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Long Term Impacts of Vouchers for Vocational Training: Experimental Evidence for Colombia·

Orazio Attanasio, University College London, NBER and IFS

Arlen Guarín, Carlos Medina, *Banco de la República*[**]

Costas Meghir, Yale University, NBER and IFS

Abstract

We use experimental data of a training program in 2005 in Colombia. We find that even up to ten years ahead, the *JeA* program had a positive and significant effect on the probability to work in the formal sector. Applicants in the treatment group also contributed more months to social security during the analyzed period, and to work for a large firm. Earnings of treated applicants were 11.8% higher in the whole sample, and they made larger contributions to social security. In addition, we also present non parametric bounds that for some percentiles of the sample of women, there are positive and nearly significant effects of the program. Thus, the effects of the program would have been capitalized both in increases in the likelihood of being formal, and increases in productivity. We also present evidence that the estimated program effects on the likelihood of working for the formal sector, the likelihood of working for a large firm, and the earnings in the formal sector, are not an artifact of analyzing multiple outcomes.

We also find that for the whole sample of applicants, those in the treatment group have 0.315 more years of education, and have a probability of graduating from high school 10 percent higher than the control group. We find no significant effect on the probability of attending college or any school program, nor on fertility decisions, marital status or some dimensions of assortative mating. Among applicants matching to the census of the poorest population, we find that beneficiaries are more likely to participate in the labor market, to be employed, and to be enrolled in a private health insurance at the time of the survey.

Finally, we find that the benefits of the *JeA* program are higher than it costs, leading to an internal rate of return of at least 22.1 percent. On the whole, the program was a cost-effective alternative, worth to consider to bridging the transit of youths from the informal to the formal sector in the future.

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I. Introduction

Developing skills and participating in the formal labor market is a central policy concern in developing countries. The issue acquires particular importance once we recognize that a well-functioning economy, which can attract investment and promote growth, requires individuals with sufficient levels of skills and work readiness (see, for instance, OECD 2012). Moreover, unskilled youth have particularly low labor market attachment and are vulnerable to poverty. According to Székely (2011), 20% of Colombian youths 15-18 years old were not in education, employment, or training by 2005, while Guarín and Medina (2015) show that in Colombian cities like Medellín, the same figure is as high as 44% for youth 16-20 years old. With these central issues in mind, on the wake of the worst recession after WWII Colombia experienced in 1999-2000, the Colombian Government implemented an important youth training program called *Jovenes en Acción* (*JeA*).[1] The program, which was operated between 2001 and 2005, combined classroom training with an internship and was offered to individuals who were pre-screened by private-sector training institutions, of which some were for-profit and some were not. These institutions designed the content of the courses and were responsible to find firms operating in the formal labor market that would accept the youths for the required internships; this mechanism provided clear incentives, as payments were linked to the completion of both the class room and the internship component.

To evaluate the program, a randomized trial was carried out and analyzed by Attanasio, Kugler and Meghir (2011) (AKM henceforth). They found that the program benefited mainly women,

[1] See Gaviria and Núñez (2002), Barrera and Corchuelo (2003), Medina and Núñez (2005), Sarmiento and others (2007), and Fedesarrollo (2009, 2010), among others for issues relating to training in Colombia.

increasing their employment, their participation in the formal sector and their earnings. Under the most conservative scenario the internal rate of return of the program for women was calculated to be 21.6%. For men however, there was no discernible effect other than a shift to the formal sector. This in itself is important however, because the formal sector offers numerous benefits and because firms that operate in the formal sector tend to be higher productivity (see Meghir, Narita and Robin, 2015), which might lead possibly to further training and professional opportunities.

Informality is a major issue around the world and in Latin America in particular. Perry et al. (2007) present figures showing that the share of the labor force not covered by a pension scheme in Latin American countries is about four times as large as it is in advanced countries, while the share of labor force self-employed is about twice as large. According to Medina et al. (2013), Cárdenas and Mejía (2007), and López (2010), since the mid 1980s informality (based on the ILO definition) has fluctuated in Colombia from 53% to 60% and is particularly high among the young (see Saavedra and Medina, 2013), at a time which is important for laying the foundations of a productive career.

Ten years have passed since the *JeA* experiment and the program itself ended. An important question, given the promising short run impacts found by AKM, is whether the program had any long-term effects. This question is particularly salient given the effects the program had on participation in the formal labor market: given the importance of informality in Latin America and in Colombia specifically, programs that can reduce informality in the long run are likely to be very valuable from both a growth and a welfare point of view.

Although there are other experimental studies evaluating job training programs implemented in Latin American countries, there is no one to our knowledge that had assessed their effect beyond a three years horizon.[2] We are in the extremely fortunate position to be able to link into the experimental sample administrative information on whether workers are employed in the formal sector and if so what their earnings are. This allows us to evaluate whether the program achieved one of its longer-term aims, namely to increase attachment to the formal sector. Moreover, the earnings data, albeit censored, allows us to estimate bounds on the treatment effects on underlying productivity. Finally, additional administrative data allow us to look at a variety of additional outcomes.

Thus, in this paper, we merge the experimental data of the Colombia's *JeA* evaluation collected in 2005 with social and labor market administrative records collected between July 2008 and June 2014, which we describe in detail below. We then use the resulting data to assess its impact on a variety of outcomes.

We find that the *JeA* program had a positive and significant effect on the probability to work in the formal sector, and those applicants in the treatment group contributed more months to social security during the analyzed period. Beneficiaries of the *JeA* program were also more likely to work for a large firm. Formal earnings of treated applicants were 11.8 percent higher in the whole sample, and they made larger contributions to social security. We also find that for the whole sample of applicants, those in the treatment group have 0.24 more years of education. The long run effects of the program are stronger for women than for men, consistently with the evidence in AKM about the short run impacts. For women we also find some suggestive

[2] Card, Ibarrarán, Regalia, Rosas and Soares (2011), and Ibarrarán, Ripani, Taboada, Villa and Garcia (2014) provide experimental results for the short-term, while Alzúa, Cruces and Lopez (2014) present experimental evidence three years after graduation.

evidence that the program improved their productivity (in addition to improve their chances of working in the formal sector).

The rest of the paper is organized as follow: we first provide, in Section 2, information on the background of the *JeA* program. In Section 3, we describe the data used in the paper and provide some descriptive statistics of it. In Section 4, we present the estimated effects of the program and, in Section 5, its cost-benefit analysis. Section 6 concludes.

II. The Intervention

The *Jóvenes en Acción* program was a training program for urban young unemployed that was implemented in the early 2000s in Colombia as part of a wider strategy called *Red de Apoyo Social*, aimed at providing a safety net for the poorest sectors of the population after the crisis that hit the country in the late 1990s.[3] It was initially funded with a USD$70 million loan from the Inter-American Development Bank, and was targeted to unemployed youths 18 to 25, who belonged to the poorest population classified in the two lowest levels of a score, called SISBEN, which is used in Colombia to target all welfare programs.[4] As DNP (2000b) highlights, unemployment rates of youths between 18 and 25 years of age of the ten largest metropolitan

[3] The Colombian crisis of the late 1990s is described by Medina, Núñez and Tamayo (2013). The first program of the *Red de Apoyo Social* was created by means of the CONPES policy document Number 3075 of March 15, 2000 (DNP, 2000a), and was aimed at generating employment for the poorest, while program *Jóvenes en Acción* was simultaneously created with program *Familias en Acción*, by the CONPES policy document 3081 of June 28, 2000 (DNP, 2000b), with a budget for both programs of USD$426 million, USD$320 million of which were to be provided by The World Bank and the Inter-American Development Bank.

[4] SISBEN is the acronym in Spanish for Information System for Beneficiaries Selection, and it is composed of six levels built with the quality of life SISBEN score, used in Colombia to target public subsidies. To apply to the program, individuals were additionally required to have a valid id, and if the applicant a mother of children under seven years of age, she must present an official document to prove her maternity. Applicants that had previously taken training courses at SENA or any training institution were also eligible to *Jóvenes en Acción*.

areas, living in the first and second lowest deciles of the income distribution, at the turn of the Millennium were 62.8 percent and 52.8 percent respectively. The program was implemented in the seven main cities of the country: Bogotá, Medellín, Cali, Barranquilla, Bucaramanga, Manizales and Cartagena. According to FIP and DNP (2001), by 2001, the program planned to enroll about 100,000 students in these cities between 2001 and 2003. According to AKM, however, it actually began to enroll them in 2002, and, by 2005, it had enrolled 80,000 students.

