what works centre for
local economic growth

Toolkit
Business advice
Accelerators

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What are they and what do they aim to do?

Accelerators and incubators are business support programmes that provide packages of support to young firms to help them grow. Widely used in the tech sector, they are now increasingly applied in other industries. This toolkit is concerned with accelerators. A companion toolkit considers incubators. We distinguish accelerators from incubators based on the definition provided by the Harvard Business Review (summarised in the Annex).

Incubators typically use non-competitive entry and comparatively 'light-touch' support, typically targeting start-ups aged one-to-five years. Typically, incubators are either non-profit or run as managed workspaces where firms have rolling contracts and pay rent, usually staying for between one and five years. Accelerators use competitive entry and a range of intensive support, typically targeting start-ups aged three-to-six months for a period of up to a year, although often for much less time. Accelerators may be non-profit, although they are more often operated by venture capital firms who take equity stakes in participating companies. The application process for accelerators is typically competitive and only a few firms are accepted into each cohort. For instance, Y Combinator, a top US accelerator, has two application seasons per year and accepts just one or two percent of the several thousand firms that typically apply each year. After being accepted, firms participate in the accelerator for three-to-six months. During their time in the accelerator, firms are typically provided with an on-site workplace.

Additionally, founders often receive business skills training in the form of seminars, as well intensive mentorship from members of established firms, in contrast to the light-touch support typically provided in incubators.

How effective are they?

The available evidence suggests that accelerators may increase participating firm employment. Four studies find that accelerators have a positive effect on employment, including one study which considers support from both accelerators and incubators. One study finds mixed effects, with a basic accelerator service of office space and seed capital having no impact on employment, whilst an advanced service which also includes training, mentoring, and networking has a positive impact. One final study found that university-based incubators have a larger impact on employment than non-university incubators.

Two studies look at firm sales, both finding positive effects. One includes both accelerators and incubators and finds that university-incubated firms have higher sales than non-university incubated firms.

Six studies consider the impact of accelerators on firm survival. Findings are positive in one study, mixed in two studies, zero in one study, and negative in the other two. Taken at face value, this suggests that accelerators may sometimes negatively affect firm survival. One explanation may be that accelerators help participants to quickly gauge the quality of their ideas (for example, through investor or peer feedback on demo days) and encourage those with weak propositions to quit early, rather than continuing until they fail 'naturally'.

Seven studies consider the impact of accelerators on firms securing external funding (for example, from angel investors or venture capital firms) or being acquired. Overall, the evidence is positive, with five studies finding positive effects, and two finding mixed effects. One of the studies that finds mixed effects looks at an accelerator that offers two levels of support, with only the more advanced service that includes training, mentoring, and networking having an impact, while the more basic service that offers office space and seed capital did not. The other study with mixed effects found participating in an accelerator has no effect on the likelihood of being acquired or time until acquired, and negative effects in relation to funding, with firms participating in the accelerator receiving less funding, and taking more days to achieve target funding levels.

It is harder to draw firm conclusions on how different accelerator characteristics contribute to these findings. For example, there are no studies that directly compare public and private sector-run programmes.

Two studies look at differences between types of support. As touched on earlier, one study finds that start-ups that attended an entrepreneurship school (which included seminars, mentoring, networking, linkages to professional services, and promotion of firm's participation) increase employment, capital raised and the probability of securing additional capital whilst those that only received office space and seed capital did not. Another study, which considers the effect of university accelerators and incubators on firm survival finds that networking activities have a negative effect, and training has no effect. It also found that firms in accelerators and incubators that specialised in a specific sector were more likely to survive than those in accelerators or incubators that support firms from varied sectors. However, findings were reversed in areas with lots of competing firms – with networking and training both having a positive effect in these locations, and specialism having a negative effect.

Three further studies also look at the impact of accelerator location on firm outcomes. One finds that

the entrepreneurial networks in the firm's home location, defined as early-stage investors and meet-ups, matter to outcomes. Two others find distance matters – either in relation to distance to investors, or distance between the firms' home location and the accelerator.

One study which considers the impact of two prominent private-sector accelerators, finds that length of time spent in an accelerator is negatively associated with the survival, acquisition and securing funding.

How secure is the evidence?

