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ABSTRACT

Is Informal Sector Work an Alternative to Workfare Benefits? The Case of Pre-Program Expansion and Economic Crisis*

Limited availability of workfare programs and unemployment insurance and a large informal sector are features of the Argentine labor market at the outset of the 2001 economic crisis. This paper tests the hypothesis whether informal work is an alternative to workfare participation before a large-scale program expansion took place. Results from the propensity score matching indicate that observable characteristics of informal low-income workers and current workfare participants are significantly different. However, within these groups, it is possible to identify subgroups that exhibit similar observable characteristics. This indicates that only a subset of the individuals sees workfare and informal sector work as substitutable alternatives.

JEL Classification: J42, J48, O17

Keywords: South America, Argentina, informal labor market, workfare program, propensity score matching

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"In a society in which there is no regular system of unemployment benefit, and in which poor relief is either non-existent or "less eligible" than almost any alternative short of suicide, a man who is thrown out of work must scratch up a living somehow or other by means of his own efforts. And under any system in which complete idleness is not a statutory condition for drawing the dole[1], a man who cannot find a regular job will naturally employ his time as usefully as he may."

Joan Robinson. 1937. Essays in the theory of employment. London: Macmillan, pp.83-84.

1. Introduction

As highlighted by Joan Robinson (1937), in the absence of a regular system of unemployment benefit or support casual and informal work seems the only alternative for survival of the unemployed.

This paper tests the hypothesis that informal waged workers and self-employed with low-incomes are in the informal sector as an alternative to limited available workfare benefits in an economic crisis.[2]

Informal waged workers and the self-employed outside social protection, social insurance and social assistance, and their comparability to workfare participants have not been explored in the empirical literature on program evaluation. Still, this link is quite apparent: Workfare and conditional cash transfer programs are some of the non-contributory safety net programs that can reach the informal sector workers, which do not have access to the formal unemployment insurance system (Vodopivec 2004). For instance, in the case of Argentina in 1991 a system of unemployment benefits was introduced, but it had very little general coverage (Marshall 2004). In Table 1 this point is illustrated with a sample of the unemployed in the October 2001 and 2002 Argentine household survey rounds. Only 2.92 percent and 2.77 percent of the unemployed in 2001 and 2002 respectively received income from unemployment insurance.

[1]The "dole" is here used to mean any kind of relief payments.

[2]*Informal waged workers* are dependent employees that do not have access or rights to a pension. The *self-employed* are independent workers and microentrepreneurs, who are bosses of firms with 1-5 employees. *Low-income* is meant to be earning at or below the minimum wage of ARG$ 200.

Alongside the unemployment insurance system, various workfare programs for the unemployed coexist and provide assistance and protection for a large share of the labor force in Argentina (Bertranou and Bonari 2005). With increasing unemployment in the economy, the government introduced these workfare programs from 1993 onwards. Participation in the workfare programs continued to grow after 1998 and peaked after the Argentine economic crisis in 2001/02. The economic situation during that time period is documented with the GDP and GDP growth numbers in Figure 1. From 1998 onwards the Argentine economy was in recession and ultimately experienced a large scale economic crisis, with a sharp drop in GDP growth in 2002 with the devaluation of the Argentine Peso. However, the economic crisis already started the last quarter of 2001 with political, financial and economic turmoil of large-scale proportions. This is also reflected in large increases in poverty and indigence rates and labor market impacts (Khamis 2008).

Informality in the labor market was also another feature of the Argentine labor market during the crisis and beforehand. Over the 1990s also informalisation in the labor market rose and increased substantially after the crisis (Gaspirini 2002; World Bank 2006). A larger segment of informal waged workers, self-employed and workfare participants coexist alongside formal waged workers and the unemployed.