The program's goal, which we describe in more detail in Appendix A, was to increase the employability of the young beneficiaries and provide them support for building was what called by the program, their *project of life*. More specifically, its objectives were: (i) to develop the youths' occupational skills, so to increase their likelihood to become employed and improve their performance at work, (ii) to promote the private supply of relevant job training programs for poor youths, and (iii) to put productive poor youths and training institutions closer to firms.

Jóvenes en Acción essentially consisted of training courses designed and provided by private institutions, known as ECAP, after the Spanish acronym for training institutions. Each course was expected to train about 30 unemployed youths selected amongst eligible applicants. The course had to have three main components: (i) classroom training; (ii) on-the-job training; and (iii) the youth's *project of life* (FIP and DNP, 2001). The aim was to develop occupational skills, social skills and broader career objectives. The program also included a small stipend of about

USD$2.20 per day for trainees without children under seven years of age, and to about USD$3.00 per day for women with children under seven.[5]

The training institutions designing and offering the courses could be for profit or not for profit and they had to satisfy certain criteria, listed in Appendix A. AKM report that 43 percent of them were for profit. In 2005 there were 114 ECAPs offering 441 courses to 26,615 trainees, with their instructors teaching about 7.6 hours per day.[6]

A unique feature of the program was that the ECAPs were paid a relatively small amount if a youth completed only the classroom component. A substantial fraction of the overall payment, instead, was conditioned on the student completing the apprenticeship with the participating firms in a timely fashion (see FIP and DNP, 2001). Moreover, the ECAPs would receive additional payments if the beneficiaries were hired by the firms that trained them. To the government, the total cost of the program is the sum of the cost of the course, plus the maintenance transfers disbursed during the six months (See FIP and DNP, 2001). This incentive scheme, which stressed the need to identify skills for which a demand was present in the labor market, was one of the most innovative characteristics of the program, especially compared to the training programs operated since 1957 at SENA, Colombia's government institution providing training, which often did not relate to the demand for specific skills in the labor market (See Saavedra and Medina, 2013).

[5] Transfers to women with children under seven year of age were not contingent on the number of their children under seven, and were paid weekly per day in which beneficiaries had attended their courses during their classes, and biweekly, after they completed their training, during their training period. See FIP and DNP (2001), DNP (2008, 2002), and AKM. Beneficiaries were also covered by personal accidents insurance, and by civil liability insurance, but not health insurance, as most of the beneficiaries were likely to be covered by the non-contributory health system that insures the poorest Colombians.

[6] 40 percent of the beneficiaries were from Bogotá, 18 percent from Medellín, 16 percent from Cali, 11 percent from Barranquilla, 7 percent from Bucaramanga, 5 percent from Cartagena, and 2 percent from Manizales. The total amount invested was US$22 Millions (See *Ministerio de la Protección Social*, 2005)

III. Data

In our empirical analysis, we use two types of data. First, we use the evaluation survey of program applicants that was collected at the start of the program and used in AKM to estimate the short run impact of the program. Second, we use two administrative data sources to follow the respondents in the evaluation survey several years after the completion of the intervention. In this section, we describe the two data sources and discuss the selection criteria used in the analysis, starting with the evaluation data.

1. Experimental Data of the *Jóvenes en Acción* Program

For the purpose of evaluating the intervention, the ECAPs selected up to 50% more applicants than the places available for the courses. 30 of the selected applicant were then randomly assigned to the course while the others were used as a control group. The evaluation survey is described in AKM and is a random sample of the universe of applicants and consists of about 50% treated and 50% control subjects although this was not achieved for each training center.[7] Here we stress that this design maintains a selection role for the ECAPS, which can be important for the impact of the intervention. It should be remembered that the ECAPS had strong incentives to select individuals that would complete the entire program.

Appendix Table A1 shows descriptive information and results on the balance of the evaluation sample. Both for women and men, the sample is well balanced. Nonetheless, when we pool students of both genders, we find that beneficiaries are slightly more educated.

[7] The sample was stratified to insure it would be balanced by city and gender.

2. Administrative Records

The data sources that we use in this paper to estimate the program's long run effects, consist of two different administrative datasets, known as SISPRO dataset and the SISBEN survey, (from their Spanish acronyms).

(i) The SISPRO Data

The SISPRO contains information from the Unified Register of Contributions, known as PILA from its Spanish acronym, which is the national information system used by firms to file the mandatory contributions to health, pensions and disability insurance they pay for their employees. Firms must report each month the amount contributed for each one of their employees. The Ministry of Social Protection has universal coverage of all the monthly contributions in the country since July 2008. Thus, this data provides us with the possibility of following up the individuals in the evaluation survey and constructing a longitudinal database with monthly frequency from July 2008 to December 2014. Since the PILA contains the monthly census of all contributions in the country, individuals in the evaluation database that were not found in the PILA register are assumed to be out of work, unemployed, or working in the informal labor market. The structure of the data also allows us to observe individuals entering and exiting the formal labor market.

(ii) The SISBEN survey

Virtually all social programs in Colombia are targeted through the so called SISBEN index. This index is constructed as a weighted average of a number of household level variables.[8] Information on the variables used to construct the score is collected with a survey, which is

[8] The formula to compute the index and the variables that enter the index are not publicly known. Moreover, the components of the SISBEN and their weight are periodically updated.

routinely administered to about the 60% poorest segment of the population in Colombia.[9] In our analysis, we use the surveys collected between mid 2009 and early 2015. We then match, using a variety of methods and information sources, the data from the evaluation survey with the SISBEN data. We therefore construct a long-run follow up with the matched applicants', and their households' characteristics, at the date their surveys were collected. Since this survey is a census of the poorest population, applicants that were not matched to it are assumed to belong to the upper income levels of the population.

An individual can, in principle, be in both administrative data and many indeed are. However, it is clear that the two data sources are somewhat complementary: somebody with a formal employment and high earnings will be found in the PILA data sets but will be, *ceteris paribus* less likely to be in the SISBEN data base. Conversely, people in the SISBEN data, as they are being targeted by welfare programs are less likely to be in PILA.

IV. Descriptive Statistics

In Table 1, we present some descriptive statistics based on the baseline information of applicants, and also based on their follow-up information from SISPRO and SISBEN. Our baseline information includes 3,956 applicants, 54% of whom are women. In Panel A, we notice that at the moment they applied to the program, they were on average 21 years old, 18 percent were married with an average of 10 years of education. 52% of applicants were employed and 38% of the total were wage earners. Their average earnings were COP$103 thousands (at December

[9] The SISBEN survey began to be collected in 1992 by all Colombian municipalities, and after its collection, whenever any household wanted its information to be updated, it had to require it to its municipal Department of Planning, in charge of the local SISBEN administration. The SISBEN was updated for first time for the whole country between 2003 and 2005, and the second time it was updated was between 2009 and 2010. Since the first time it was updated, its records became much more reliable and its score much less manipulable (See Bottia et al., 2012).

2013 pesos). Only 8.9% worked in the formal sector, 7.8% had a written contract, and they worked an average of 12.3 days per month and 25.9 hours per week. Men were less likely to be married, and more likely to be working, and in particular, to be wage earners, with higher earnings, more formal and more likely with a written contract. Finally, they worked more days per month and hours per week (Table 1, Panel A).

In panel B of table 1, we notice that 77% of applicants matched at least one month with the PILA between July of 2008 and December of 2014, and on average, they matched 31.2 months in that period and contributed for an average of 870 days. In the whole period, they earned an average of COP$23 millions of December 2013 in the formal sector (COP$297 thousand per month), and contributed an average of COP$3.5, COP$2.6, COP$0.8 and COP$0.3 millions to pensions, health, *Cajas* and SENA respectively. Men were more likely to be formal and to earn and contribute more.

Finally, in panel C, we report outcomes that were extracted from the SISBEN database. About 71% of the applicants were matched in to SISBEN, with the matching rate being higher for males than females. Those observed in SISBEN, had, when they were surveyed, an average education slightly lower than the average of all applicants at baseline, which is natural since the SISBEN survey only includes the poorest. Of those observed in the SISBEN survey, 70% had graduated from high school, 63.1% participated in the labor market, 52.4% were employed and 10.8% unemployed. Their monthly income was COP$254 thousand, and the income of 24% of them was above the minimum wage (Table 1, Panel C).

