

**The Impact of Training Policies in Argentina and Chile**  
**Research Proposal**  
by  
**Graduate Program in Economics**  
**Universidad Alberto Hurtado**  
and  
**Ibero-Amerika Institut fuer Wirtschaftsforschung**  
**Universitaet Goettingen**

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## **1. Objectives**

The objectives of this project is to evaluate the impact of the “Programa Joven”, a job training program, in Argentina and Chile using the treatment of the program on the treated approach (TTA) to estimate the program monetary benefits and a cost benefit analysis to estimate the internal rate of return of the programs. Special consideration will be given to the multi-treatment characteristic of the Program in which participants can choose among several subjects for their theoretical and internship training.

In the Argentina’s “Programa Joven” the study will focus on the fifth issue, which took place in 1997, and will analyze the effects of the program on participant’s wages and on their probability of getting a job. This Project covered a population of 23,258 young people who certainly did take the training and 11,000 who did not participate (admitted but not show up). This is the most important training project that has been undertaken in Argentina in the last decade.

In the Chilean’s “Programa Joven” we will focus on data available for 1998 and we will analyze the effects of the program on participant’s wages and on their employment probability after the program. This project covered a population of 15,5000 young people who did take the training and 9,988 who did not participate.

The objective is to apply econometric techniques that allow a more reliable estimate of the monetary benefits of this type of programs. There are some analysis performed by the offices that run these programs in Argentina and Chile. These will be used as a basis for comparison with the better estimates that may be derived by applying more appropriate econometric methodologies.

A cost benefit analysis will be performed for which the cost of the program will be estimated including direct and alternative costs.

## **2. Methodology and Content of the Proposal**

The theoretical foundations are based on the literature mainly developed by J. Heckman and C. Mansky, which are surveyed in the supporting paper by C. Aedo.

### **2.1 Counterfactual of Interest**

The private benefits coming from this program could be measured in terms of the increase of wages and probability of employment. Since the interest is to correctly estimate the effect of the program on the beneficiaries, the counterfactual of interest is the outcome that would have been observed for the beneficiaries, after the program took place, had they not participated in the program.

The data available for both Argentina and Chile contains outcome and background information before and after the program took place for beneficiaries (group of interest) and for people who, after being admitted to the program, did not show up

(comparison group). Analyzing the effects of training policies comparing the beneficiaries group and the comparison group directly could be misleading if the process of actually participating or dropping out of the program after being admitted is contaminated with self-selection. If the selection process is only based on individual's observable characteristics, then controlling for those variables easily solves the problem. On the other hand, if the selection is based on unobservable traits, then a selection model has to be used in order to recover an estimate of the counterfactual of interest.

In the evaluation of these programs, the average of the distribution will be considered. These results, together with the estimated costs of the program, will provide the necessary tools to evaluate different aspects of the welfare of the people trained and the society that invest in it.

## **2.2 Outcome Variables**

The outcome variables to be examined are monthly earnings and probability of getting employed. Special consideration will be given to the multi-treatment characteristic of the Program in which participants can choose among several subjects for their theoretical and internship training.

## **2.3 Description of the Programs**

Both programs were designed in the same way and they are very similar in most of their characteristics.

### **2.3.1 Argentina**

The "Programa Joven" offers training since 1994 to facilitate the labor insertion of the beneficiaries in the formal labor market. To this purpose, the program provides intensive training for positions in the productive sector of the economy and training internships in firms.

The target population of the Program are young persons, males or females, coming from poor households, with a low educational level, without working experience, and who are unemployed, underemployed or inactive. The selection criteria for the program are: minimum 16 years of age; education level no greater than secondary education; to belong to a household considered poor and not to be integrated to the labor market.

The program comprehend the following benefits: an average of 200 hours of training, transportation expenses, a subsidy for females with young children, medical checkups, books, material and working clothing.

The criteria for selecting firms for the internships are: general characteristics of the firm, tasks to be done by the trainees, personal involved in similar positions in the firm, equipment, supplies and infrastructure of the firm.

The duration of the training program varies from 14 to 20 weeks. The training is intensive and can be divided into two main activities:

-*Technical Knowledge*: the beneficiaries receive knowledge and technical skills to undertake an occupation. The duration of this activity varies from 6 to 12 weeks.

