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Do business accelerators accelerate growth *and* failure?

A case for thoughtful interpretation of policy evaluations

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AUBREY CHERNICK

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We are a **research laboratory** based in the **School of Engineering of Pontificia Universidad Católica de Chile.**

Our main goal is to **identify the cause and effect of entrepreneurship** and **innovation policies** and generate **evidence-based knowledge** that contributes to **socioeconomic development.**

We aim at generating **timely** and **robust information** to **improve** the **design** and **effectiveness** of **entrepreneurship** and **innovation policies.**

EPIC Lab focuses its **efforts** on better **understanding** the phenomena **underlying entrepreneurship** and **innovation.**

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Do business accelerators accelerate growth *and* failure?

A case for thoughtful interpretation of policy evaluations

Introduction

Many entrepreneurship policy-makers work hard to implement and improve programs because they believe that those programs (and the resources used to support them) are having (or will have) the desired effect on socioeconomic development. Their belief is based on their knowledge, experience, and observations. However, belief is not the same as certainty. Typically, policy-makers believe that their programs are effective based on the outcomes they *observe* (such as the progress of the startups that participate in the program). Unfortunately, rarely do we observe the outcomes of a control group. Without a valid comparison, one cannot be certain that a policy is having the desired effect.

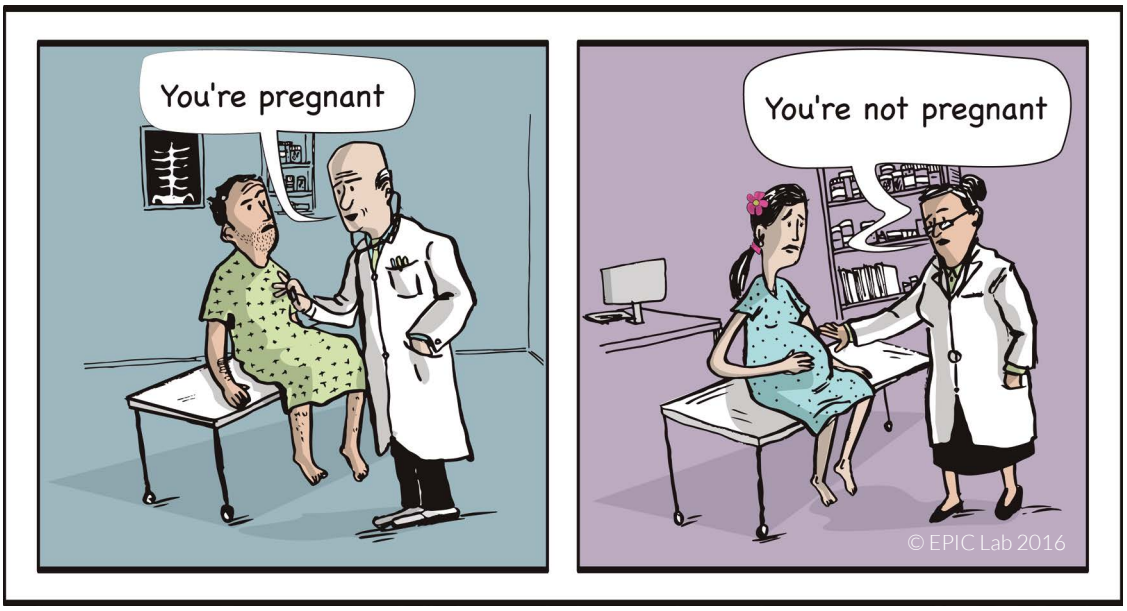
This is why stakeholders around the globe are increasingly requesting that entrepreneurship policies be measured with tools that make possible a causal inference. While at first it may be wise to implement new programs based on a policy-maker's intuition, in the long run it is important to know whether that intuition was correct, regardless of the policy-maker's belief. If the intuition turns out to

be correct, then it may be reasonable to increase the budget for such a program. If the intuition turns out to be incorrect, then a reallocation of resources is probably the best option.

Thus, making an effort to identify the causal effects of programs sponsored by policy-makers is particularly important. However, those entrusted to identify the causal effects of entrepreneurship programs must be careful to avoid hasty conclusions based on a quick look at the initial results. Otherwise, there is a considerable risk of making a type I error (a "false positive") or a type II error (a "false negative"). Figure 1 illustrates these types of errors.