Participation in workfare programs usually is subject to work requirements, which serve to provide incentives in terms of self-targeting and poverty-reducing investments (Besley and Coate 1992). In the presence of low enforcement of some of the workfare programs' eligibility criteria, most noticeably the criteria that participants cannot even hold an informal job before entry into the program or the effort and completion of the work requirement, might be very difficult to monitor in a developing country labor market.[3] Due to these difficulties, workfare participants might pursue jobs as informal waged workers and self-employed.[4] Informal waged and self-employed work and workfare program participation could be substitutes or even complements for other household

[3]Also the need to monitor the continued eligibility for unemployment insurance and the informal labor market options is raised as an issue by Vodopivec (2004).

[4]Participation in a workfare program might distort incentives to remain or become beneficiaries. It might lead to changed labor market arrangements within the household (Mkandawire 2006). In the case of Argentina this is documented in the re-formation of households, multiple household heads in one family and family splitting (Jalan and Ravallion 1999, 2003).

members and their income.

This paper investigates the hypothesis that in the labor market for low-income individuals the informal sector, more specifically informal waged workers and the self-employed, has a potential substitute role for limited access to workfare programs.[5]

This hypothesis is tested in an environment with limited workfare coverage and general economic recession at the onset of the Argentine economic crisis in 2001, just before the introduction of a near universal workfare program. This analysis provides an insight whether workers from the low-wage informal sector could form a potential entrant group to a more extended workfare program. Using observable characteristics the two groups, the current workfare participants and the control group from the low-wage informal sector are compared with propensity score matching.[6] Being able to use propensity score matching according to observable characteristics, including the specific eligibility criteria and program participation related characteristics, would provide empirical evidence for the hypothesis that these two groups constitute potential substitutes in the labor market for low-income individuals. Empirical evidence on this is limited as of yet. This paper contributes with a simple test using recent econometric techniques of the program evaluation literature.

In the next section background on workfare programs in Argentina, in particular the eligibility criteria for program participation necessary for the later estimation strategy, is presented. Also the most relevant literature on Argentine workfare programs is discussed in relation to the research presented in this paper. A discussion of the chosen empirical methodology and data follows. Propensity score matching with different comparison groups and the treatment group, workfare participants, is employed in this context.

The main finding of this paper is that observable characteristics of informal low-income workers and current workfare participants are significantly different. However, within these groups, it is possible to identify subgroups that exhibit similar observable characteristics. This indicates that only a subset of the individuals sees workfare and

[5]It is harder to check whether workfare participants work parallel to their workfare program work as the workfare participants are coded in differential ways in their work status in the Argentine household survey. Sometimes, in the supplementary survey of Plan Jefes y Jefas de Hogares (the main workfare program after the Argentine economic crisis 2001/02), they are coded as part of salaried employees or unemployed or inactive. This depends on the status and level of their work requirement and the receipt of the work benefit.

[6] This analysis does account for observable characteristics but not unobservables.

informal sector work as substitutable alternatives. In addition to that I find that only 10 percent of the minimum wage, around 20 Argentine Peso, can be accounted to the workfare program as impact when using the informal sector as comparison group.
In the latter sections of this paper these results and its implications for policy are discussed in detail.

2. Workfare programs: Eligibility Criteria and Informality

2.1 History and Eligibility criteria

Since the early 1990s several workfare programs, which all were targeted at the least-skilled unemployed workers, with a small monthly benefit and work or training requirement in return were implemented by the Argentine government. The main intended objectives were to provide a short-term safety net during times of economic recession and to increase the employability of the unemployed.
These programs were available on the national and provincial level in Argentina. Programa Intensivo de Trabajo, Plan Trabajar I, II, III and Plan Jefes y Jefas de Hogar were the major national employment programs implemented successively throughout the 1990s to 2005.[7]
In 1993 Programa Intensive de Trabajo (PIT) was introduced and targeted at the long-term unemployed household heads. Beneficiaries were required to work on basic infrastructure projects and were able to claim this benefit for six month with an extension possibility for another six months (Bertranou and Bonari 2005).
Following PIT and after the 1995-96 recession, which led to substantial increases in unemployment among the poor and non-poor, Plan Trabajar I was implemented in March 1996. It was subsequently extended until 2002 (Plan Trabajar I to Plan Trabajar III). From Plan Trabajar I onwards the eligibility criteria were amended in order to insure closer targeting of poorer households more closely. The requirement `to be a household head or to have young dependents' was dropped to allow more general access for the unemployed poor and vulnerable (Eisenstedt 1998).
In general persons older than 16 years of age who were unemployed and poor were able to benefit and receive about or below ARG$ 200 Peso (Ronconi 2002; Jalan and