-*Internships*: the beneficiaries complement their technical knowledge with an applied work in firms in the occupations they have been trained. The duration of this activity is of 8 weeks.

To carry out the training the Ministerio del Trabajo uses competitive bidding mechanisms to select Instituciones de Capacitación (ICAP) who will offer appropriate and efficient courses. These institutions must, among other things, be legal entities, have experience in job training, and a high commitment to work on issues concerning highly disadvantaged people.

The distribution of the training activities at the national level is determined in accordance to the quantity of inhabitants. At the governmental level the program executor is the Ministerio del Trabajo y Seguridad Social, throughout the Secretaría de Empleo and Capacitación Laboral. The program will continue its operation until the year 2,000, being jointly funded by IDB and the Argentinean government.

There is an evaluation and monitoring of the outcomes and impacts of the Program. The impact evaluation analyze the degree of correspondence of the actions undertaken for the Program and the outcomes obtained. This is done with the use of a quasi experimental model with a comparison group, which tries to identify the magnitude of the changes and outcomes of the Program on social, economic, educational and attitudinal impacts on the trainees compared with non trainees.

### **2.3.3 Chile**

The “Programa Joven” was designed in 1990 and its goal is to offer training to facilitate the labor insertion of young males and females from poor families who face difficulties in their insertion to the formal labor market. To this purpose, the program provides intensive training for positions in the productive sector of the economy and training internships in firms.

The target population of the Program are young persons, males or females, coming from poor households, with a low educational level, without working experience, and who are unemployed, underemployed or inactive. The selection criteria for the program are: minimum 16 years of age and maximum 24 years of age; education level no greater than secondary education; to belong to a household considered poor and not to be integrated to the labor market.

The program comprehend the following benefits: an average of 250 hours of classroom training and three month of internship in a formal firm, transportation

expenses, a subsidy for females with young children, medical checkups, books, material and working clothing.

The criteria for selecting firms for the internships are: general characteristics of the firm, tasks to be done by the trainees, personal involved in similar positions in the firm, equipment, supplies and infrastructure of the firm.

The training is intensive and can be divided into two main activities:

*-Technical Knowledge:* the beneficiaries receive an average 250 hours of classroom knowledge and technical skills to undertake an occupation. The size of the class is at most 25 students.

*-Internships:* the beneficiaries complement their technical knowledge with an applied work in firms in the occupations they have been trained. The duration of this activity is 3 months.

To carry out the training the Ministerio del Trabajo hires private Instituciones de Capacitación through a bidding process. It is fundamental that providers have experience in job training and that they respond to the concrete demands of the productive sector.

The distribution of the training activities at the national level is determined in accordance to the quantity of inhabitants. At the governmental level the program executor is the Ministerio del Trabajo. IDB and the Chilean government jointly funded the program.

## **2.4 Characteristics of the Samples**

### **2.4.1 Argentina**

The Program has data set to evaluate two waves of training activities, corresponding to the second-third and fifth bidding. Given the sample design, degree of response to the surveys, sample sizes and quality of the interviewing process, we have chosen to work with the information for the fifth bidding. On the other hand, the labor conditions in Argentina during the second-third bidding process, year 1995, were very difficult as reflected by an 18% unemployment rate was of 18%.

The data set to evaluate the fifth bidding process start with an universe of 23,258 potential beneficiaries. From this universe the Programa Joven obtained a sample of beneficiaries (intervention group) and a comparison group (control). Both groups come from individuals who meet the selection criteria to be considered as a potential participant of the program. In addition, the beneficiaries group come from the ones that actually attended the program.

Both samples comprehend 1,670 cases (3,340 cases in total). To make both samples comparable the sample design controlled for the following variables: age, sex, level

of education, labor insertion, socioeconomic level, and to have a children with 5 years of age or less. The comparison group was not selected at random. This has to be taken into consideration in the estimation.

For both samples, there is information for the period covered by the first contact with the program to 12 months after the beneficiaries finished the training. This allows constructing the individual labor history for both samples.

#### **2.4.2 Chile**

We have a sample of 568 beneficiaries of the program and a comparison sample of the same size. In the beneficiaries sample 51,8% are males and 48.2% are females; 34,3% are younger than 20 years of age; around 74,7% of them belong to the first income quintals; a 68,3% of them has not completed secondary education and 53,4% of them has worked less than 4 months in the year prior to instruction.

