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Accelerating Startups: The Seed Accelerator Phenomenon

Susan L. Cohen
University of Richmond, scohen2@richmond.edu

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Susan G. Cohen

University of Richmond

Yael V. Hochberg

Massachusetts Institute of Technology and NBER

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We examine and discuss the seed accelerator phenomenon which has recently received much attention both in the US and across the globe. While accelerators appear to be proliferating quickly, little is known regarding the value of these programs; how to define accelerator programs; the differences between accelerators, incubators, angel investors and co-working environments; and the importance of the various aspects of these programs to the ultimate success of their graduates, the local entrepreneurship ecosystems and the broader U.S. economy. This paper aims to fill this gap.

Accelerators are a rapidly growing phenomenon. The first accelerator, Y Combinator, was founded by Paul Graham in 2005 in Cambridge, Massachusetts, and soon moved and established itself in Silicon Valley. In 2007, David Cohen and Brad Feld, two start-up investors, set up TechStars in Boulder, Colorado, hoping to transform its start-up ecosystem through the accelerator model. Today, estimates of the number of accelerators range from 300+ to over 2000, spanning six continents. The number is growing rapidly. The TechStars program and its affiliates now operate in 11 cities, and the Global Accelerator Network, a selective international umbrella organization for accelerator programs who follow the TechStars model, counts 50 accelerators in 63 cities on 6 continents among its members.

Initially, many accelerator programs were generalist, accepting entrepreneurs whose businesses were directed at a variety of different industry verticals. Today, accelerator programs have also diversified into industry-vertical focused programs, such as Surge (Houston, TX) which focuses on acceleration of energy start-ups, Kaplan EdTech (New York, NY) which focuses on education-related start-ups, and Healthbox (Chicago and Boston) and Rock Health (San Francisco and Cambridge), which focus on acceleration of healthcare-related start-ups. Others specialize in a myriad of other fashions, for example, restricting applicants to those affiliated with a given community (women or minority-owned start-ups, or university-affiliated start-ups) or using or complementary to a particular company's products (e.g. Microsoft or Nike).

While proliferation of such innovation accelerators is evident, the efficacy of these programs is far from clear. Moreover, given the heterogeneity between programs, including the objectives of the programs themselves, it is likely that outcomes are also heterogeneous. Little research has explored whether these programs are effective, which ones are more effective and

what might drive results. Indeed, even descriptive research on these programs is scant.

Furthermore, the definition of accelerator programs remains discordant, which not only confuses the media and the marketplace but also complicates research, since researchers must manually categorize programs. For example, some programs with the word accelerator in their names are actually what we historically termed incubators – co-working spaces with shared resources and mentorship that is ad-hoc at best. Heterogeneity between actual accelerator programs further complicates research in this area. It is therefore clear that research needs to go beyond simple inquiry and explore multiple drivers of multiple outcomes.

Yet, research on the impact of accelerators has been anemic. There are several reasons for the lack of published research. In addition to the lack of comprehensive data sources mentioned above, the newness of the phenomena is also an issue. Not enough time has passed since the inception of many programs to assess outcomes, particularly since accelerators tend to focus on extremely early stage start-up ventures and most start-ups have graduated from accelerator programs within the last five years.

In this paper, we provide a comprehensive set of characteristics that define accelerator programs as distinguished from other programs with similar or related goals. We then proceed to examine what is known and unknown about such programs from past research, and present summary statistics on a number of basic accelerator outcomes: (1) What proportion of accelerator graduates receive follow-on financing rounds? (2) What proportion of graduates have meaningful exits for founders? (3) How do programs differ in offerings, including mentorship and education? (4) What questions and data would be fruitful for informing further research and identification?