The evidence base on accelerators is large compared to some other areas of business support. We found 13 studies that examined the effectiveness of accelerators (or accelerators and incubators combined) and met our evidence standards. Four studies are scored at SMS 4 on the Maryland Scale, two at SMS 3, and seven at SMS 2.[1]

Only one study comes from the the United Kingdom (UK), with most of the studies (10) coming from the United States (US). The remaining studies are from Chile and Columbia. The Annex provides summaries of each study.

More rigorous studies are required to better understand impacts on different outcomes and to establish cost effectiveness.

Are they cost effective?

Only two of the 13 studies provide any cost information. One found accelerators have negative impacts, so this programme cannot be cost effective. Information from the other programme suggests a grant of around $37,000 is required per additional employee. This calculation does not consider the other costs of the programmes or potential displacement effects.

Things to consider

- If accelerators lead to an increase in firms closing is that a negative thing? In some cases, programmes help firms survive, but we also found evidence the other way. It's plausible that this is down to accelerators helping founders identify weak ideas, which lead to them closing their current firm and move onto develop new ideas.
- What type of support should accelerators provide? In addition to funding, accelerators often provide firms with intensive mentorship, networking, and co-working space. There is limited evidence on which of these have the largest effect on firm outcomes, so providers should experiment to see what configuration of these works best for them.
- Should accelerators have a minimum or maximum tenancy? Only one study looked at the evidence on whether length of time in incubator had an impact on outcomes so it would be good for policymakers to explore this.
- Should accelerators be left to the private sector? We found no strong evidence either way. Policymakers should consider whether there is any substantive market failure in accelerator provision in their area.
- Should accelerators require equity for funding? We didn't find any studies that make a direct comparison between accelerators that require equity and those that don't. Providers could usefully

1 For more information on how we rank the robustness of evaluations, see our introduction to the Scientific Maryland Scale: http://www.whatworksgrowth.org/resources/the-scientific-maryland-scale/

test the specific impact of taking equity stakes in participants.

- Where should accelerators be located? Accelerators seem to be most effective in regions with rich entrepreneurial ecosystems.
- What is the value added of accelerator vs. incubator business models? We didn't find any studies that directly compare the two approaches.

Annex: Evidence on accelerators

Accelerators and incubators are business support programmes that provide packages of support to young firms to help them grow. Widely used in the tech sector, they are now increasingly applied in other industries. We distinguish accelerators from incubators based on the definition provided by the Harvard Business Review (summarised in Figure 1). This toolkit is concerned with accelerators. A companion toolkit considers incubators.

The application process for accelerators is competitive and only a select few firms are accepted into each accelerator cohort. After being accepted, firms participate in the accelerator for three-to-six months. While many accelerators take equity stakes in participating firms, some operate on a non-profit basis. During their time in the accelerator, firms are typically provided with co-working space. Additionally, founders often receive business skills training in the form of seminars, as well as intensive mentorship from members of established firms. For example, the UK's most prominent private sector accelerator, Seedcamp, provides firms with business skills workshops (for example, in product development), monitors progress and goal achievement, and organises trips to visit established companies abroad.

Figure 1. Definition of accelerators and incubators

	Accelerators	Incubators
Duration	Three-to-six months	One-to-five years
Cohorts	Yes	No
Business model	Investment; can also be non-profit	Rent; non-profit
Selection	Competitive; cyclical	Non-competitive
Venture stage	Early	Early or late
Education	Seminars	Ad hoc; human resources or legal support
Mentorship	Intense; by self and others	Minimal; tactical
Venture location	On-site	On-site

Source: Harvard Business Review https://hbr.org/2016/03/what-startup-accelerators-really-do

This toolkit summarises the available evidence on the effect of accelerators on participating firms. This toolkit does not consider evidence based on qualitative or case study methods. Instead, we focus on evaluations that identify effects that can be attributed, with some degree of certainty, to the support provided.

We focused on evidence from the OECD, in English. We considered any study that provided before-and-after or cross-sectional evidence controlling for differences between supported and unsupported firms. We also included more robust studies that compared changes to firms with a control group or that used a source of randomness in provision of support to estimate a causal effect.[2] Throughout the toolkit, we have placed greater emphasis on studies with stronger methods.