This individuals, as well a comparison sample, were interviewed 12 months after the program. The data contained in the surveys will be used to estimate the program impact on the outcome variables considered in this study.

#### **2.5 Selection Bias**

It is important to mention that in the analysis of the selection bias Heckman divide this term into three components: i) the lack of a perfect matching between the comparison group and the intervention group; ii) the comparison group do not correspond to the same labor market as the beneficiaries; and iii) there is not an exogenous mechanism used to select people into the training program we have to correct for selection bias.

With regard to the first two, it is important to mention the following in the Argentinean and Chilean cases:

- The information corresponds to the same labor markets, for both beneficiaries and comparison groups.
- The same surveys were used for both groups.
- As stated before, the people from the comparison group was obtained from “selected” individuals.
- As stated before, there was an effort to construct similar individuals by considering “twins”.

In our opinion the first two sources of selection are somehow controlled in the data sets. The third component requires some modeling. We use a sufficient index method, within a conventional econometric approach, to consider a selection model taking into consideration non-observable. We will assume that the decision to participate is made by the individual by a comparison of the cost and the benefits of the two alternatives available: participate or not to participate in the training program.

## **2.6 Methodology**

We use the Matching Estimators approach as our basic methodology. This choice is based upon both the theoretical developments surveyed in the supporting paper (Aedo, 2001) and the availability and quality of relevant information. The application of this methodology requires two steps: first, the estimation of a model of program participation (Propensity Scores) and second, and conditional on the estimated propensity scores, the usage of matching estimators to obtain the impact of the Program.

The estimation of the probability of program participation is one of the main elements needed to apply a cross-sectional Matching Estimator methodology. We will estimate different models of program participation. The following individual dimensions are going to be used in the model of program participation:

- *Labor Status Dimension:* This variable reflects the labor status of the individual (employed, unemployed with and without labor experience, and inactive).
- *Poverty Dimension:* We will use an index of unmet basic needs (NBI) and the Poverty Line criteria.
- *Sociodemographic Dimension:* We will use gender and age.
- *Education and Marital Status Dimension:* We will use several indicators of years of education completed, as well as school attendance. The Marital dimension can be considered by measuring whether the individual was married or single, whether he/she had children (specially young children) and whether the individual is or not the head of the household.
- *Geographical Dimension:* We can group geographical areas following accepted criteria for both Argentina and Chile.

We will consider four groups in our estimations based upon gender and age. The groups are:

1. Adult Males – ages 21 and above.
2. Young Males – ages less than 21.
3. Adult Females – ages 21 and above.
4. Young Females – ages less than 21.

We will work with cross-sectional (CS) matching estimator, given that this methodology compares the results for the *Beneficiaries* and *Comparisons* at the same period after the program. The information available allows us to apply this methodology.

The specific cross-sectional matching estimators we will use are:

- **Nearest Neighbor Matching Estimator:**<sup>1</sup> This is the simplest method to implement and its specific formulas can be seen in the supporting paper (Aedo, 2001). The number of neighbors to include from the *Comparisons* sample for each *Beneficiary* is taken as given. For each *Beneficiary* we include only income information of the specified number of *Comparisons* with the lowest Euclidean distance to the *ith Beneficiary* propensity scores.
- **Epanechnikov Kernel:** The Epanechnikov kernel and its specific formulas can be seen in the supporting paper (Aedo, 2001). In this kernel the window width can be optimally chosen with reference to a standard normal distribution.

The technique of **bootstrapping** can be used to obtain the sample variance of the impact estimates.

### 2.7 Contribution to the identification and quantification of the Program benefits: Cost-Benefit Study

Based on the identification and quantification of the outcome measures, it is possible to determine the benefits of “Programa Joven”, for the time period considered. This information can be used together with information on costs of the program to conduct a cost-benefit analysis and to calculate a rate of return to dollars spent on the Program for both the Argentinean and Chilean cases.

We have information for Argentina and Chile on:

- **Direct Cost of Training:** This includes the cost of the training services rendered by the ICAP, the insurance for short-term stays in firms, and the fellowships and subsidies to the program beneficiaries for children.
- **Administrative Costs:** This includes the costs of personal, infrastructure, inputs and operational expenses of the unit that carries out the Program. It also includes, among others, information on bidding costs, promotion, computer services and supervision.