Table 1. Descriptive Statistics

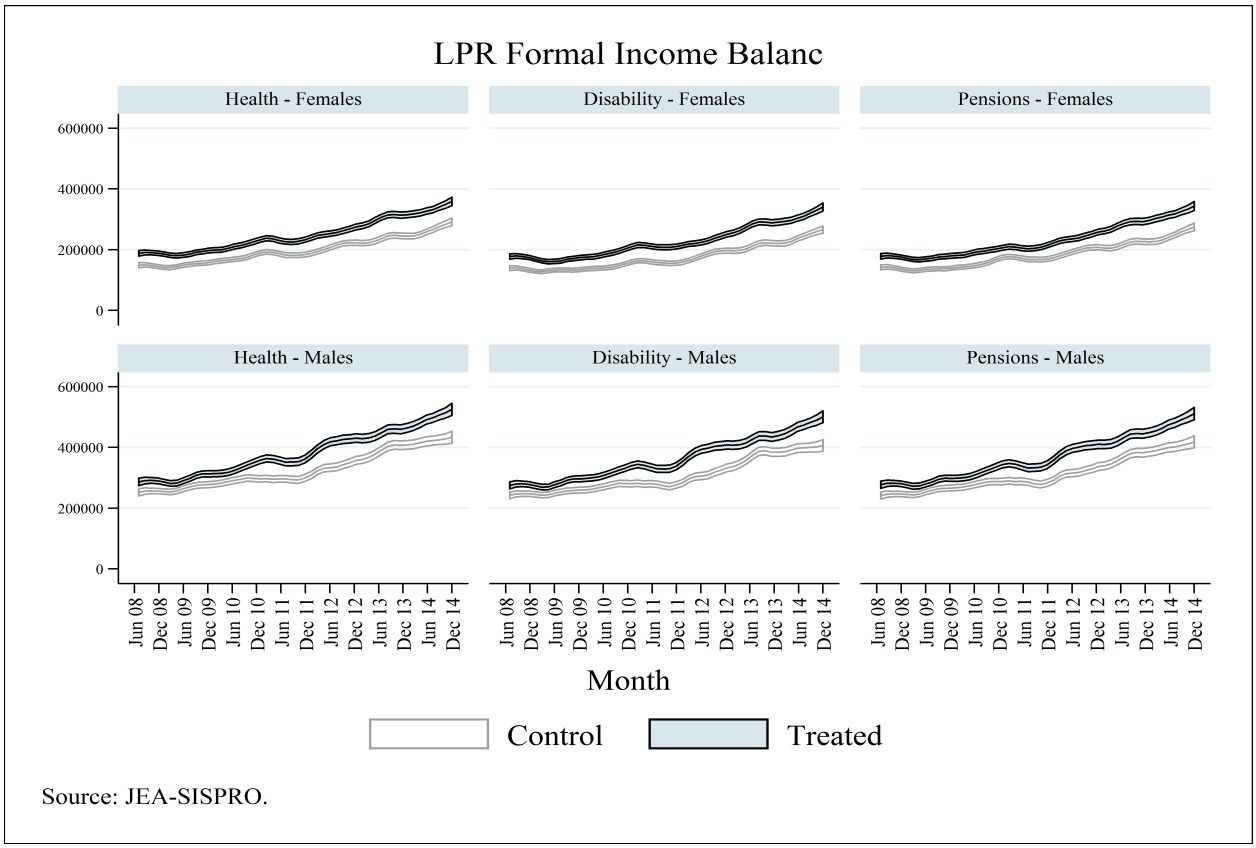
Variable	*All*		*Women*		*Men*	
	Mean	*S.D.*	*Mean*	*S.D.*	*Mean*	*S.D.*
			A. Baseline characteristics*			
Women	0.537	0.499	1.0	0.0	0.0	0.0
Age	21.1	2.0	21.3	2.1	20.8	2.0
Married	0.179	0.383	0.257	0.437	0.088	0.283
Years of education	10.2	1.7	10.1	1.7	10.3	1.6
Employment	0.519	0.500	0.470	0.499	0.576	0.494
Paid employment	0.378	0.485	0.354	0.478	0.406	0.491
Salary (zero if out of work, COP$)♦	103,088	154,658	87,661	140,944	121,006	167,461
Profit (self-employment earnings, COP$)♦♦	21,596	76,862	15,388	64,056	28,806	88,940
Formal (zero if out of work)	0.089	0.284	0.073	0.260	0.107	0.309
Contract (zero if out of work or no written	0.078	0.269	0.067	0.250	0.091	0.288
Days worked per month	12.3	12.7	11.1	12.6	13.8	12.7
Hours worked per week	25.9	28.9	22.9	28.2	29.4	29.3
			B. Total formal outcomes (SISPRO, Jul/08-Dec/14)**			
Probability of working in the formal sector	0.774	0.418	0.719	0.449	0.837	0.369
Months working in the formal sector	31.2	27.9	26.0	26.7	37.3	28.0
Total days contributed in the formal sector	870.6	814.8	733.5	780.9	1,029.9	824.5
Total formal income in the formal sector (RCOP$)	23,231,591	26,435,269	18,497,244	22,651,521	28,730,494	29,302,705
Total contributions to pensions (RCOP$)	3,472,725	4,264,398	2,699,890	3,661,581	4,370,367	4,716,430
Total contributions to health (RCOP$)	2,567,306	2,991,278	2,046,095	2,562,759	3,172,688	3,321,874
Total contributions to *Cajas* (RCOP$)	817,285	1,043,165	627,096	883,988	1,038,188	1,163,724
Total contributions to SENA (RCOP$)	292,101	402,498	225,883	343,519	369,012	449,653
			C. Sisben outcomes***			
Matching to Sisben survey	0.716	0.451	0.750	0.433	0.677	0.468
Months between the end of the program and the Sisben survey	69.6	19.4	69.5	19.3	69.6	19.6
Years of education	9.7	3.2	9.6	3.2	9.8	3.3
High school graduation	0.702	0.458	0.681	0.466	0.729	0.445
Labor force participation at the time of the Sisben survey	0.631	0.483	0.517	0.500	0.779	0.415
Employed at the time of the Sisben survey	0.524	0.500	0.426	0.495	0.650	0.477
Unemployed at the time of the Sisben survey	0.108	0.310	0.091	0.288	0.129	0.335
Monthly income (RCOP$)	254,499	417,033	211,425	468,903	309,975	330,735
Monthly income at least the minimum wage	0.242	0.428	0.179	0.384	0.323	0.468

* 3,956 observations; ** 3,940 observatons; *** 2,869 observations. Observations were weighted by P_{SCi} (1-P_{SCi}) as explained in the text. COP$: Colombian pesos at the moment students apply (2014). RCOP$: Colombian pesos of December 2013. ♦ Zero if does not receive salary earnings. ♦♦ Zero if does not receive profits. The *Cajas* are private social entities created to administer a family subsidy for low wage employees with children, and to provide recreation for their members. SENA is the cronym for National Service for Learning, the public entity in charge of providing job training, technique and technological higher education programs.

We now present more information on outcomes related to formal employment, in particular, the average earnings of the applicants, the average earnings of applicants matched to PILA, and the

likelihood of matching to the PILA survey. Individuals are assumed to be matched to the PILA if they hold a formal job. Figure 1 shows the average (formal) earnings of applicants, including both treated and control samples. Earnings of individual not matched in the PILA (and hence, out of work, unemployed, or informal) are set to zero. The sample is weighted, by P_{SCi} (1-P_{SCi}), where P_{SCi} is the population probability, taken from administrative records, that an applicant i, that applied to course C, at site S, be offered a place. These weights will be used throughout, including in the estimation of the effects.