When we first developed this toolkit in 2017, we found 10 evaluations on the impact of accelerators (or accelerators and incubators). We found four additional studies when we undertook this update. The studies identified as part of this update all start with the letter U (e.g. U406). Two studies cited in the original toolkit (105, 106) were working papers, which have now been published – we use the later publications. We removed one study (103) that was in the original toolkit as it is no longer in the public

2 See http://www.whatworksgrowth.org/resources/the-scientific-maryland-scale/.

domain.

Only one study is from the UK. Ten studies look at accelerators in the US, one in Chile, and one in Colombia. Three of the studies (202, 204, 235) look at both accelerators and incubators. In each case, it is not possible to disaggregate the impact of accelerators from incubators.

We looked for evidence on the effect of accelerators on a range of outcomes including employment, sales, survival, and funding. Figure 2 summarises the reported effects by outcome.

Figure 2. Reported effects by outcome

Outcome	Positive	Zero	Negative	Mixed	Total evaluated	No. positive
Employment	179, 202, 235, U401, U406	-	-	105	6	5/6
Sales	235, U400	-	-		2	2/2
Survival	U406	105	104, 106	180, 204	6	1/6
Raising capital and external funding	101, 104, 179, U401, U406	-		105, 106	7	5/7

The evidence

Employment

The available evidence suggests that accelerators may increase participating firm employment. Four studies find that accelerators have a positive effect on employment, including one study which considers support from both accelerators and incubators. One study finds mixed effects, with a basic accelerator service of office space and seed capital having no impact on employment, whilst an advanced service which also includes training, mentoring, and networking has a positive impact. One final study found that university-based incubators have a larger impact on employment than non-university incubators.

Study 105 (SMS 4) examines the impact of Start-Up Chile on firm employment. Start-Up Chile is an accelerator aimed at high-growth early-stage ventures. It admits, on average, 100 participants per cohort and offers them shared office space and equity-free seed capital. It offers entrepreneurial schooling (including entrepreneurship seminars, mentoring, networking, and linkages to professional services) for around 20 participants per cohort. Selection to the accelerator is based on evaluation of applications, with the final decision made by the Chilean Economic Development Agency. Two months after joining the programme, selected firms can apply to the entrepreneurship school with selection based on a presentation of the project and on the quality of the idea. In both selection processes (to the accelerator and to the entrepreneurial school), firms were given numerical scores, allowing the study to compare the performance of firms just above and just below the eligibility thresholds. It finds that within 4.75 years of entry to the accelerator, those attending the entrepreneurship school had twice the number of employees compared to those receiving basic accelerator services only. Firms that only received basic accelerator services did not have higher employment compared to non-participant firms.

Study 179 (SMS 4) evaluates the impact of the MassChallenge accelerator programme on employment. MassChallenge is a private non-profit accelerator in Boston that receives funding through corporate partnerships and government grants. It admits 128 start-up firms each year, providing them with office space, educational development, and mentoring for four months. At the end of the programme, a subset of firms received between $25,000 and $150,000 in grants. To be accepted to the accelerator, firms are judged by a panel that attributes scores according to firm potential. The study compares firms that were just above the score acceptance threshold to firms that were just below. The study looks at whether the firm employs more than 15 people within the two years of application to the accelerator and finds that participating in the accelerator programme increases the likelihood of doing so.

Study 202 (SMS 2) evaluates the relationship between incubators and accelerators and employment in the US. The study considers 294 firms supported by an incubator or accelerator registered with the National Business Incubator Association (NBIA), as well as a control group of observably similar firms from a database that covers firms established over the preceding 20 years. Data on both treatment and control firms was collected through a 2009 survey. As the NBIA includes both incubators and accelerators as members, it is not possible to disentangle the effects of accelerators. The study finds that firms that participated in an incubator or accelerator have five more employees than those that did not.

Study 235 (SMS 2) evaluates whether being affiliated with a university has an impact on the outcomes of incubators and accelerators. As with Study 202, this study uses the NBIA website to identify a list of incubators and accelerators associated with universities and access information on current and

graduated firms. The study considers 224 US-based firms that participated in university incubators or accelerators from 1989 to 2012. The comparison group is comprised of firms that are observably similar and participated in a non-university incubator or accelerator. The study does not differentiate between the effects of accelerators and incubators. The study results show that two years after graduation university-incubated or accelerated firms have four more employees than those that attended a non-university incubator or accelerator.