1. Defining the Seed Accelerator

What do accelerators do? Broadly speaking, they help ventures define and build their initial products, identify promising customer segments, and secure resources, including capital and employees. More specifically, accelerator programs are limited-duration programs—lasting roughly three months—that help cohorts of ventures with the new venture process. They usually provide a small amount of seed capital, plus working space. They also offer a plethora of networking, educational and mentorship opportunities, with both peer ventures and mentors, who might be successful entrepreneurs, program graduates, venture capitalists, angel investors, or even corporate executives. Finally, most programs end with a grand event, usually a "demo day" where ventures pitch to a large audience of qualified investors (Cohen 2013).

Certainly, much of this sounds familiar. After all, incubators and angel investors, which are more established phenomena, also help and fund nascent ventures. Accelerators certainly bear certain similarities to incubators and angel investors. Like the former, accelerators aim to help nascent ventures during the formation stage. We therefore might expect that many of the activities provided by incubators and angels would also be provided by accelerators. But accelerators differ in several ways. Perhaps the most fundamental difference is the limited duration of accelerator programs compared to the continuous nature of incubators and angel investments. This one small difference leads to many other differences, as we discuss in more detail below. We thus define the Seed Accelerator as follows:

> A *fixed-term*, *cohort-based* **program, including** *mentorship and educational components*, **that culminates in a public pitch event or** *demo-day*.

Such programs may be for-profit or non-profit, and may vary in the amount of stipend,

the size of the equity stake taken, the length of the mentorship and educational program, the

availability of co-working space and in industry vertical focus. Some are affiliated with venture

capital firms or angel groups, some with corporations, and other with universities or local

governments or non-governmental organizations. The fixed length of the program, its intensity,

the provision of a stipend and services and the cohort-based nature of accelerator programs

distinguishes them from other entities such as incubators, which lack a fixed term, do not

typically provide equity investment in return for cash, primarily focus on co-working space and

shared office resources (internet, etc.), are not selective in admissions, and offer ad-hoc

educational offerings and mentoring if at all.

2. Research on Seed Accelerators

Given the newness of the accelerator phenomena, there is little published research on

accelerators, and virtually no empirical research. Initial reports describe accelerators (Caley and

Kula 2013; Miller and Bound 2011) or compare accelerators to incubators (Isabelle 2013). They

suggest that the primary distinguishing features of accelerators are the limited duration of the

programs, for-profit legal status and cohorts, or classes of start-ups who enter and graduate

together.

Some research highlights the role accelerators play in mediating the relationship between

start-ups and investors. For example, Radojevich-Kelley and Hoffman's (2012) multiple case

study suggests that mentorship driven accelerator programs connect start-ups with potential

investors, and Kim and Wagman's (2012) game theory model highlights accelerators' role as

certifiers of start-up quality. Kim and Wagman (2012), also raise an interesting tension: Since

accelerators are investors in the ventures that they are certifying, they might be incentivized to

withhold negative signals about participating start-ups. Overall, much of the existing research is

conceptual, lacking empirics (Isabelle 2013; Kim and Wagman 2012) or relying on a few case studies (Radojevich-Kelley and Hoffman 2012)[1].

Some exceptions to this include very recent, early-stage empirical studies such as Hallen, Bingham and Cohen (2013) and Winston-Smith and Hannigan (2013). Both studies assess whether accelerators accelerate various aspects of startup company development. Hallen, Bingham and Cohen (2013) compare accelerated ventures that eventually raise venture capital to non-accelerated ventures that eventually raise venture capital. Their findings suggest that top programs do in fact accelerate the time horizon for reaching key milestones, including time to raising of venture capital, exit by acquisition and achievement of customer traction. However, they also find that many accelerator programs do not accelerate startup development. Winston-Smith and Hannigan (2013), in contrast, compare ventures that have participated in two of the leading accelerators, TechStars and YCombinator, to similar ventures that do not go through these programs but instead raise angel funding. Their findings suggest that, relative to startups that did not go through these programs, startups going through these two elite programs are founded by entrepreneurs from a relatively elite set of universities, receive their first round of follow-up financing significantly sooner and are more likely to be either acquired or to fail.