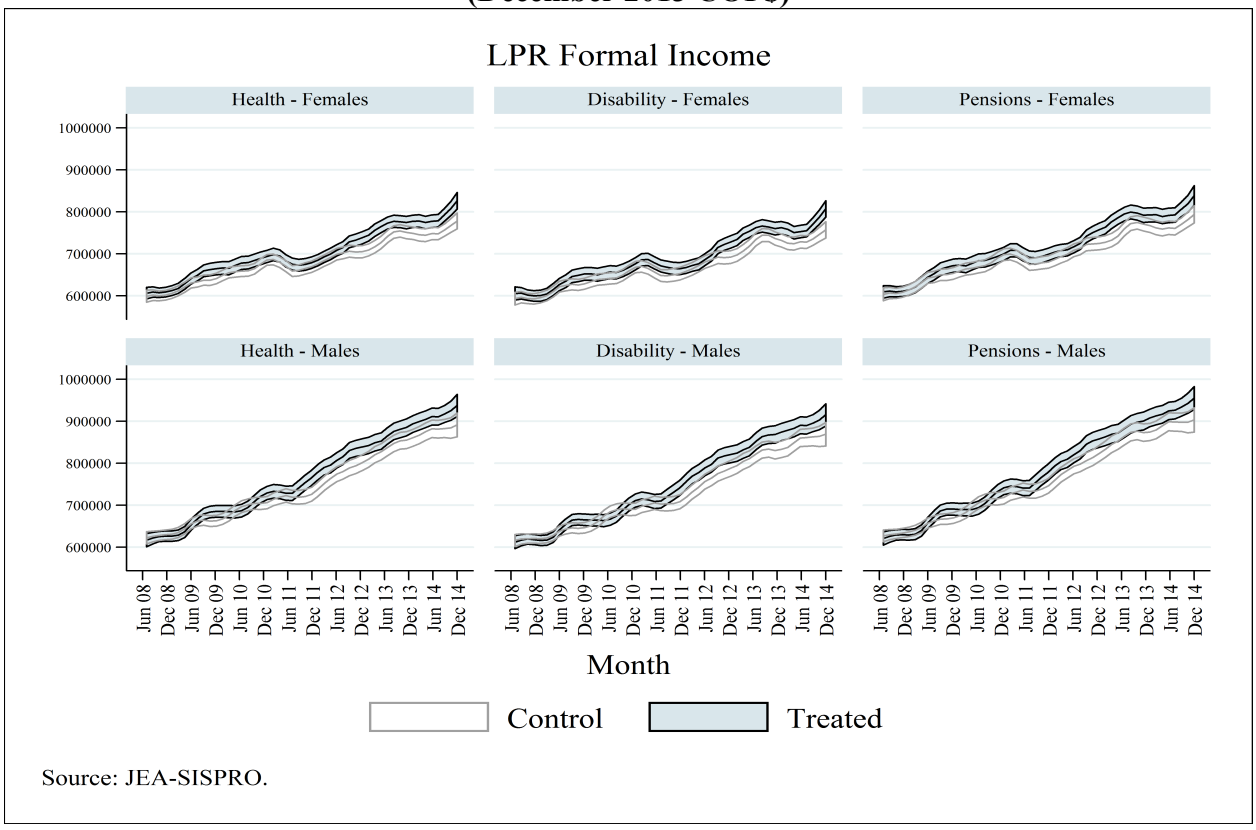
Figure 1. Evolution of Formal Average Earnings of Applicants (COP$ of December 2013)



There is a clear gap in favor of beneficiaries of the *JeA* program, which is slightly increasing over time. The figure gives a first view of the estimates we present later of the effect the program on formal earnings, arising partly from a higher likelihood of being a formal employee, that is, of matching to PILA, and, possibly, from increases in productivity.

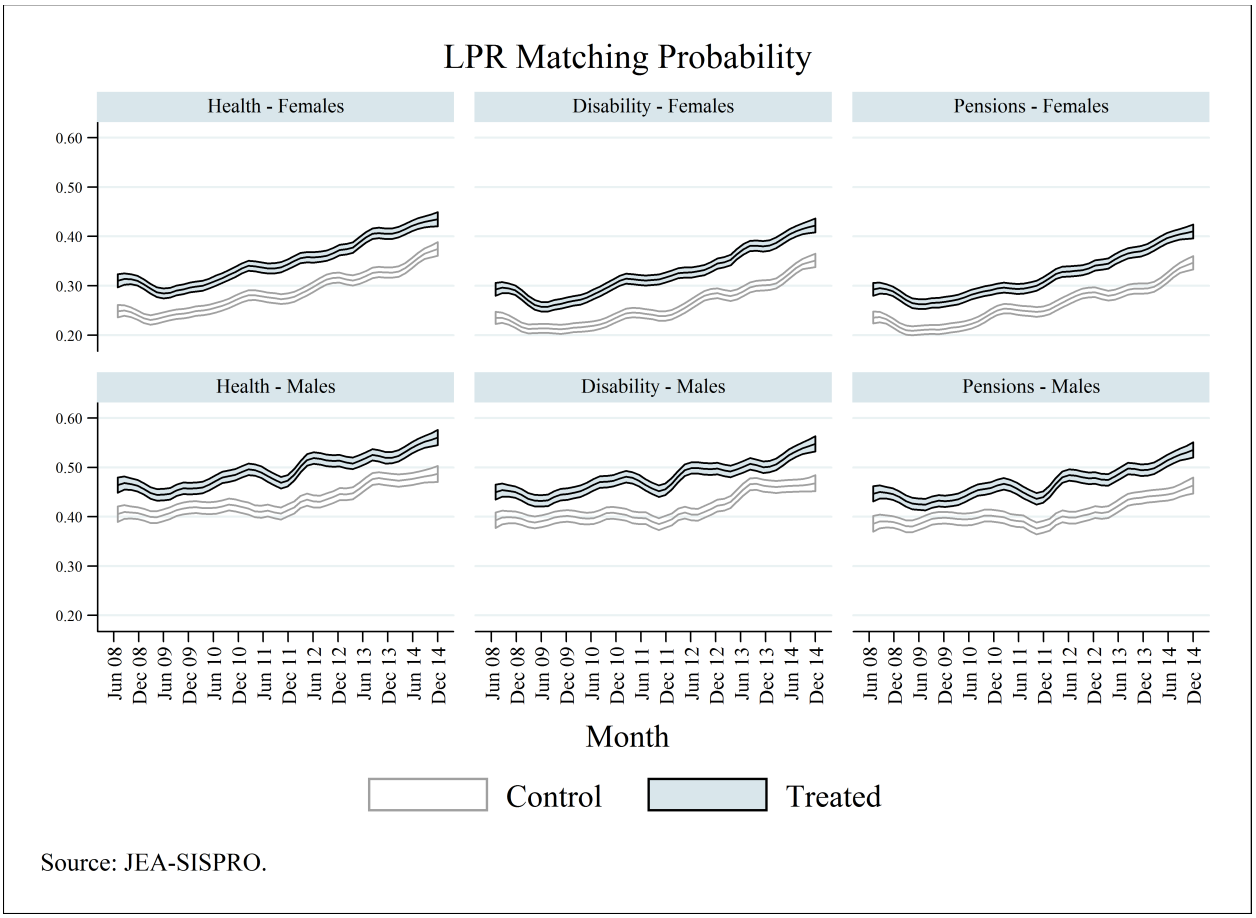
Figure 2 shows the mean earnings only of applicants who were matched to PILA. Until 2011, we do not observe significant differences between individuals who were treated and those who were not. However, starting in 2011, we find an increasing gap in favor of the beneficiaries. The gap is larger for men than for women. It should be remembered, however, that this is a self-selected sample, an issue we will address later by the estimating non-parametric bounds of the effect on productivity.

Figure 2. Evolution of Formal Earnings of Applicants that were matched to the PILA (December 2013 COP$)



Source: JEA-SISPRO.

Figure 3. Match rates to formal employment data by Treatment Status, Gender and Type of Contribution



Finally, Figure 3 shows the effect of the program on the probability of matching to PILA, which shows a similar pattern to the one observed in Figure 1. Altogether, the figures suggest that most of the effects on earnings of the *JeA* program are capitalized by beneficiaries in the form of a higher probability of becoming a formal employee, rather than by means of an increase in their productivity.

V. Program Effects

To estimate the long term impacts of the program we use the following model:

$$Y_{ij} = \alpha D_i + X_i\beta + SC_j + \varepsilon_{ij} \quad (1)$$

Where Y_{ij} is the outcome of person i in site and course j, D_i is the treatment indicator, and it is equal to 0 if the applicant was randomly denied a place in course j, or 1 if he was randomly offered a place in it, X_i is a vector of characteristics of the applicants at baseline, such as gender, initial employment and experience, education and so on. Considering that randomization in the experimental design took place at the course level, we include SC_j, a site-by-course fixed effect, which allows us to interpret our parameter of interest (α) as the weighted average of the program effects across all courses. Finally, ε_{ij} is a random error term. In all of our estimates below we compute robust standard errors, clustered at the site-by-course level, and whenever we use panel data, we cluster them at the applicant level.