An example of the risk of making a diagnosis based on a false negative can be appreciated in Gonzalez-Uribe and Leatherbee's study titled "The Effects of Business Accelerators on Venture Performance: Evidence from Start-Up Chile." The authors find no significant differences between the average performance of startups that received basic accelerator services and the average performance of a comparable control group. A hasty conclusion could have been that Start-Up Chile had no meaningful effects on startup performance. However, as discussed further in this white paper, such a conclusion would have most likely been a "false negative" (i.e., a diagnosis that the treatment has no effect, when it actually may have an effect).

FIGURE 1. EXAMPLE OF A FALSE POSITIVE AND A FALSE NEGATIVE CASE



"Type I error" (false positive)

"Type II error" (false negative)

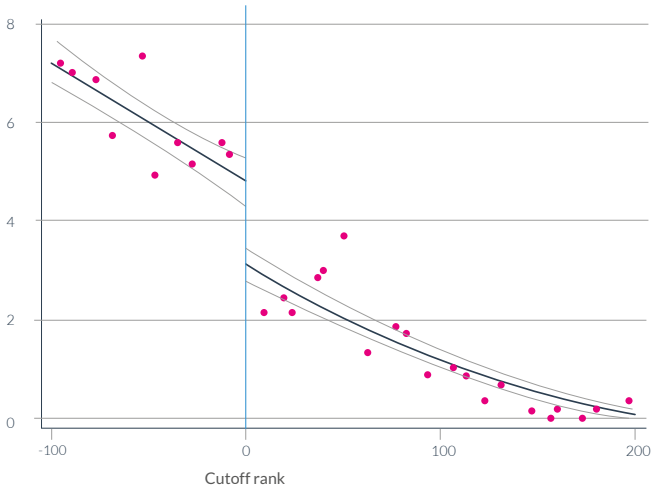
The case of the Start-Up Chile business accelerator

Start-Up Chile is an ecosystem-type business accelerator aimed at helping Chile become the innovation and entrepreneurship hub of South America. At the time of the study, the accelerator offered participants two types of services: basic services comprised of access to the program's co-working space plus an equity free grant of roughly $40,000 dollars; and entrepreneurship schooling services which, added to the basic services, comprised of certification, monitoring and workshops about building a startup. The schooling services were typically available to the top performing 20% of participants.

The researchers were intrigued about knowing whether the accelerator's basic services had an effect on startup performance. The baseline assumption was that the cash would help startups develop their businesses, and that interaction with other entrepreneurs would give participants access to valuable networks and knowledge.

To answer this question, Gonzalez-Uribe and Leatherbee relied on a regression discontinuity design that leveraged the ranking of applicants to the accelerator and the program capacity cutoff score. The intuition is that startups ranking sufficiently close to the cutoff are similar in everything except their probability of receiving the treatment of the basic services. Figure 2 shows the jump in the probability of receiving the treatment, which enables the identification of the treatment effects. That is, startups close to the cutoff receiving the treatment are a valid counterfactual for startups close to the cutoff not receiving the treatment.

FIGURE 2. FRACTION OF ACCELERATED PARTICIPANTS



Likelihood of being selected as a function of application ranking. Zero represents the cut-off threshold based on the program capacity.

The study explored the causal effects of basic accelerator services on multiple new venture performance measures, such as raising capital, startup valuation, market traction, employee growth and survival. They found no statistically significant differences between the average performance of the treatment and control group startups.

Based on these results, some may find it tempting to declare that Start-Up Chile is an unsuccessful program. Jumping to this conclusion, however, would have been careless in the absence of a deeper analysis of the situation.

Understanding the evaluation tool to identify potential limitations

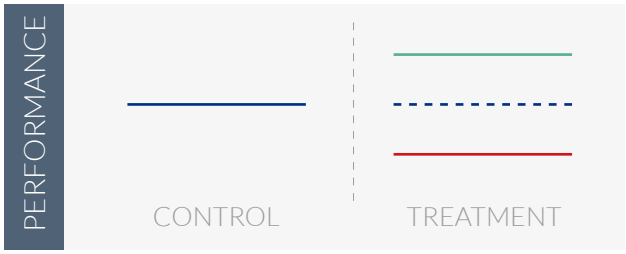
Every evaluation method has its limitations. Therefore, it is important to understand *what* these limitations are and *how* to factor them into the diagnosis. In the case of Start-Up Chile, the empirical methodology used by Gonzalez-Uribe and Leatherbee is very effective at comparing the *average* treatment effect of two groups. However, sometimes we need to know more than just the average performance of a given group to make meaningful diagnoses.