3. Data Availability

One of the primary obstacles to research in this area has been the absence of large scale representative datasets on accelerator programs that include program features and information about the companies which enter and graduate from the programs. Accelerator programs are typically lean organizations, with small staffs and little organized data collection. These

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[1] Multiple case study of 3 accelerators; not clear how many interviews.

programs are not tracked by commercial or government data providers. While some of the accelerators encourage their start-ups to submit some information to public databases like CrunchBase, not all do so consistently, as many start-ups want to keep funding data confidential (so as not to attract new entrants or reveal investor interest to potential competitors). Data is scraped from the internet and collected from other public sources from CrunchBase, and this publicly available data is aggregated at seed-db.com. However, the publicly available data lacks crucial detail and may not be complete. Moreover, it is difficult to ascertain whether the contributed data is representative or even accurate. Few, if any, other data sources provide information that would speak to the quality and features of these programs.

Some researchers, ourselves included, are therefore focused on assembling proprietary datasets to address issues of interest. For example, the Seed Accelerator Ranking Project (Gilani, and Quann (2011), Hochberg and Kamath (2012), Hochberg, Cohen, Fedher and Yee (2013)) collects data from nearly all U.S. accelerator programs with at least 10 graduates that take equity stakes in their startups, including detailed information on the features of each program, subsequent financing and exit outcomes from the program's graduates, and qualitative assessments of the programs provided by in-depth interviews with a sample of venture capitalists and angel investors from across the U.S. as well as assessment of the programs by their graduates. Other collection efforts are focused on qualitative study of the phenomenon. For example, Cohen's (Cohen 2013) embedded multiple case study of nine geographically dispersed and various sized U.S. accelerator programs combines funding data garnered from publically available databases with semi-structured interviews; archival data, such as blogs, company websites, and trade publications; and field observations to deduce how ventures accelerators accelerate the new venture process.

These datasets provide some initial insight into the features and heterogeneity of seed accelerator programs and outcomes for their graduates. Some key ranges and statistics are provided in Table 1. While many graduates of accelerator programs go on to receive seed, angel and VC financing within a year of completing the program, the variability is high. Furthermore, a relatively small proportion of accelerator graduates have successfully achieved exit for their founders; for many programs, no exits have been achieved. This may be due to the newness of these programs and the substantial period of time required for early stage companies to grow into viable M&A or IPO candidates.

Table 1.

Summary Statistics for Accelerator Programs from 2012 Seed Accelerator Rankings

	Mean	Range
Stipend provided (in $ thousands)	$22.89	$0 – 50
Equity stake taken by accelerator in return for stipend and mentorship program	6%	5-8%
Percentage of graduates receiving subsequent financing of $350K or more within one year of graduation	41%	5% - 78%
Percentage of graduates who successfully exited via sale or IPO ($1M or more) as of EoY 2011	4%	0%-13%

4. Distinguishing Accelerators from Incubators and Angels

As noted, accelerators are often confused by the media, researchers and policy makers, with existing institutions such as incubators and angel or seed stage investors. Table 2 below provides a summary of the differences between incubators, angel investors, and accelerators, which we discuss in detail in this next section (Cohen, 2013).

Table 2.

Summary of the Differences between Incubators, Investors, and Accelerators

	Accelerators	Incubators	Angel Investors
Duration	3 months	1-5 yrs	Ongoing
Cohorts	Yes	No	No
Business model	Investment; non-profit	Rent; non-profit	Investment
Selection frequency	Competitive, cyclical	Non competitive	Competitive, ongoing
Venture stage	Early	Early, or late	Early
Education offered	Seminars	Ad hoc, hr/legal	None
Venture location	Usually on-site	On-site	Off-site
Mentorship	Intense, by self and others	Minimal, tactical	As needed, by investor

4.1 Accelerators versus Incubators

Even prior to the rise of seed accelerators, groups that provided shared workspace, ad hoc mentoring and services, known as incubators, had proliferated across the US. Perhaps one of the best known of these incubators, prominent during the internet bubble of the late 1990's, was Bill Gross' idealabs. According to the National Business Incubation Association, incubators shelter vulnerable nascent businesses, allowing them to become stronger before becoming independent. The association's website[2] reports that 93 percent of all incubators are non-profit organizations focused on economic development, and roughly a third are affiliated with a university.