We present estimates of the "intent to treat" effect, that is, the mean effect of the offer of treatment. However, since compliance among applicants is 97%, our estimates should not differ substantially from the average treatment effect in this population. We weigh each applicant by P_{SCi} (1-P_{SCi}), where P_{SCi} is the population probability, taken from administrative records, that an applicant i, that applied to course C, at site S, be offered a place. While we report the results obtained using this weighting scheme, we also compute unweighted estimates, which are available on request. Weighing does not make any substantial difference to our results or conclusions because the probabilities do not vary much.

1. Effects of the *Jóvenes en Acción* on participation in the Formal Labor Market

We use the PILA data for each month between July 2008 and December 2014 to track individuals in the formal market. When an individual is not recorded in the dataset they are either

unemployed or working in the informal market. We focus on three outcome variables: whether an individual is working in a formal job in any one month, whether they are working in a large formal firm, and their earnings. These are set to zero for those who do not appear in the administrative data set (PILA).

Table 2. Effects of the *JeA* Program on Labor Market Outcomes for the Whole Sample♦

		All	
		Control's Mean (s.d.) (1)	Coefficient on being offered training (s.e./R-W p-value) (2)
Total Formal Income	*Coefficient*	258,922	35,331
	s.d. - s.e.	(432,480)	(10,766)
	R-W p-value		(0.025)**
	Observat.	148,746	306,696
Probability of working in the formal sector	*Coefficient*	0.36	0.042
	s.d. - s.e.	(0.479)	(0.012)
	R-W p-value		(0.009)***
	Observat.	148,746	306,696
Probability of working in a large firm of the formal sector	*Coefficient*	0.189	0.032
	s.d. - s.e.	(0.392)	(0.01)
	R-W p-value		(0.025)**
	Observat.	148,746	306,696

♦COP$ of 2013. *** Significant at the 1% level. ** Significant at the 5% level. * Significant at the 10% level. All regressions control for siteby-course fixed effects and the following pretreatment characteristics: age, education, marital status, employment, paid employment, salary, self-employment earnings, whether working in the formal sector, whether working with a contract, days worked per month, and hours worked per week. We additionally include a gender dummy and its interactions with all covariates. Standard errors are corrected by clustering at the applicant level. R-W p-values were estimated taking into account that there were multiple hypotheses, using the Romano and Wolf (2005), and Romano, Shaikh and Wolf (2008) procedure, on each of the three outcomes included in this table, based on the bootstrap (1000 replications) standard errors stratified

The results for the whole sample are reported in Table 2, while results by gender are shown in Table 3. We include training center fixed effects and we report stepdown p-values computed using the procedure derived by Romano-Wolf (2005) adjusting for multiple testing in groups. So in Table 2 the p-values are adjusted for testing the three outcomes in that Table. In Table 3 the R-W p-values account for testing of all 6 outcomes reported there. All levels of significance (and the asterisks in the table) are reported based on the R-W p-values and not on the standard t-statistics.

Table 3. Effects of the *JeA* Program on Labor Market Outcomes by gender

		Women		Men	
		Control's Mean (s.d.) (3)	Coefficient on being offered training (s.e./R-W p-value) (4)	Control's Mean (s.d.) (5)	Coefficient on being offered training (s.e./R-W p-value) (6)
Total Formal Income	*Coefficient*	200,103	35,495	327,673	35,126
	s.d. - s.e.	(366,562)	(12,421)	(489,732)	(18,597)
	R-W p-value		(0.065)*		(0.251)
	Observat.	81,588	165,750	67,158	140,946
Probability of working in the formal sector	*Coefficient*	0.29	0.047	0.43	0.036
	s.d. - s.e.	(0.453)	(0.015)	(0.496)	(0.019)
	R-W p-value		(0.052)*		(0.251)
	Observat.	81,588	165,750	67,158	140,946
Probability of working in a large firm of the formal sector	*Coefficient*	0.146	0.038	0.240	0.025
	s.d. - s.e.	(0.353)	(0.013)	(0.427)	(0.016)
	R-W p-value		(0.065)*		(0.251)
	Observat.	81,588	165,750	67,158	140,946

♦COP$ of 2013. *** Significant at the 1% level. ** Significant at the 5% level. * Significant at the 10% level. All regressions control for siteby-course fixed effects and the following pretreatment characteristics: age, education, marital status, employment, paid employment, salary, self-employment earnings, whether working in the formal sector, whether working with a contract, days worked per month, and hours worked per week. Standard errors are corrected by clustering at the applicant level. R-W p-values were estimated taking into account that there were multiple hypotheses, using the Romano and Wolf (2005), and Romano, Shaikh and Wolf (2008) procedure, on each of the three outcomes included in this table, based on the bootstrap (1000 replications) standard errors stratified by city, gender and treatment status.

Formal Earnings. We find that formal earnings is about COL$35,000 higher among the individuals who were randomly assigned to the training courses than the formal earnings of the

control group. This corresponds to a 13.6% increase in formal earnings. The RW p-value associated to this effect is 0.025. This shows a remarkable persistence of the effects of the program, beyond the cost-benefit analysis in AKM, where a 10% depreciation rate was assumed. In terms of pesos, the effect is similar for males and females, at about 35k (Table 3), although for women it represents a higher percentage increase: female earnings in the control group are COL$200,000, while those for males are COL$327,000. Thus the respective percentage increases are 17.5% for females and 10.7% for males. Once we control for multiple testing the female effect is significant at the 6.5% level, while the male effect is insignificant.

Probability of working in the formal sector. The probability of working in the formal sector is increased by 4 percentage points as a result of the program (Table 2). This effect is significant at the 1% level (RW p-value=0.009). When we look at the same impacts separately for women and men, in Table 3, we find that for females the probability of being a formal employee increases by 5 percentage points (RW p-value of 0.052). For males, the point estimate is similar and the t-statistic is 1.89, but the adjusted RW p-value is 0.25 and is therefore not statistically different from zero. Participants in *JeA* worked on average 3.33 months longer in the formal sector, quite precisely estimated with a standard error of 1.19.

Probability of working in a large firm. Finally, we consider the probability of working for a large firm as an additional outcome variable. Large firms often offer better career prospects through promotion opportunities and may be a proxy for higher quality jobs. We find that the proportion of those working in large formal firms increases by 3.2pp (p-value 0.025). Breaking down the impact by gender we find a 3.8pp effect for women (p-value 0.065). For men the effect is 2.5pp and totally insignificant.

Bounding the effects on productivity.

The estimated effects point to a strong and persistent effect of the program on working in the formal sector, which is reflected both in the participation and in the earnings measures. However this does not necessarily imply that the trainees have become more productive. This is not an issue that can be assessed experimentally simply because we only observe earnings conditional on working in the formal sector; in other words comparing the formal earnings of those who went through the program to the formal earnings of those who did not, as pointed out in AKM is subject to selection bias, because of the effect of the program on formality. Trainees who select into the formal sector are likely to be very different from controls who select into the same sector.

One possibility is to bound the effects on earnings, following an approach similar to that used by AKM. To sharpen the bounds they relied only on a monotonicity assumption, i.e. that participating in training could not discourage work. However they had to deal with a selection problem less severe than what we are facing, as missing earnings were confined to non-workers. In contrast to this study, they also observed the earnings of those with jobs in the informal sector. Therefore, to get tighter bounds in our context, we impose stronger restrictions as in Angrist et al. (2006).

In particular, we assume that the training program could not lead to a decline in earnings, $Y_{1it} \geq Y_{0it}$, where the first subscript is 1 for those allocated to treatment and 0 for those not.[10] This is not an innocuous assumption because it states that lost experience from participating in training has either negligible effects or is dominated by the effects of training. Now, define T_{1it} to be a dummy for whether an individual *i* works in the formal sector when allocated to training.

[10] This is the *monotone treatment response* assumption used by Manski (1997).