An important aspect to understand about average treatment effects analysis is that the comparison is made between the average performances of two groups. It says nothing to the effect of differences in the distribution of the performance of both groups. For example, two groups may have exactly the same average performance, such that on *average* they look the same, yet their distribution of individual performance is quite different. Thus, a treatment

effect may actually be occurring, even though our observation of the data suggests that there is no treatment effect (i.e., a false negative).

For example, a hypothetical control group in Figure 3 could have all members performing at a value of X (the blue line), while the treatment group could have half of the members performing at 2X (the green line) and the other half of the members performing at 0 (the red line), such that the average is X (blue dotted line). In this example, these two groups have very different outcomes. However, an average treatment effect analysis would find no differences between both groups.

FIGURE 3. HYPOTHETICAL COMPARISON BETWEEN CONTROL AND TREATMENT GROUP



Depending on the policy objective, the outcome of increasing the variance in the performance of a group of startups (as in the case of the treatment group previously exemplified) may actually be a very favorable result for socioeconomic development. Accelerating the demise of a low-potential startup may be a very favorable outcome if, as a consequence of the demise, founders end up relocating to more productive sectors of the economy (such as working on a better startup or a more productive company).

For example, take a low-potential business idea that makes just enough money to pay founders half of market wage[1] and will never become better (precisely because it is a bad idea). The economy (as well as the founders) would be better off if something helped these poor founders realize that their business idea is not very good, and that they would be best served by trying something different. In this case, if an entrepreneurship program were to accelerate the failure of bad business ideas, this would be a favorable outcome and we should certainly support the program. Startup "zombies" (companies that are not bad enough to die on their own, but are barely good enough to keep their founders engaged) are not good for socioeconomic development.

Do business accelerators accelerate growth and failure?

If business accelerators actually do stimulate the performance of high-potential startups and speed up the demise of low-potential startups, this would certainly justify the existence of business accelerators as contributors to socioeconomic development. Even though the average performance of the accelerated group appeared to be similar to the average performance of the non-accelerated group.

However, how could one explore whether this may be happening in the case of Start-Up Chile? In their study, Gonzalez-Uribe and Leatherbee focused their attention on the performance variance of both control and treatment groups, and on the professional trajectory outcome of individual founders (as opposed to focusing only on the startups).

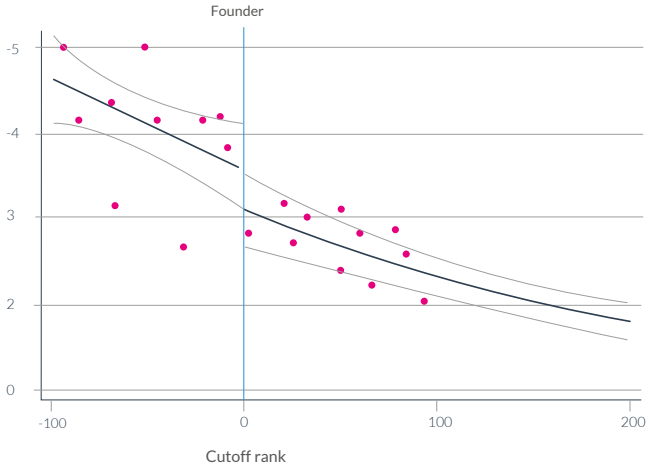
By focusing on the variance of the average performance measures, the authors discovered

1. Market wage is what individuals would be paid if they were employees at an established company.

that the dispersion of the performance measures was greater for participants than for non-participants. Thus, it seems that business accelerator participants who received the basic services of cash and co-working space were more likely to end up being either higher performing or lower performing than non-participants. In other words, the accelerator may have been effectively accelerating the performance of high-potential startups, and encouraging the demise of low-potential startups.

