Pre-Analysis Plan for Western Balkan Investment Readiness Intervention

Version 1.1, November 10, 2015

Updates:

November 10: added section on testing for treatment effect heterogeneity.

Background

This impact evaluation tests the impact of an Investment Readiness Program (IRP) delivered in 5 countries in the Western Balkans. It is designed to help innovative start-ups and SMEs in the region become more investment ready in the sense that the owners know what is required to be attractive prospects for outside investors, that they can present their business in a way to be attractive to external funders, and that eventually this will result in additional equity funding.

Applications were screened to ensure they meet the eligibility requirements. Eligible applications were then scored on four criteria to measure their initial level of investment readiness: market attractiveness, product technology, traction, and team. The top 10 proposals overall in terms of score were then randomly assigned to 5 in treatment and 5 in control, in order to ensure that some of the very top proposals were in both groups. Then the remainder of firms were divided into groups (strata) based on country (Serbia, Croatia, or the rest) and whether or not they already have a private investor. Within these six groups firms were ranked into groups of four on the basis of their investment readiness score. Within these quartets two firms were randomly chosen for treatment and two for control.

This was done for an initial batch of 333 firms, allocating 167 to treatment and 166 to control. An additional batch received after this assignment were then also randomly allocated. This resulted in 346 firms, with 174 treatment and 172 control.

The treatment group then receives the full investment readiness program that includes the following services: (i) individual mentoring on how to write a business development proposition in a way that is attractive to investors and on how to take the business forward (ii) master-classes on specific topics (business model, sales and marketing, team building and HR, investment and finance) needed for enterprise development and group pitch practice; (iii) online content, chat, and other features (iv) mentoring and teaching on presentational skills for a pitch event, and (v) assistance in the matching process between entrepreneurs and investors. The control group receives access to an online course designed to help the entrepreneur to write a business development proposition in a way that is attractive to investors without individual mentoring. The course covers several topics, including: (i) providing information about the requirements to commercialize new products and/or processes; (ii) describing an innovation and the benefits it provides; (iii) navigating development strategies; (iv) understanding competition and conducting market validation of the firm's main product/service; (v) creating a pitch; and (vi) presenting to investors

At the end of the training, there will be a semi-final pitch event, where treatment and control groups will have to give a 5-minute presentation to judges about their business development propositions, followed

by 5 minutes of questions, and judges will evaluate their investment readiness. The top 50 firms will then be invited to a final and real pitch event with local, regional, and international investors.

Scoring of Investment Readiness at Semi-Final Event

The short-run impact of the program will be evaluated through measuring the investment readiness of the firm according to scores of judges at the Belgrade Venture Forum event. Judges will judge the business on the following attributes:

a) Team strength

b) Technology and innovativeness

c) Demonstrated market success

d) Market attractiveness

The juries will be additionally asked to rate the following aspects:

e) Recent business development progress (3 month-period approximately)

f) Presentation performance

Finally, the jury members will be asked to also assign an overall rank-score to each beneficiary.

Aggregate score: An aggregate investment readiness score will be comprised used the following weights (a) 28%, (b) 21%, (c) 14%, (d) 7%, and (e) 30%. This strong focus on team and demonstrated ability to execute is in line with what investors would typically focus on at the early stage. The presentation performance (f) will then be used as a "hygiene factor" in which any company who ranks significantly below average in this dimension will not be selected to present on stage in the finals in Zagreb.

Beneficiaries will be assigned to presentation batches under consideration of their country of operation, industry, and technology used, as well as additional factors such as the initial score their project obtained when applying to this program. Each team will receive rankings from 4 judges. We will use the simple average of the scores from each judge in constructing the aggregate investment readiness score. In order to decide who goes to the final, jury members will used the final score and collectively rank the top 3 teams within each batch.

Short-run outcomes of interest

We hypothesize that the investment readiness program will improve the overall score, and each component, with the largest improvements to be seen in recent business development progress and presentation performance. We also hypothesize that the program may reduce the variability among judges in their assessment of how investment ready the firms are. We therefore will estimate the impacts on the following outcomes:

- Aggregate investment readiness score
- Scores on each of the 6 component scores

- Standard deviation among the 4 judge scores in terms of aggregate investment readiness score

We are also interested in whether this program makes it more likely firms are in the top of the distribution. This leads to the following outcome:

- Selected for Zagreb finals

Specification

We plan on running the following econometric specification as our base specification:

Outcome = a + b*Treat + c*Randomization Strata + e

Note this stratification implicitly controls for baseline investment readiness, baseline investor interest, and country.