Similarly T_{0it} is a dummy for whether an individual i works in the formal sector when not allocated to training. We assume that $T_{1it} \geq T_{0it}$, which is the monotonicity assumption of Imbens and Angrist (1995).[11] Define $q_0(\theta)$ to be the θ-quantile of the distribution of Y_0, and $q_1(\theta)$ the θ-quantile of the distribution of Y_1. Finally, T is an indicator of formality and D is the randomization defining allocation to treatment. Angrist et al. (2006) show that

$$E[YT|D=1, YT > q_1(\theta)] - E[YT|D=0, YT > q_0(\theta)]$$

$$\geq E[Y_1 - Y_0 | Y_0 > q_0(\theta), T_0 = 1]$$

$$\geq E[YT|D=1, YT > q_0(\theta)] - E[YT|D=0, YT > q_0(\theta)] = \Delta_{LB} \quad (2)$$

We can further tighten the bounds by exploiting the fact that in our experimental setting the vector (Y_{1it}, Y_{0it}, T_{1it}, T_{0it}, $X_{it\text{-}1}$) is independent of D_i, where $X_{it\text{-}1}$ is the vector of baseline characteristics as in Lee (2009). In this case, we can derive bounds conditional on X and then average over *X's* distribution among formal workers who were not treated. Thus the lower bound takes the form

$$\Delta_X^{LB} = E[YT|D=1, YT > q_0(\theta), X] - E[YT|D=0, YT > q_0(\theta), X]$$

$$\Delta_0^{LB} = \int \Delta_X^{LB} dF(X) \quad (3)$$

where $F(X)$ is the distribution function of X conditional on $D = 0$ and $T = 1$. The upper bound is computed in a similar fashion.

In Panel A of Table 4, we show the estimated bounds by demographic group obtained using equation (2), based on the applicants' formal earnings, as reported when they contributed to health, disability, pensions, from which we take the maximum. We estimate lower and upper bounds at different percentile levels. First, including all control individuals matched to PILA

[11] See Angrist et al. (2006) and Lee (2009).

(65th percentile), and then, including only those on top of the 75th, and 85th income percentiles. The table shows that, for women, the upper bound of the impact of the *JeA* program on earnings is positive, significantly different from zero and large. It is particularly high at the 65th and the 85th percentiles: the shape of the impacts is U-shaped, with a minimum at the 75th percentile, both in absolute and percentage terms. For men, the story is very different: the upper bounds on the impacts are much smaller and never significantly different from zero. For the overall sample, the impact reflects the pattern of the impact of women, except that the minimum is at the 75th percentile. As for the lower bounds, they are never significantly different from zero. In the case of men, all point estimates of the lower bound are actually negative.

In panel B, we also condition on the specific ECAP individuals attended, and compute bounds based on equation (3). In this case, we still find positive and significant upper bounds, although their point estimates are smaller than those in Panel A. The lower bounds are higher than those in Panel A, and at the 65th percentile the lower bound is significantly positive for women at the 10%. For men, again, we find much smaller impacts and, again, all lower bounds are negative and, in the case of the 85th percentile, significantly different from zero. The point estimate of the upper bounds in the 85th percentile is negative (although not significantly so).[12]

We summarize the evidence from the bounds by saying that there is some suggestive evidence that the program might have improved the productivity in the formal sector of the female youths who received it. The increase in formal earnings for men, instead, seems to be completely driven by the increasing formality, rather than by an increase in productivity.

[12] We do observe that the *JeA* effect increases with time: the estimates in table 4 imply a relative increase in earnings for women of 9.2%, but when we get the lower bound estimate using only 2014 data, its relative effect becomes 14.1%.

Table 4. Effects of the *JeA* Program on Monthly Earnings♦: Non Parametric Bounds

Quantile		All			Women			Men		
		Control's Mean Above Ouantile (s.d.)	Lower Bound (s.e.)	Upper Bound (s.e.)	Control's Mean Above Ouantile (s.d.)	Lower Bound (s.e.)	Upper Bound (s.e.)	Control's Mean Above Ouantile (s.d.)	Lower Bound (s.e.)	Upper Bound (s.e.)
		(1)	(4)	(5)	(4)	(5)	(6)	(7)	(8)	(9)
					A. Bounds					
65th perc.	*Coefficient*	870,516	-692	83,944	805,764	40,608	145,958	898,712	-10,660	25,771
	s.d./s.e.	(509,807)	(21,082)	(24,391)***	(403,162)	(43,540)	(55,876)***	(502,691)	(22,776)	(23,965)
	Observat.	22,287	49,499	43,490	2,446	5,375	4,473	20,811	46,149	43,420
75th perc.	*Coefficient*	905,076	-11,685	20,812	804,914	5,916	67,707	970,221	-21,075	29,936
	s.d./s.e.	(468,833)	(17,567)	(18,093)	(389,965)	(22,924)	(25,130)***	(530,596)	(25,233)	(25803)
	Observat.	32,682	73,250	69,512	13,928	31,223	27,609	17,419	38,696	35,714
85th perc.	*Coefficient*	1,006,858	-8,757	52,317	885,504	-8,110	68,455	1,140,161	-52,418	2,873
	s.d./s.e.	(514,132)	(20,239)	(20,894)**	(398,431)	(26,577)	(26,297)***	(607,104)	(31,281)*	(32,095)
	Observat.	23,704	52,695	47,285	12,206	27,719	24,523	11,048	24,374	22,225
					B. Bounds conditioning on type of course					
65th perc.	*Coefficient*	864,401	10,184	47,412	812,833	63,050	69,147	913,270	-16,068	11,100
	s.d./s.e.	(454,766)	(22,951)	(24,155)**	(331,536)	(38,271)*	(38,508)*	(478,105)	(26,060)	(27,247)
	Observat.	16,158	34,760	32,950	2,878	6,125	6,016	10,972	23,681	22,900
75th perc.	*Coefficient*	885,538	-9,641	38,047	822,628	17,512	50,590	978,988	-35,994	18,732
	s.d./s.e.	(460,342)	(17,561)	(18,335)**	(377,964)	(25,079)	(25,705)**	(527,786)	(25,260)	(25,232)
	Observat.	24,811	55,562	50,909	6,970	15,050	13,828	12,205	27,326	25,029
85th perc.	*Coefficient*	981,321	-21,118	44,992	868,164	19,585	76,748	1,082,236	-68,002	-212
	s.d./s.e.	(516,827)	(18,588)	(20,195)**	(384,323)	(24,020)	(25,373)***	(604,895)	(28,112)**	(29,301)
	Observat.	21,676	50,089	43,161	9,293	20,511	17,952	10,355	24,663	20,620

♦COP$ of 2013. *** Significant at the 1% level. ** Significant at the 5% level. * Significant at the 10% level. All regressions control for siteby-course fixed effects and the following pretreatment characteristics: age, education, marital status, employment, paid employment, salary, self-employment earnings, whether working in the formal sector, whether working with a contract, days worked per month, and hours worked per week. Standard errors are corrected by clustering at the applicant level.

2. Effects on Contributions to Social Security

Finally, we present evidence on the contribution records of these formal workers as an additional way of corroborating the increase in participation in formal sector. Thus, Table 5 presents the estimated effects of the *JeA* program on the amounts of taxes and contributions paid by applicants. As with the results reported in Table 4, we find significant and positive effects on contributions, overall and for women, but not for men. Finally, in Table B.1 in the appendix we

document the effect of the program on a number of other outcomes, including education. We find no significant effect on these.