[7]Other smaller programs are described in Bertranou and Bonari (2005) and Ministerio de Economia (2006).

Ravallion 1999). Thus, the benefit of Plan Trabajar was set at or below the prevailing minimum wage and therefore ensured self-targeting of beneficiaries (Jalan and Ravallion 1999).[8] In return the participants were required to work in community projects relating to basic infrastructure and community services. Eligible participants were able to receive the benefit for six months (Ministerio de Trabajo y Seguridad Social 1998).

After the economics crisis, in April 2002, Plan Jefes y Jefas de Hogar was put in place to assist Argentines, who experienced a rise in individual poverty rates from 35.9 percent in May 2001 to 53 percent in May 2002 (Khamis 2008). This program continued until the end of 2005, when a transition and reassignment of Plan Jefes y Jefas de Hogares beneficiaries to Familias, a conditional cash transfer program, started and continued in 2006 (World Bank 2006). To be eligible for the receipt of Plan Jefes one needed to be an unemployed head of household with children under 18 years or disabled children in the household.[9]

The work requirement for participants was set at a minimum of four hours per day and maximum of six hours per day. The activity could be working on community projects or basic community work. Also training or finalization of formal education in the form of school attendance was counted towards this requirement. Also participants, that found work in private companies, were entitled to receive the benefit in the form of a wage subsidy for six months. Participants received ARG$ 150 Peso monthly.[10]

Registration to the program was cross-checked with administrative records on social security contributions to see whether workfare applicants were working in the formal sector (Galasso and Ravallion 2003; Giovagnoli 2005; Gasparini, Haimovich and Oliveri 2006). Contrary to this, it was much harder to check whether an applicant was working in the informal sector, as an informal waged worker or self-employed, beforehand or even

[8] Coady, Grosh and Hoddinott (2004) discuss issues of Argentina's Plan Trabajar targeting and find that it was able to transfer 80 percent of program benefits to the poorest quintile. The maximum wages paid was set at the minimum wage initially but was adjusted to a lower level at a later stage, which ensured the targeting towards the poorest in the population.

[9]The precise eligible criteria were available on the Argentine Ministry of Labor website on the beneficiaries of Plan Jefes de Hogar: http://www.trabajo.
gov.ar/jefes/beneficiarios/index.asp, (accessed 8th March, 2007) and MTSS (2004).

[10]Modolo (2004) describes in detail institutional, political and social dimensions of the workfare program, which are not discussed here.

parallel to workfare benefit receipt.

Plan Jefes program was almost universal by October 2002, which meant that most people self-selected into the program as participant or applicant, but not everyone was formally employed and then unemployed who received the benefit. Some leakages of the benefit to previously inactive and informal workers were recorded (Galasso and Ravallion 2003, 2004).

Overall, the different workfare programs, Plan Trabajar I to III and Plan Jefes y Jefas de Hogar, described in this section were the largest national programs at the time and share similar general eligibility criteria:

Self-targeting at a low benefit, below minimum wage levels, and a work requirement in some form or another. The beneficiary's previous labor market status was supposed to be unemployed and not in formal work at the time of the workfare benefit application.

Still, this left some potential for targeting inefficiencies: applicants and participants with informal waged work or in self-employment could apply or participate in the workfare program.