In general, tenant firms pay reduced rent to incubators in exchange for office space and administrative support services (Allen and McCluskey 1990). Incubator managers may also introduce firms to financiers, and legal, technology transfer, and accounting consultants(Hackett and Dilts 2004). University-affiliated incubators may also transfer intellectual property from faculty members to firms that are commercializing the university's intellectual property.

Philosophically, incubators are designed to nurture nascent ventures by buffering them from the environment, providing them room to grow in a space sheltered from market forces.

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[2] http://www.nbia.org/resource_library/faq/#4

Accelerators, in contrast, are designed to speed up market interactions in order to help nascent ventures adapt quickly and learn. Practically, accelerators differ from incubators on four important dimensions.

A. *Duration*

The limited duration of accelerators, usually three months, is the characteristic that most clearly defines accelerator programs. Research on incubators suggests that firms graduate from incubators anywhere from one to five years after they begin (Amezcua, 2011). Established timelines and strict graduation dates reduce the amount of codependence between ventures and accelerators and force ventures to face the selection mechanisms that operate in the market. Participating in an accelerator program may not necessarily keep the venture (or the venture idea) alive; instead, it may speed up the cycle of the venture—leading to quicker growth or quicker failure. Quicker failure does have a benefit if those entrepreneurs move on to a higher-value opportunity: they can help grow different ventures and the overall economy. The limited duration of accelerator programs focuses founders' attention. Founders work at an often unsustainable pace for the three-month programs; often working seven days a week, doing little else but work and sleep. Of course, they could not sustain this pace if the programs were longer or ongoing.

B. *Cohorts*

Another byproduct of the structured, limited-duration programs of accelerators is that ventures enter and exit the programs in groups, known as cohorts or batches. While venture founders in an incubator may also develop relationships with other founders at the incubator, the experience of starting in the program at the same time fosters uncommonly strong bonds and communal

identity between founders in the same accelerator cohort. The batching selection process also focuses the accelerator's marketing and outreach around key dates. Moreover, the open application process attracts ventures from a wide, even global, pool. Top accelerator programs accept as few as one percent of applicants.

C. Incentives

Many accelerators are privately owned[3], and take an equity stake in the ventures participating in the programs[4]. Incubators, on the other hand, are mostly publicly owned, managed by managers, and generally do not have their own investment funds (Allen and McCluskey, 1990; Hackett and Dilts, 2004). As a result, the incentives of accelerator directors are often more closely aligned with the ventures than are those of professional incubator managers. Further, some accelerator owners have extensive experience as entrepreneurs or angel investors, giving them the first-hand experience they need to assist ventures with a myriad of tasks, from customer development to fundraising and hiring. Accelerators typically seek growth that leads to a positive exit, while the best outcome for an incubator might be slower growth, which delays graduation and prolongs the venture's tenant status. It is telling that ventures in incubators are called tenants while those affiliated with accelerators are called portfolio companies--consistent with the fact that most accelerators take equity stakes in participating firms.

D. Educational Program

Intense mentorship and education are cornerstones of accelerator programs and often a primary reason that ventures participate. Research on incubators (Hackett and Dilts, 2004) suggests that

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[3] Recent years have seen the emergence of publically backed accelerators, of which more and more are being formed.
[4] Less frequently, accelerators are non-profit organizations and offer stipends rather than equity investments.

incubators offer fee-based professional services, such as accountants and lawyers. Education at accelerators, however, appears to be extensive, and often includes seminars on a wide range of entrepreneurship topics, including unit economics, search engine optimization, and term sheet negotiation. Such seminars are usually given by either the directors of the program or by guest speakers who often provide one-on-one guidance after their talks.