Table 5. Effects of the *JeA* Program on Contributions to Social Security•

		All		Women		Men	
		Control's Mean (s.d.) (1)	Coefficient on being offered training (s.e./p-value) (2)	Control's Mean (s.d.) (3)	Coefficient on being offered training (s.e./p-value) (4)	Control's Mean (s.d.) (5)	Coefficient on being offered training (s.e./p-value) (6)
		Panel A			Panel B		
Pensions	*Coefficient*	38,525	5,491	29,086	5,198	49,558	5,857
	s.d. - s.e.	(69,149)	(1,982)	(59,921)	(2,251)	(77,124)	(3,463)
	R-W p-value		(0.021)**		(0.097)*		(0.163)
	Observat.	148,746	306,696	81,588	165,750	67,158	140,946
Health	*Coefficient*	28,684	3,780	22,159	3,761	36,311	3,805
	s.d. - s.e.	(49,695)	(1,402)	(42,196)	(1,573)	(56,277)	(2,469)
	R-W p-value		(0.024)**		(0.080)*		(0.190)
	Observat.	148,746	306,696	81,588	165,750	67,158	140,946
Cajas	*Coefficient*	9,019	1,270	6,696	1,223	11,735	1,330
	s.d. - s.e.	(17,043)	(483)	(14,261)	(541)	(19,456)	(851)
	R-W p-value		(0.024)**		(0.097)*		(0.190)
	Observat.	148,746	306,696	81,588	165,750	67,158	140,946
SENA	*Coefficient*	3,212	437	2,379	439	4,184	434
	s.d. - s.e.	(7,090)	(191)	(5,871)	(215)	(8,184)	(336)
	R-W p-value		(0.026)**		(0.129)		(0.212)
	Observat.	148,746	306,696	81,588	165,750	67,158	140,946

* $COP of 2013. All regressions control for siteby-course fixed effects. The regressions in columns 2, 4 and 6 control for the following pretreatment characteristics: age, education, marital status, employment, paid employment, salary, self-employment earnings, whether working in the formal sector, whether working with a contract, days worked per month, and hours worked per week. Column 2 additionally includes gender and its interactions with all covariates. R-W p-values were estimated taking into account that there were multiple hypotheses, using the Romano and Wolf (2005), and Romano, Shaikh and Wolf (2008), on each of the three outcomes included in this table, based on the bootstrap standard errors stratified by city, gender and treatment status. The *Cajas* are private social entities created to administer a family subsidy for low wage employees with children, and to provide recreation for their members. *SENA* is the acronym for National Service for Learning, the public entity in charge of providing job training, technique and technological higher education programs.

VI. Cost-Benefit

Table 6 presents a simple cost-benefit analysis focusing on women where we find significant effects of the program. We find that the average formal earnings of control applicant women is COP$200,100, or US$100.1 Our estimated premium for women, attributable to the *JeA* program is 17.7 percent in our case. Allowing for a program cost of COP$1.6 millions that includes the direct costs of operating the program, a maintenance allowance, and the loss of tenure, the internal rate of return is 29.5 percent, similar to the one calculated by AKM.

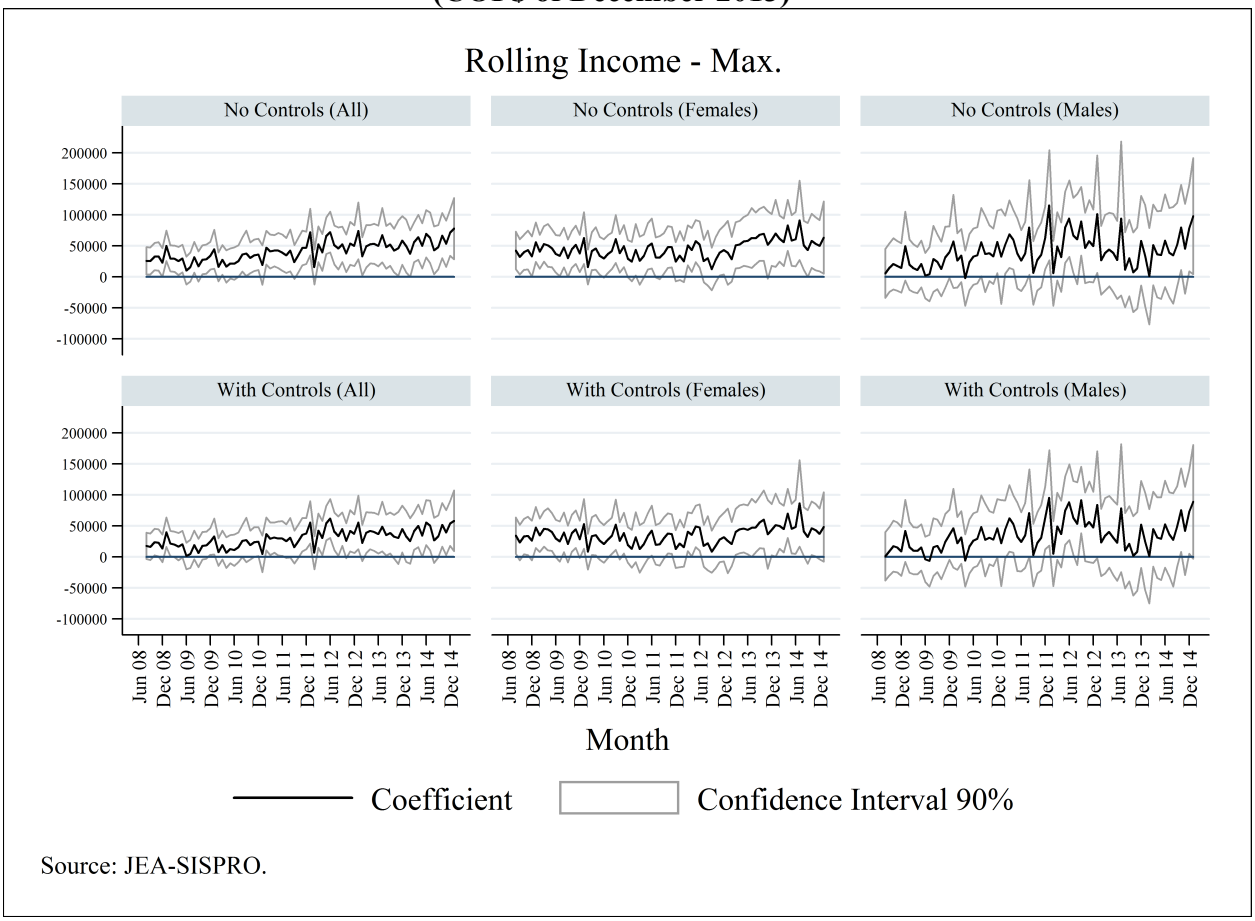
As seen in Figure 4, the gains are stable over time: the effects of this program seem to be permanent. However, even if we allow for a 6% depreciation annually we still obtain an internal rate of return of 20%

Table 6. Cost-Benefit Analysis

	All	Women	All	Women
	COP$000 of 2013		US$	
Benefits				
Control's Monthly Earnings	258.9	200.1	129.5	100.1
Monthly Gains in Earnings	35.3 **	35.5 **	17.7	17.7
Relative Gain vs Control	13.6%	17.7%	13.6%	17.7%
Net Present Value of Benefits				
Monthly Rate 0.5%	6,421	6,451	3,211	3,226
Monthly Decrease in Gains 0.5%	3,512	3,529	1,756	1,764
Costs*	**1,624**	**1,624**	**812**	**812**
Direct Cost	1,500	1,500	750	750
Loss of Tenure	124	124	62	62
Benefit-Cost				
Monthly Rate 0.5%	4,797	4,827	2,399	2,414
Monthly Decrease in Gains 0.5%	1,888	1,905	944	952
Annual IRR				
Monthly Rate 0.5%	29.5%	29.6%	29.5%	29.6%
Monthly Decrease in Gains 0.5%	22.1%	22.2%	22.1%	22.2%

* Source: Attanasio et al. (2011). ** Significant at the 5% level.

Figure 4. Evolution of the effect of the *JeA* Program on Formal Earnings (COP$ of December 2013)



Source: JEA-SISPRO.

VII. Conclusions

The *Jóvenes en Acción* was focused on training and work experience for young people. Its original evaluation by AKM, based on randomized experiment, showed positive effects on women, who showed an increase in earnings and an increase in formal employment. Nevertheless the key question is whether the effects are sustained. In this paper, we use administrative data to follow up the subjects in the experiment and show that the effects on women are sustained. Specifically there is a long run increase in participation in the formal labor market of about 4%. Moreover, female formal earnings of about 18%. No significant effect is

found for men, although the impacts are positive. In the case of women, the cost benefit analysis with no skill depreciation attributes a 29% internal rate of return. We also bounded the effect on productivity and at least for women these do not include zero indicating an improvement there as well (although the lower bound is not significantly different from zero).

By all accounts this has been a successful program with sustained effects. Given the importance for growth of reducing the size of the informal sector and moving people into the formal one the lessons learnt from this program should be replicated. Evidence on the relative importance of the classroom component vis a vis the work experience one would be very useful. Our belief is that the combination of the two contributed to the success of the program.