2.2 Workfare programs and Informality

The vast literature on Argentine workfare programs has centered on several elements: program impact evaluation and program incentives relating to political economy and program inefficiencies.[11] This section describes a more narrow literature on workfare programs and informality in Argentina and highlights the existing gaps in the literature with respect to the empirical analysis of the low-waged informal and self-employed labor

[11]For evaluations of the various workfare programs and their dimensions on employment and poverty: (Galasso and Ravallion 2003, 2004; Galasso, Ravallion and Salvia 2001; Jalan and Ravallion 1999, 2003; Ravallion, Galasso, Lazo and Philipp 2001; Ronconi, Sanguinetti and Fachelli 2004; Ronconi, Sanguinetti, Fachelli, Casazza and Franceschelli 2006; Gasparini, Haimovich and Oliveri 2006; Almeida and Galasso 2007; Iturriza, Bedi and Sparrow 2008). For the political economy literature: The distribution of benefits is analyzed on various levels. On the individual level the administration of benefits is not only directly to the participants, but several intermediaries might be able to take a share of the benefit and exert political pressure on participants (Galasso and Ravallion 2003; 2004; Lodola 2003). Piquetero organizations, which stage road blocks in order to receive workfare program benefits, also have the control of some share of the benefits (Ronconi and Franceschelli 2005). Provinces and municipalities close to certain political parties might also be able to influence the distribution of the workfare benefit (Lodola 2003; Giovagnoli 2005; Weitz-Shapiro 2006).

market in relation to workfare program participants.

Several findings on labor market informality and its relationship with workfare programs are raised in the previous literature relating to workfare programs in Argentina.

In an analysis of Plan Jefes and its impact, using the national household survey for 2001 and 2002 for probit estimations, Paz and Zadicoff (2003) claim that informal workers have more chances to become participants in Plan Jefes than the unemployed and thereby informality is fostered. Relating to this point Galasso and Ravallion (2003, 2004) also argue that previous unemployment status of workfare participants is hard to verify with a high degree of informality in the economy present. Using data for 2001 and 2002 they estimated the workfare program impact with a counterfactual comparison group based on a matched of Plan Jefes applicants, who did not receive the program yet. Despite some problems of eligibility and coverage of the workfare program they conclude from their difference-in-difference estimations that the program helped to reduce unemployment and alleviate poverty.

Another major workfare program evaluation by Ronconi et al. (2004, 2006) employs household survey for the period 2000 to 2002 to evaluate the impact of not only Plan Jefes but also other workfare programs on poverty and employment. They work with a propensity score matching estimator, without the particular focus on informality. Their results are in line with Galasso and Ravallion (2003, 2004) in terms of findings with respect to the program impact and targeting nature of the program. In addition to that they find that the workfare programs operated more as unemployment insurance for beneficiaries and not as a training program as participants who were offered a job in the labor market exited the program.

Investigating informality and workfare program exits Gasparini, Haimovich and Oliveri (2006) employ a matching difference-in-difference estimator for their analysis of the period 2003 to 2005. They find that the design of the workfare program Plan Jefes increased the incentives for current participants to find a job in the informal sector and thereby resulted in an informality bias of the program.

In this paper the focus differs from the existing literature with the emphasis on workfare program participants and a comparison to eligible labor force participants in informal waged work without benefits and self-employed in the low-income sector at a time before

program universality. Contrary to Gasparini, Haimovich and Oliveri (2006) I do not look at the program exits, but at comparability between participants and low-income informal sector work in a situation of limited program access. The informal labor market and program participation were not incorporated in these studies as potential substitutes.

The importance of the informal sector for unemployed workers as an alternative to the workfare program as a source of income is important. This seems in particular relevant given the limited coverage of the Argentine unemployment insurance system (Vodopivec 2004; Gill, Montenegro and Doemeland 2002). In the absence of the availability of a workfare program the unemployed, the informals and inactive would have to refer to work in the labor market. In the light of the economic crisis in 2001/02 informal sector jobs were found to be one of the main coping strategies (Fiszbein, Giovagnoli and Aduriz 2002). The poor, which do not have access to savings, other resources or social capital, would have to resort to the informal sector for survival if a workfare program was not available to them.