As a robustness check, we will also control for judge fixed effects using the specification:

Outcome = a + b*Treat + c*Randomization Strata + d*Judge Fixed Effects + e

Testing for Heterogeneity in Treatment Effects

We hypothesize that the impact of the program is likely to be greater for firms that were less investment-ready to begin with, since firms that already had very high scores on all components have little room to improve.

We therefore will define the variable *belowmedianreadiness* as having a baseline investment readiness score below the median of 3 (45.1% of firms). We will then run the following specification:

Outcome = a + b1*Treat +b2*Treat*belowmedianreadiness+d*belowmedianreadiness+ c*Randomization Strata + e

And test whether b2>0 (the impact is greater for those with initially low readiness).

Dealing with Attrition/Missing Data

The investment readiness scores will only be available for firms which participate in the Semi-finals. We will therefore examine first whether treatment is related to participation in the semi-finals via the following take-up regression:

Participate in the Semi-Finals = a + b*Treat + c*Randomization Strata + e

And examine how the baseline characteristics of those who participate versus those who don't differ by comparing the same characteristics as used in Table 1 (our balance check table) for those who participate in the semi-finals versus those who don't. We will do this for the full sample, and also separately by treatment group. In addition, we will look at the initial distribution of baseline investment readiness scores (as in Figure 1) for the full sample participating in the semi-finals versus those who don't.

Then our approach will be the following:

1) First estimate treatment effects assuming missing-at-random attrition
2) Second, use the baseline investment readiness score data to impute the missing outcome data for firms who attrit. We will use the control group data to fit the following equation:
Outcome = a + b*baseline team strength + c*baseline market attractiveness+d*baseline product technology +e*baseline traction + f*Croatia +g*Serbia + h*has an outside investor

   We will then use the imputed outcome for the missing values in this set of robustness checks.

3) Third, if there is statistically significant differential attrition by treatment status, we will use Lee (2009, *Review of Economic Studies*) bounds to see how sensitive our results are to this differential.

Table 1: Balance Test

	Treatment	Control	P-value
Variables stratified on			
Incorporated/Registered in Croatia	0.25	0.24	0.612
Incorporated/Registered in Serbia	0.46	0.46	0.626
Baseline Readiness Score	2.95	2.92	0.150
Has an outside private investor	0.10	0.09	0.178
Other variables			
Market attractiveness score	3.08	3.05	0.851
Product technology score	2.47	2.43	0.835
Traction score	3.34	3.27	0.507
Team score	3.04	3.05	0.878
Sector is business and productivity	0.48	0.39	0.107
Sector is lifestyle and entertainment	0.18	0.23	0.295
Uses Cloud Technology	0.20	0.26	0.231
Uses Big Data	0.18	0.21	0.642
Place in value chain is developer	0.61	0.55	0.171
Place in value chain is service provider	0.59	0.54	0.372
Age of firm (years)	2.61	2.66	0.887
Early stage firm	0.30	0.33	0.475
Firm has revenue	0.48	0.51	0.621
Revenues in 2014	178073	184760	0.959
Number of employees	6.47	5.88	0.539
Age of main founder	38.22	36.81	0.204
Main founder has post-graduate education	0.49	0.48	0.816
At least one founder is female	0.16	0.22	0.128
Company has a global focus	0.60	0.58	0.576
Have accepted outside financing	0.34	0.37	0.656
Have participated in mentoring/accelerator program before	0.15	0.16	0.704
Sample Size	**174**	**172**	
Joint test of orthogonality of treatment p-value			0.573

Figure 1 shows that the two groups are also similar across the entire distribution in terms of initial investment readiness. As a result, any difference in investment readiness at the conclusion of the program can be reliability assessed as the impact of the program and not due to any pre-existing differences across groups.
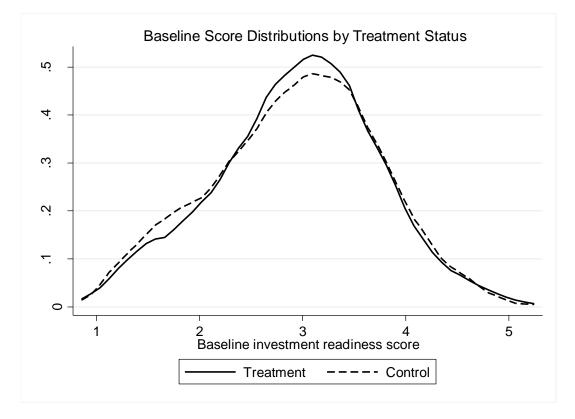
Figure 1: Initial Distributions of Investment Readiness for Treatment and Control Groups

Baseline Score Distributions by Treatment Status