acquisition is a better option than a failure. Stricter rules for approving acquisitions may aim to increase the number of IPOs by making acquisitions more difficult. It may also increase failures. As a result, fewer startups could be started, decreasing innovation, entry and choice for consumers.

- **Stricter merger review standards could deter market entry, competition and innovation**

Making acquisitions more difficult from a regulatory point of view will deter initial market entry. Regulatory burdens that make acquisitions more difficult, or even prohibit them from happening, will likely lead to more startups failing as only a few of them would successfully go public. In practice, this means that stricter M&A rules are likely to result

in more failed startups and less market entry, with the consequent negative impact on competition and innovation that results from new entrants.

- **Inhibiting startup acquisitions does not necessarily promote competition, innovation or efficiency**

Measures such as the 'balance of harms' competition test, less stringent standards of proof, and even reversing the burden of proof in certain circumstances may make regulatory approval of tech mergers more difficult and deter startup acquisitions. While regulators may believe these measures could reduce errors from approving mergers they come to regret, such measures also run the risk of prohibiting mergers that promote innovation and consumer welfare, and of discouraging the creation of some startups. Acquisitions are essential and are in fact the most common exit with value – roughly 2/3 – for VC-funded startups.

- **The venture outcome data does not speak to the issue of which mergers should be approved and which blocked. It does show that acquisitions are very important to venture innovation, and that changes to M&A policy could have consequences that are socially worse rather than better.**

To assess how acquisitions in the tech industry affect competition and innovation, it is important to look at the data and understand the importance of acquisitions to venture startups. The data here does not speak to the issue of which mergers should be approved and which blocked. What it shows is that few acquired companies could have gone public instead.

The adoption of stricter rules is not innocuous. Applying more burdensome rules for the regulatory approval of M&As might result in the blocking of some anti-competitive mergers, but it would come with a cost to innovation and competition. Some startups will not be started, others might not find their most valuable acquirer, and some firms might even fail when acquisitions are burdened.

More sophisticated theories of harm with a focus on the effects of merger on dynamic competition and on innovation, rather than increasing the burdens for all startup acquisitions, seems a more promising avenue to improve the efficiency of merger review and encourage innovation. Finally, further empirical work to inform policy choices is crucial for a balanced approach to merger review that promotes competition and innovation.

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