Contrary to the previous literature on informality and workfare programs in Argentina, this paper focuses on the period, October 2001, at the brink of the economic crisis and before the implementation of the near universal Plan Jefes program. An explicit empirical test of the comparability of workfare participants and informal workers and the self-employed with low-income is proposed in this paper.

3. Data and Empirical Strategy

3.1 Empirical Strategy

To test the role of being employed in the informal sector as an alternative to workfare participation, this paper estimates with nearest neighbor propensity score matching whether informal workers and self-employed and workfare participation exhibit similar observable characteristics or not. In recent empirical literature on development several papers have employed this technique to compare informal and formal workers' wage gaps (Pratap and Quintin 2006; Badaoui, Strobl and Walsh 2008). Also a related paper on workfare program, which analyses the exits of the workfare program, uses matching techniques (Gasparini, Haimovich and Oliveri 2006).

Here, the focus is different: the comparison of current informal workers and self-

employed with low income to current workfare participants.[12]

This paper employs propensity score matching for these two groups.[13] The workfare participants constitute the treatment group T while the informal sector workers and self-employed with low income the control group C. As we are not able to observe the treatment group in its counterfactual state of non-treatment and the control group in its counterfactual state of treatment, the econometric method of matching on observables provides a way to construct an observationally equivalent group of informal sector participants to the treatment group of workfare participants.

To implement matching and estimate the impact of treatment, propensity score matching requires two crucial underlying assumptions: the Conditional Independence Assumption (CIA from now onwards) and the Common Support Assumption.

The CIA states that all the relevant differences between two individuals in the treated and in the control group are captured in their observable characteristics X and those affect participation in the treatment and outcomes. Treatment status is conditional on those observable characteristics:

$$(Y_T, Y_C) \perp D \mid X \tag{1}$$

This underlying assumption is crucial and cannot be tested as such. A potential source of bias, which Bundell and Dias (2000) point out, is the selection on unobservables, which I do not account for here.[14]

The common support condition (equation 2) assumes that participants can be matched to the non-participants with the same characteristics. The support of the distribution is the set of values with positive density.

$$0 < prob(D = 1 \mid X) < 1 \text{ for all } X \tag{2}$$

[12] In a developed country context, but relevant to this paper, caseworkers and the unemployed are compared for similar characteristics through matching methods (Behncke, Froelich and Lechner 2009).

[13] For an overview on propensity score matching see Caliendo and Kopenig (2008).

[14] To overcome this matching is often combined with a difference-in-difference estimator (Heckman, Ichimura and Todd 1997; Heckman, Lalonde and Smith 1999). Due to the nature of the program, which was expanded substantially in the period following my analysis, this will not be possible to implement it here.

It follows from the common support that it is possible to estimate the average treatment of the treated from the average outcome from the non-treated, which is used as the counterfactual in this case, given their similar observable characteristics.

Both assumptions so far have highlighted the importance of the characteristics X. Rosenbaum and Rubin (1983, 1984) propose the use of the propensity score instead of the characteristics X themselves (equation 3). They define the propensity score as the conditional probability of assignment to a particular treatment given a vector of observed characteristics (Rosenbaum and Rubin1983, p.1; Rosenbaum and Rubin 1984, p.1).

$$P(X) = prob(D = 1 | X) \tag{3}$$

Rosenbaum and Rubin (1983, 1984) show that the CIA assumption still holds when using the propensity score of the observed characteristics instead of the covariates X themselves:

$$(Y_T, Y_C) \perp D | P(X) \tag{4}$$

Propensity score matching requires a specific range of the propensity score for the treatment and the comparison group to be defined. For this reason, several matching methods, for instance one-to-one, nearest neighbor, kernel, are most commonly used.