### 3. Dissemination Activities

- Presentation of Research Results: Chile, Argentina and Germany.
- Distribution of a Policy Brief in International Organizations, Governmental Institutions and Academic Centers.
- Elaboration of a Web page.
- Presentation of the paper in the Econometrica and LACEA meeting.

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<sup>1</sup> These estimators assume that  $E[Y_0 | P(X), D = 1] = E[Y_0 | P(X), D = 0]$  and  $0 < \Pr(D=1 | X) < 1$ .

**- Policy Brief**

The Policy Brief is a summary of the Project and its main results. It is aimed at the academic community and policy makers. It is direct, self-contained and with an extension of 2,400 words (excluding tables and the institutional and researchers information).

**- Web Page**

The Project will have a Web page. The idea is to put the research documents in pdf format, its comments and information related to the activities of the project.

**4. Access to Computational Resources**

The Universidad Alberto Hurtado has a net Ethernet 10 Base-T with 120 computers. A central server Compaq Proliant 1600 13 Gb hard drive and 128 Ram, Windows NT 4.0. A server Internet Compaq Proliant 1600 13 Gb hard drive 128 Ram, Linux 6.0. There are three computer rooms for students with a capacity for 30 PC.

In terms of software the computers are equipped with Microsoft Office 97 Professional, Statistical package SPSS 8.0 for windows. Matlab, Version 5.2.0.3084. Eviews, Version 3.0. Stata, Version 6.0.

The computers have total access to Internet, e-mails, etc.

The Ibero-Amerika Institut fuer Wirtschaftsforschung, Universitaet Goettingen has  
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**5. Timetable**

The project has duration of 14 months. The Timetable is as follows:

*The Impact of Training Policies in Argentina and Chile*

Activity/Month	Mes 1	Mes 2	Mes 3	Mes 4	Mes 5	Mes 6	Mes 7	Mes 8	Mes 9	Mes 10	Mes 11	Mes 12	Mes 13	Mes 14
	1º 2º	1º 2º	1º 2º	1º 2º	1º 2º	1º 2º	1º 2º	1º 2º	1º 2º	1º 2º	1º 2º	1º 2º	1º 2º	1º 2º
<b>July 2001</b>														
Methodology	█													
Possible different approaches. Empirical Evidence		█												
Gathering of Information and Analisis			█											
Processing of the Samples				█										
Processing of the Household Surveys					█									
Treatment of the Comparison Group						█								
Selection Bias. Methodology							█							
Correction of the Contamination and Sustitution								█						
Analysis of different estimators.									█					
Estimators, Evaluation. Especification Test.										█				
Estimation											█			
Analysis of results. First Draft final												█		
<b>First draft final - April 2002</b>													█	
Organization of presentation of the Draft														█
Revision														
Elaboration of final Report														
<b>Final Report July 2002</b>														
Organization Disemination Activities														
Seminar, Policy Brief, Web Page, Presentation paper														

**6. Cost of the Project**

I think we have to agree on the amount we will request. This need to be worked together.

**7. Research Team**

- *Cristian Aedo*. Ph. D Economics University of Minnesota (1990). (Director of Research Team).
- *Sergio Núñez* Master of Arts in Economics (c) Georgetown University.
- NN1, Ibero-Amerika Institut fuer Wirtschaftsforschung, Universitaet Goettingen
- NN2, Ibero-Amerika Institut fuer Wirtschaftsforschung, Universitaet Goettingen

*Prior Experience*

Impact Evaluation of “Programa Joven” – Argentina. Prepared for IADB, December 2000.

Impact evaluation of the beneficiaries of the Project: “Proyecto Joven”. Prepared for IADB, august 1996.

Methodology for impact evaluation of social programs. Outcomes. Prepared joined to CEPAL -Santiago de Chile, December 1996.

Cost Analysis Process of the program: "Programa de Apoyo a la Reconversión Productiva". Prepared for the project's direction. Ministry of Labor. 1996

Impact Evaluation on the participants of the pilot trial for the project: "Proyecto Joven". Prepared for IDB, august 1996. Project PNUD Arg. 93/024, PARP.