Study U401 (SMS 2) looks at the effect on firms of participating in three US accelerators located in Silicon Valley, Boston and New York City (all areas considered entrepreneurial hubs). The analysis compares 252 firms that participated in 2011 and 2012 to those who made it to the round before last of the recruitment process (referred to in the study as 'almost accepted applicants'). Results suggest that participating in accelerator programmes is positively associated with better long-term performance including a higher likelihood of reaching 11 or more employees in the subsequent two-to-three years than almost accepted applicants.

Study U406 (SMS 4) examines the impact of a London-based accelerator run by a large US-headquartered technology company. The accelerator provides four standard services: shared office space, free access to software, developer tools, and cloud services from the corporate sponsor, workshops and personalised guidance, and access to the corporate sponsor's network. However, it does not offer seed capital or require a fee or equity stake. The study uses data from 638 applicants to five cohorts between 2013 and 2016 and compares performance of those firms that scored just above and just below the threshold for being interviewed for a place on the programme. The study finds that attending the accelerator is positively associated with an increase in employment by 2018.

Sales

Two studies look at firm sales, both finding positive effects. One includes both accelerators and incubators, and finds that university-incubated firms have higher sales than non-university incubated firms.

Study 235 (SMS 2, discussed earlier) assess the impact of incubators and accelerators on firm sales, comparing the performance of firms that participated in university-incubators and accelerators with firms participating in non-university incubators and accelerators in the US. The analysis tracks sales two years before and after the graduation, finding that those that university-incubated or accelerated firms have higher sales growth.

Study U400 (SMS 4) evaluates the impact of ValleE on high-potential entrepreneurs. ValleE, a business accelerator in Colombia, encourages local growth by identifying and boosting high-potential entrepreneurs by providing business training, one-to-one customised advice, and increased visibility through a fixed-term, cohort-based programme. Participants do not receive financial support. Participants apply online, ValleE selects high-potential applicants, and randomly assigns them to a panel of three judges. Judges score applicants based on the clarity, innovation, scalability, and potential profitability of their proposal, and the entrepreneurial team. The study examines the effect of providing firms with support by matching participants and exploiting differences in judges' scoring generosity. Results suggest that participating in the accelerator increases annual revenue by 166 percent relative to rejected applicants over the first three post-application years.

Survival

Six studies consider the impact of accelerators on firm survival. Findings are positive in one study, mixed in two studies, zero in one study, and negative in the other two. Taken at face value, this suggests that accelerators may sometimes negatively affect firm survival. One explanation may be that accelerators help participants to quickly gauge the quality of their ideas (for example, through investor or peer feedback on demo days) and encourage those with weak propositions to quit early, rather than continuing until they fail 'naturally'.

Study 104 (SMS 2) evaluates the relationship between accelerators and firm survival in the US. The study considers a cross-sectional dataset of firms that were accepted to the Y Combinator and TechStars accelerators between 2005 and 2011. Firms that received funding from a large angel investment group, but did not participate in an accelerator, are used as a control group. The study finds that accelerators are associated with a reduction in the amount of time until the firm is 'terminated', both in the short run (120-500 days after being admitted to the accelerator) and in the longer term (at least 500 days after admission). The study notes that this may be due to the fact that accelerators feature 'demo days', in which start-ups present their idea to investors. If a firm does not secure investment on this day, its likelihood of success is limited. Ultimately, this speeds up the process through which firms fail.

Study 105 (SMS 4, discussed earlier) evaluates the impact of the Start Up Chile (SUC) programme on firm survival. As noted above, firms are admitted to the accelerator, and within this cohort, the firms with the highest potential are selected to attend an entrepreneurship school. Firm survival is assessed by looking at whether firms were listed on Facebook or Linkedin. Firms attending the entrepreneurial school were no more likely to survive that those receiving basic accelerator services only and there was no significant difference in survival between those being supported by accelerator and those just below cut-off for acceptance.

Study 106 (SMS 2) explores the relationship between accelerator programmes and firm survival using a novel dataset containing 900 firms that participated in 13 accelerators across the US. To address the effect of accelerators on firm survival, the study matches accelerator with non-accelerator firms based on pre-intervention characteristics. The study finds that accelerator firms are 150 percent more likely to shut down compared to non-accelerator companies. The study also found that participating in an accelerator decreases the time until closure compared with control firms. The study notes that this is likely because accelerators more accurately gauge the quality of the company, so that founders close unproductive firms which might otherwise continue until they fail 'naturally'.