E. Mentorship & Network Development.

Mentorship is also frequently cited as a valuable aspect of accelerator programs, but it varies quite substantially among programs. Some programs schedule meetings with up to 75 different mentors during their first month. Others may either make introductions on an as-needed basis, or simply hand entrepreneurs a list of pre-selected mentors. Meeting with four or five mentors a day for nearly a month provides a unique opportunity for ventures to build their social network and learn about alternate strategies. Generally, network development is cited as an important aspect of accelerator participation. Finally, managing directors provide guidance throughout the program, helping entrepreneurs understand the knowledge they are garnering through mentor meetings, seminars, and other means.

4.2 Accelerators versus Angels

Angel investors also aim to help fledging ventures, primarily financially through investment. Angels are individual investors who provide seed capital investments and varying amounts of advice to young firms. Often, but not always, they are entrepreneurs who want to help the next generation of entrepreneurs. They also may be friends or family members who provide financial investment (Feld and Mendelson 2011). More recently, platforms such as AngelList have been formed to facilitate matching between entrepreneurs and angel investors.

While accelerators are often compared to incubators, they are may be more similar to angel investors. The entrepreneurs who participated in the authors' research concur. While none of them considered applying to incubators, nearly all either tried, or planned, to raise seed capital from angel investors. Moreover, while none of the accelerator founders we spoke to had prior experience running incubators, nearly all were active angel investors. Angel investors differ from accelerators in three key ways.

A. Duration

Paradoxically, the limited duration of accelerator programs increases the influence programs have on portfolio ventures, compared to the influence of other early-stage investors. Because they make investments in batches, accelerator directors spend more time with ventures. They dedicate three months to helping a batch of young firms, and then move on to the next batch. This focused and highly structured time with young startup teams influences the direction of the portfolio companies while they are still malleable. The limited duration of programs also helps assemble mentors, guest speakers, and other resources for the ventures. External supporters, like mentors, can more easily commit to the ventures since the program is short. The limited duration also forces ventures to graduate at a pre-specified time. Graduations are marked by "demo days" where venture founders pitch their businesses to large audiences of potential investors. Again, the structured duration of the program enables the accelerators to periodically assemble impressive groups of local, regional, and other investors. It is unlikely that individual angel investors could assemble such impressive groups, or attract the same level of media attention. Overall, accelerators' time-compressed programs and social norms encourage frequent dialog between accelerator directors and participating ventures, and encourage ventures to learn and adapt.

B. Business Model and Selection

One of the most difficult aspects of angel and venture capital investing is selecting the most promising ventures from groups of early-stage companies. The accelerator format helps angels and venture capital funds select firms by combining the funds of many investors, enabling accelerators to spread risk across more portfolio firms. Thus accelerators hedge their bets and increase their odds of picking a home run. Moreover, accelerator fund investors can, and often do, increase their investments in their favorite firm's post-accelerator program. Thus, the accelerator serves as a deal aggregator, and provides a real option for investors who learn about a batch of ventures before taking a larger financial stake in them.

C. *Education, Mentorship, and Colocation*

Another challenge for angel investors is being able to influence the strategic direction of portfolio companies. Angel investors might have a seat on the board and meet with their portfolio firms periodically to mentor their portfolio firms directly. They typically do not co-locate with portfolio companies. In contrast, accelerator directors work alongside their participating ventures and connect them with mentors, including investors and active or former entrepreneurs. Moreover, when ventures raise seed funds from multiple investors, it may become difficult to get all parties to agree to change strategic direction. The accelerator model, however, provides significant amounts of education, mentoring, and advice throughout the program. It also encourages and accepts change.

5. Conclusion

Accelerator programs represent a relatively new model of assistance for entrepreneurs that combines many features that in the past were typically provided separately. They differ

significantly from previously known models such as incubators, angel investors and co-working environments. These differences are thought to have significant importance for the ultimate success of their graduates. While rigorous research in the area so far is limited, the accelerator model represents an interesting area for further exploration of what affects the success of startup ventures, and recent data collection efforts may aid in providing an opportunity for deeper qualitative and quantitative analysis.

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