Moreover, by focusing on the professional trajectory of *individual participants*, the authors discovered that business accelerator founders who worked at the startups that received the basic services of cash and co-working space were more likely to remain entrepreneurs long after participating in the accelerator (see Figure 4). This finding comes into stark contrast against the observation that the average survival rate of the treatment group *startups* was not significantly different to that of the control group startups.

FIGURE 4. PERSISTENCE OF THE ENTREPRENEURIAL CAREER



Likelihood of remaining an entrepreneur after the end of the program, as a function of application ranking. Zero represents the cut-off threshold based on the program capacity.

Information in the contradiction

How is it possible that the average survival rate of the startups is similar between the treatment and control groups, yet the survival rate of the *individual participants*[2] is greater for the treatment group? One plausible explanation is that a portion of the accelerator participants were *deciding* to shut down their old (possibly lower potential) startups and starting new (possibly higher potential) startups, while the control group founders were persisting with their original startups. In other words, it would seem that these accelerator participants were learning something from the accelerator experience that was convincing them to shut down their original startup and encouraging them to found a (presumably) better one. That is, it may well be that, as a consequence of participating in Start-Up Chile, and despite receiving only the basic services, individuals were more likely to shut down their original startup and found a new one.

It is important to note that Gonzalez-Uribe and Leatherbee's exploration beyond the direct results of no average treatment effects is not conclusive. However, it is certainly enough to be cautious about claiming that Start-Up Chile has no effect on new venture performance (at the risk of declaring a false negative), and to encourage the design of further tests that may help conclude with greater confidence whether the basic services of cash and co-working space is accelerating the growth of good startups and accelerating the demise of bad ones.

2. By "survival rate" of individual entrepreneurs we mean the choice of participants to remain as entrepreneurs (as opposed to employees of established firms) after graduating from the program.

In Brief

With the goal of exploring the performance enhancing effects of business accelerators, "The Effects of Business Accelerators on Venture Performance: Evidence from Start-Up Chile" by Gonzalez-Uribe and Leatherbee finds no evidence that the basic accelerator services of cash and co-working space have an *average* treatment effect on fundraising, scale, or survival. On average, startups in the treatment group have similar performance outcomes as the startups in the control group. However, jumping to the conclusion that the basic services are useless is premature, misleading, and may be a "false negative" diagnosis.

Gonzalez-Uribe and Leatherbee find that the dispersion of the performance of the control group is lower than the dispersion of the treatment group, which suggests that the basic accelerator services may be accelerating the growth of good startups as well as accelerating the demise of bad startups. If this were the case, then the basic services of cash and co-working space are useful for socioeconomic development because it pushes entrepreneurs towards more productive activities.

Implications for

Policymakers

One of policymakers' fiduciary responsibilities is to make sure the programs they are supporting are actually having a relevant effect. This requires the use of experimental and quasi-experimental methods to test causality. By helping to generate this knowledge, policymakers will be able to justify the allocation of more resources to support those programs that are effective, and reallocate resources from less to more effective programs.

However, policymakers must be very careful with program evaluators that make hasty, careless diagnoses based on limited data and a superficial understanding of entrepreneurship phenomena. A type I (false positive) or type II (false negative) diagnosis may lead policy discussions down a counter-productive path, destroying value along the way. Thus, program evaluations are a double-edged sword. If used properly, they can certainly give policymakers the upper hand and guide the policy discussion down a path of greater socioeconomic value creation.

Business Accelerators

The goal of business accelerators is to accelerate the creation of socioeconomic value. Therefore, the acceleration of growth is as important as the acceleration of failure. That is, accelerators are best served by helping high-potential startups grow their businesses, and helping founders of low-potential startups rethink their original ideas in order to pursue better business opportunities. By keeping a close eye on how and whether specific programmatic features are helping founders discover better opportunities and enabling them to pivot, business accelerator staff will be contributing to the important goal of discovering high-value business opportunities.

Entrepreneurs

Discovering high-potential business opportunities is fundamental for entrepreneurial success. Sometimes, however, entrepreneurs do not realize that the business idea they are pursuing has low potential. Therefore, it behooves entrepreneurs to participate in programs that encourage them to try their business ideas, stimulate interaction with a community of likeminded entrepreneurs who can provide them with novel ideas, and allow them to change their business ideas at low personal and economic cost.

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