Study 180 (SMS 3) examines the impact of the Next 36 programme on the likelihood that minority (women and non-Caucasians populations) and non-minority participants continue to work in the start-up sector. Next 36 is a programme that provides entrepreneurs and very early start-ups with up to $60,000 in funding, intensive training, and mentoring support for a period of eight months. It is a highly selective programme admitting only 36 candidates to each annual cohort. The study compares outcomes for programme participants to outcomes for individuals who made it to the last stage of the selection process but who were eventually not accepted. This ensures that treatment and control group were relatively similar, and further observational differences (e.g. prior experience, judge scores on interview) were controlled for in the regression analysis. The study finds that in the short term, both minority (either female or non-Caucasian) and non-minority participants benefited from the programme in terms of the likelihood that they continue to start-up. The short-term impact for minorities (10 percentage points

(pp)) is smaller than that for non-minorities (23 pp). However, in the long term, only the minorities group benefits (20 pp) compared with the control group. The study suggests that programme participation expedites the benefits (e.g. networks, capital) that the non-minority group would eventually capture without having participated. Conversely, for minorities there are benefits in the long run, but they take time to materialise suggesting they face additional barriers in pursuing entrepreneurship (e.g. networks and access to capital). The study finds that the size of the long-term benefits for minorities is enough to offset the negative relationship between minority status and subsequent start up activity.

Study 204 (SMS 2) evaluates the relationship between different types of incubator and accelerator support and firm survival in the US. The study considers incubators and accelerators, and it is not possible to disentangle specific accelerator effects. The study considers all firms that belonged to a university accelerator or incubator at any point between 1994 and 2007. Three different types of incubator and accelerator support are considered: if the incubator hosted networking events and conferences, if the incubator or accelerator only hosted firms in a particular sector, and if the incubator provided direct support in the form of educational training. The study finds that firms that participated in incubators or accelerators providing networking events were less likely to survive than firms in programmes without this form of support. On the other hand, firms that participated in incubators or accelerators that only hosted firms in a particular sector were more likely to survive than firms in non-specialised programmes. Direct support was found to have no effect. The study also considers whether these effects change according to the competitiveness of the incubator's location (as measured by the number of firms operating in the same industry within the firm's founding county). It finds that that networking events and training initiatives are associated with a positive effect on firm survival in competitive counties, while hosting only firms from certain sectors is associated with a negative impact on firm survival in competitive counties.

Study U406 (SMS 4, discussed earlier) evaluates the effect of a London-based accelerator run by a large US-headquartered technology company on survival for 2013 to 2016 cohorts of UK-based firms. To measure firm survival the study uses the start-up's online presence in 2018, namely whether the company has a profile on LinkedIn or Crunchbase, two widely used business social networks. The study finds that attending the accelerator is associated with an increase of 50 percent in online presence when those just above and just below the threshold for being interviewed for a place on the programme are compared.

Raising capital and external funding

Seven studies consider the impact of accelerators on firms securing external funding (for example, from angel investors or venture capital firms) or being acquired. Overall, the evidence is positive, with five studies finding positive effects, and two finding mixed effects. One of the studies that finds mixed effects looks at an accelerator that offers two levels of support, with only the more advanced service that includes training, mentoring, and networking having an impact, while the more basic service that offers office space and seed capital did not. The other study with mixed effects found participating in an accelerator has no effect on the likelihood of being acquired or time until acquired, and negative effects in relation to funding, with firms participating in the accelerator receiving less funding, and taking more days to achieve target funding levels.

Study 101 (SMS 3) evaluates the impact of accelerators on venture capital investment in metropolitan areas (MSAs) within the US. Using a dataset of venture capital activity between 2005 and 2012, the

study finds that having an active accelerator within an MSA increases the number of venture capital deals by 2.0, the number of early-stage investors by 1.9, and the amount of funds invested by 4,800 percent.

Study 104 (SMS 2, discussed earlier) analyses the relationship between accelerators and external finance for two leading US accelerators. Participation in the Y Combinator and TechStars accelerators has positive effects on both the probability of being acquired, and on the time to first round venture capital funding.