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Appendix A. *Jovenes en Acción*

Institutions interested in offering the program could be national or international, formally established, having as one of its social goals the provision of job training programs, with the required infrastructure, technique expertise, experience, and economic solvency that could allow it to provide a high quality program, and appropriately manage the public economic resources of the program. Institutions could be private, public or mixed, and among the public they could be different to the SENA, provided that their public resources were not used to provide the *Jóvenes en Acción* program, so that they had no advantage with respect to their private competitors.

The ECAPs did not receive any payment if a student dropped out before completing at least 20 of the coursework (although the students could be replaced by other), they received 30% of the fee if the student completed less than 80 percent of the coursework, 40% if the student finished the coursework but did not complete the 'on-the-job' training component, 45% if the student started the on the job training with a delay but did not fully finish it, 50% if the student started on time (within 5 working days) as a trainee but did not fully finish the course, between 80 and 90% if the student is started with a delay fully finish it, and 100% if the student started as a trainee on time and completed the course fully.

Moreover, the ECAPs would receive additional payments if the beneficiaries were hired by the firms that trained them: in this case, and provided their employment was in a field related to the classes they received, on a contract of at least six months, the ECAP would receive the stipend not cashed by the beneficiaries.

Table A1. Personal Characteristics and Treatment Status

	All		Women		Men	
	Control mean	Treatment-control difference (p-value)	Control mean	Treatment-control difference (p-value)	Control mean	Treatment-control difference (p-value)
Employoment	0.513	0.008	0.459	0.015	0.564	0.016
		(>0.5)		(>0.5)		(>0.5)
Paid Employment	0.362	0.022	0.341	0.019	0.378	0.038
		(>0.5)		(>0.5)		(>0.5)
Contract	0.079	-0.001	0.056	0.015	0.100	-0.012
		(>0.5)		(>0.5)		(>0.5)
Formal	0.078	0.014	0.054	0.026	0.108	-0.001
		(>0.5)		(>0.5)		(>0.5)
Wage and salary earnings	104,215	-1532	86,376	1749	123,202	-2982
		(>0.5)		(>0.5)		(>0.5)
Self-employment earnings	23,011	-1924	12,920	3359	34,688	-7985
		(>0.5)		(>0.5)		(>0.5)
Tenure	3.34	0.679	2.71	1.189	3.39	1.034
		(>0.5)		(>0.5)		(>0.5)
Days workep per month	12.32	0.006	10.83	0.311	13.76	0.057
		(>0.5)		(>0.5)		(>0.5)
Hours worked per month	25.35	0.788	21.82	1.498	28.61	1.106
		(>0.5)		(>0.5)		(>0.5)
Education	9.99	0.257	9.92	0.226	10.08	0.29
		(0.005)***		(0,356)		(>0.5)
Age	21.28	-0.254	21.51	-0.286	20.90	-0.083
		(0,127)		(0,490)		(0,166)
Married	0.197	-0.024	0.267	-0.013	0.116	-0.038
		(>0.5)		(>0.5)		(>0.5)
Observations	3,940		2,128		1,812	

Notes: The table reports the difference in each variable between the treatment and control groups, controlling for site-by-course fixed effects. The p-values were estimated taking into account that there were multiple hypotheses, using the Romano and Wolf (2005), and Romano, Shaikh and Wolf (2008), on each of the 12 baseline variables, based on the bootstrap standard errors stratified by city, gender and treatment status.

*** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

Appendix 1

Program details

The first component was expected to last between 280 and 350 hours and was focused both on the development of basic abilities for becoming employed (independent of the specific field), and the development of occupation specific skills. The former objective was pursued by providing the youths with basic social abilities and developing their soft skills: teaching them to be proactive, resourceful and open to feedback; improving their verbal and written communication skills; their analytic, deductive and daily work problems solving skills; by encouraging them to assimilate and understand their job's organizational environment; by developing teamwork skills, etc. The latter goal was pursued by providing training in the specific field of their interest, including the expertise in the use of equipment and tools, didactic material, and the procurement of services; products or services production, etc.

The second component consisted of three months of on-the-job training, and was about 480 hours long, conditional on the labor schedule of the specific firms in which the youths were trained. The training institutions, ECAPs, when designing the training courses, they had to identify participating employers that would take the young trainees on an apprenticeship basis. The ECAPS also wrote a *training plan* to facilitate the completion in the firm of the training process that began in their classrooms. It also includes an assessment of the youths' performance in terms of their achievements, agreed upon by the firm, the ECAP, and the youth.

The third component, the *project of life*, pursued the youths' comprehensive human development, orienting them towards a positive visualization of their abilities, personal and work

perspectives; providing them with tools for decision-making. It encouraged the youths to reflect on their work, their imminent insertion in the labor force, and its meaning with respect to their future labor market perspectives, helping them build their labor identity. This component took place all through the six months of the intervention (See FIP and DNP, 2001, Annex 7).

Appendix B Further Outcomes

Table B1. Effects of the *JeA* Program on Education and Labor Outcomes• (SISBEN dataset)

		All		Women		Men	
		Control's Mean (s.d.) (1)	Coefficient on being offered training (s.e./R-W p-value) (2)	Control's Mean (s.d.) (3)	Coefficient on being offered training (s.e./R-W p-value) (4)	Control's Mean (s.d.) (5)	Coefficient on being offered training (s.e./R-W p-value) (6)
Probability of Matching	*Coefficient*	0.731	-0.019	0.775	-0.023	0.679	-0.014
	s.d. - s.e.	(0.444)	(0.019)	(0.418)	(0.024)	(0.467)	(0.03)
	Observat.	1,907	3,932	1,046	2,125	861	1,807
			Panel A			Panel B	
Years of Education	*Coefficient*	9.192	0.328	9.169	0.290	9.224	0.383
	s.d. - s.e.	(3.539)	(0.143)	(3.53)	(0.184)	(3.555)	(0.227)
	R-W p-value		(0.152)		(>0.3)		(>0.3)
	Observat.	1,401	2,863	828	1,649	573	1,214
High School Graduation	*Coefficient*	0.638	0.036	0.643	0.018	0.632	0.062
	s.d. - s.e.	(0.481)	(0.02)	(0.479)	(0.027)	(0.483)	(0.029)
	R-W p-value		(0.256)		(>0.3)		(>0.3)
	Observat.	1,401	2,863	828	1,649	573	1,214
Labor Force Participation at the Time of the Survey	*Coefficient*	0.574	0.047	0.458	0.031	0.728	0.071
	s.d. - s.e.	(0.495)	(0.023)	(0.499)	(0.03)	(0.446)	(0.033)
	R-W p-value		(0.230)		(>0.3)		(>0.3)
	Observat.	1,401	2,863	828	1,649	573	1,214
Employed at the Time of the Survey	*Coefficient*	0.466	0.048	0.360	0.038	0.607	0.062
	s.d. - s.e.	(0.499)	(0.023)	(0.48)	(0.029)	(0.489)	(0.037)
	R-W p-value		(0.230)		(>0.3)		(>0.3)
	Observat.	1,401	2,863	828	1,649	573	1,214
Private Health insurance[1]	*Coefficient*	0.233	0.038	0.238	0.040	0.227	0.036
	s.d. - s.e.	(0.423)	(0.021)	(0.426)	(0.028)	(0.419)	(0.031)
	R-W p-value		(0.256)		(>0.3)		(>0.3)
	Observat.	1,401	2,863	828	1,649	573	1,214
Monthly Income*	*Coefficient*	213,205	23,053	182,301	-9,836	254,403	70,861
	s.d. - s.e.	(376,774)	(16,453)	(444,528)	(22,320)	(254,958)	(23,355)
	R-W p-value		(0.256)		(>0.3)		(0.057)*
	Observat.	1,401	2,863	828	1,649	573	1,214

* $COP of 2013. All regressions control for siteby-course fixed effects and the following pretreatment characteristics: age, education, marital status, employment, paid employment, salary, self-employment earnings, whether working in the formal sector, whether working with a contract, days worked per month, and hours worked per week. Column 2 additionally includes gender and its interactions with all covariates. Standard errors are corrected by clustering at the applicant level. R-W p-values were estimated taking into account that there were multiple hypotheses, using the Romano and Wolf (2005), and Romano, Shaikh and Wolf (2008) procedure, on each of the three outcomes included in this table, based on the bootstrap (1000 replications) standard errors stratified by city, gender and treatment status.