Study 105 (SMS 4, discussed earlier) evaluates the relationship between accelerators and securing additional funding in Chile by comparing the capital raised by those start-ups participating in the entrepreneurship school and those accessing basic accelerator services (funding and co-working space) only. It finds that firms that attended entrepreneurial school were more likely to secure additional funding than those that only accessed basic accelerator services (by 21 percent) and raised three times more funding on average. Compared to non-participants, firms receiving basic accelerator services were no more likely to secure additional funding. There was also no impact on the scale of the capital raised.

Study 106 (SMS 2, discussed earlier) evaluates the relationship between accelerators and venture capital funding in the US. Venture capital funding is captured in five different ways: total funding in millions of dollars, number of days from firm start to receiving $100,000 funding, number of days from firm start to receiving $1 million, probability of being acquired, and number of days until acquisition. The study looks at 13 accelerators, and unlike some other studies is not focused on the most selective. The study finds that accelerators are not associated with the likelihood of being acquired, nor with the number of days until a firm is acquired. However, it finds that accelerator firms receive $5 million less in funding, and take 50 more days to achieve $100,000, and 106 more days to achieve $1 million. This implies that accelerator participation is negatively associated with firms' ability to obtain funding. The study states that this negative relationship may be due to a selection effect – i.e. founders with the best ideas will apply for accelerator programmes since they do not want to give away any ownership.

Study 179 (SMS 4, discussed earlier) evaluates the impact of the MassChallenge accelerator programme on venture capital funding. The study considers two aspects of venture capital: whether the firm received more than $500,000 funding; and the dollar amount of venture capital funding. The study finds that accelerator participation increases the likelihood of obtaining over $500,000 by 0.25 percentage points and increases the total amount of funding secured.

Study U401 (SMS 2, discussed earlier) also assesses the effect of three US accelerators on raising capital, comparing accepted and 'almost accepted' companies. The study finds that start-ups participating in an accelerator raise more funds after participation. Additionally, they also achieve fundraising for different amounts ($500,000, $1 million, or $2 million) faster. For example, participating firms are, on average, 544 percent more likely to reach the $500,000 funding target each month.

Study U406 (SMS 4, discussed earlier) evaluates the impact of a London-based accelerator run by a large US-headquartered technology company on the funds raised by 2013 to 2016 cohorts of firms by 2018. The study calculates this using data from the application stage and from Crunchbase. Comparing those that scored just above and just below the threshold for being interviewed for a place on the programme, acceleration is associated with an increase in fundraising of 77.6 percent, equivalent to £90,000.

Different accelerator characteristics

It is harder to draw firm conclusions on how different accelerator characteristics contribute to these findings. For example, there are no studies that directly compare public and private sector-run programmes.

Two studies look at differences between types of support. As touched on earlier, one study finds that start-ups that attended an entrepreneurship school (which included seminars, mentoring, networking, linkages to professional services, and promotion of firm's participation) increase employment, capital raised and the probability of securing additional capital whilst those that only received office space and seed capital did not. Another study, which considers the effect of university accelerators and incubators on firm survival finds that networking activities have a negative effect and training has no effect. It also found that firms in accelerators and incubators that specialised in a specific sector were more likely to survive than those in accelerators or incubators that support firms from varied sectors. However, findings were reversed in areas with lots of competing firms – with networking and training both having a positive effect in these locations, and specialism having a negative effect.

Three further studies also look at the impact of accelerator location on firm outcomes. One finds that the entrepreneurial networks in the firm's home location, defined as early-stage investors and meet-ups, matter to outcomes. Two others find distance matters – either in relation to distance to investors, or distance between the firms' home location and the accelerator.

Study 101 (SMS 3, discussed earlier) evaluates the impact of accelerator location on funding in the US. Using a dataset of venture capital activity over 2005 to 2012, the study finds that firms are more likely to obtain funding from investors located within 300 miles of them.

Study 105 (SMS 4, discussed earlier) evaluates an accelerator aimed at high-growth early-stage ventures in Chile. Start-Up Chile provides shared office space and equity-free seed capital to around 100 business per cohort. The study finds that this basic service has no impact on survival, employment or securing funding. Entrepreneurial schooling, which includes seminars, mentoring, networking and linkages to professional services, is provided to around 20 participants per cohort. This has a positive impact on employment and securing funding, but not on survival.

Study 179 (SMS 4, discussed earlier) evaluates the impact of accelerator location on employment and funding. The study evaluates the impact of the home region (zipcode) of the firm. It finds that firms from regions that have entrepreneurship meet-ups and more early-stage investors have better employment and funding outcomes. Furthermore, firms from areas with higher property prices are more likely to obtain funding. Conversely, firms from regions with high R&D investment are less likely to obtain funding.

Study 204 (SMS 2, discussed earlier) evaluates the impact of university accelerators and incubators on firm survival. It finds that firms that participated in incubators or accelerators that provided networking events were less likely to survive than firms in programmes without this form of support, that training had no impact on survival, and firms that participated in incubators or accelerators that only hosted firms

in a particular sector were more likely to survive then firms in non-specialised programmes. However, the results were different in more competitive counties (based on the number of firms operating in the same industry within the firm's founding county), with networking events and training initiatives having a positive effect on firm survival in competitive counties, while hosting only firms from a particular sector had a negative impact on firm survival.

Study U405 (SMS 2) uses information on 736 US-based start-ups that were accepted into and received financing between 2005 and 2011 from the two largest US accelerators (Y Combinator and Techstars), comparing them with firms that received their first round of equity finance from major angel groups. The study looks at the impact of these accelerators on key economic outcomes such as follow-on investment, firm closure, and employment growth at the regional level. Results suggest that whether a firm comes from the same region that the accelerator or angel group is based in or not plays an important role. On average, firms in accelerators and angel groups both hire more employees when they are in the same region as the accelerator or angel group, respectively. However, accelerators tend to invest in firms from a larger geographic area than angel groups. Additionally, local and distant firms are impacted differently by accelerators and angel groups. For example, location in the same region has a greater impact on the likelihood of acquisition for a firm in an accelerator than for a similar firm in an angel group. The effect of being in the same region on the amount of follow-on funding is also amplified for firms in accelerators.

Time spent in acceleration

One study which considers the impact of two prominent private-sector accelerators, finds that length of time spent in an accelerator is negatively associated with the survival, acquisition and securing funding.

Study 104 (SMS 2, discussed earlier) evaluates the relationship between length of time spent in an accelerator and firm survival and funding in the US. The study considers a cross-sectional dataset of firms that were accepted to the Y Combinator and TechStars accelerators between 2005 and 2011. Firms that received funding from a large angel investment group, but did not participate in an accelerator, are used as a control group. The study looks at length of time spent in the accelerator (up to 120 days, or between 120 and 500 days), firm survival (measured by the number of months from the date of receiving accelerator funding until the date the firm stopped operating) and funding (firm was acquired or time of the first round of venture capital funding). The study finds that staying longer than 120 days decreases the likelihood of survival, acquisition, and ability to attract funding.

Cost effectiveness

Only two of the 13 studies provide any cost information. One found accelerators have negative impacts, so this programme cannot be cost effective. Information from the other programme suggests a grant of around $37,000 is required per additional employee. This calculation does not consider the other costs of the programmes or potential displacement effects.

Study 106 considers the impact of thirteen private sector accelerators. On average, these programmes last 14 weeks and invest $20,846 per firm. Given that the study finds a negative impact of accelerators, the programmes are not cost effective (unless the findings can be explained by a selection effect as suggested by the authors).

Study 179 consider the MassChallenge programme, which provides firms with office space, mentorship, and non-equity grants. These grants range from $25,000 to $150,000. The programme increased the likelihood of a firm hiring over 15 employees by 31.3 percent. Assuming that the average grant is $87,500, this suggests each $280,000 of expenditure should lead one firm to hire more than 15 employees. It is not clear from the study what kind of increase in employees takes firms from one group into the other. Assuming a required increase in 7.5 employees (i.e. firms are evenly distributed in the 0-15 employees range), this would equate to a cost of around $37,000 per additional employee. This value is a lower bound since it does not include the non-grant costs of workspace, mentorship, and administration. Further, it does not account for displacement, where employees hired by assisted firms might have otherwise been hired by unassisted firms.

Evidence reviewed

Ref. No	Reference
101	Fehder, D. C., and Hochberg, Y. V. (2014). “Accelerators and the regional supply of venture capital investment”. Available at SSRN 2518668.
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