As Bundell and Costa Dias (2000) suggested, the nearest neighbor matching estimator can be written as follows:

$$\hat{\theta}_{MM} = \sum_{t \varepsilon T} (Y_t - Y_c) \frac{1}{N_T} \tag{5}$$

where observation c is the nearest neighbor of the comparison group C in terms of the propensity score to observation t in treatment group T. N represents the number of nearest neighbor specified. This estimator is applied here to test the hypothesis that informal wage workers and self-employed with low-income are potential workfare program entrants and are observationally similar. To find supporting evidence, being able to match the treatment and control group, for this hypothesis would imply that the main limitation to access the workfare program is the limited availability and not their

eligibility and characteristics. If it is possible to match these two groups, one can estimate impact of the treatment, workfare program participation, the average treatment on the treated effect (ATT).

Matching accounts for the selection on observables such as individual, household or region characteristics which might influence program participation. It also controls for observable heterogeneous returns. Matching estimators would only compare people who would be comparable due to the common support assumption when matching on the propensity score. For this reason it is possible to determine whether the impact results are reliable or not (Sianesi 2004)

The disadvantage would be that a great sample size is necessary to operationalize matching and that the selection on the observables is highly dependent on the quality of X used in the matching procedure. The matching quality can best tested through a balancing of variables test, usually a t-test on the equality of the means in the treated and non-treated groups before and after the matching (Sianesi 2004).

For the matching to be successful it is necessary that there is enough common support between the two samples. Hence, the densities of the propensity scores for treatment and control group overlap. Smith (2000) emphasizes this so-called “support” problem. It can happen that the participants sample and the non-participants sample will not have any observations for certain values of P(X). This would imply that the two samples differ.

For a successful estimation of the treatment one would need an analogue for each of the participants in the non-participant sample. To impose the common support one would drop the treatment observations whose propensity score is higher than the maximum or less than the minimum propensity score of the controls.

In addition to that if treatment impact differs across the treated, the restriction to the common support might change the parameters estimated and it would be impossible to identify the average treatment on the treated effect (Smith 2003).

To check for heterogeneous effects of the workfare program it is possible to divide the sample into subsamples and to check whether results are robust or differ. This was implemented in this paper with different comparison groups, in order to see whether the informal workers and self-employed can form a valid comparison group as opposed to other comparison groups.

As highlighted before the challenge is the appropriate selection of X variables in the estimation of the propensity score is important for the identification. For this reason the estimations will include variables that are thought to be related to the eligibility criteria and that determine participation in the program.

3.2 Data

Like previous studies on the Argentine labor market (Gasparini 2002; Pratap and Quintin 2006), this paper works with the national household survey, the Encuesta Permanente de Hogares (EPH). The EPH was collected twice a year, in May and October, until May 2003, by the Argentine national statistical office (INDEC). This rotating panel survey covered the major urban areas and thereby about 70 per cent of the Argentine population. Two questionnaires, an individual and household questionnaire, were administered to cover income, benefits receipts, demographic, dwelling, occupation, education and labor market characteristics.

This paper works with the October wave of the 2001 EPH survey, at the outset of the economic crisis and pre-Plan Jefes survey, for the nearest neighbor propensity score matching for comparison (informal sector workers with low wages/income) and treatment group (workfare participants). Construction of the variables for the estimation of the propensity score, the probability of program participation, are derived from the eligibility criteria and knowledge of the workfare programs in Argentina, which were outlined in the previous section.

The availability of questions in the EPH survey limits the different individual, household and regional characteristics to be included in the estimation. Also in the October 2001 wave of the EPH survey the question whether the individual participates in a workfare program was asked, which was used to construct the treatment group in the estimations. One limitation and caveat here in this analysis is the fact that the question relating to workfare programs does not ask which specific program the individual participates and works in.

As there are several national and regional workfare programs ongoing at the time of the household survey, a concern might be the possibility of the respondents participating in different programs. This could potentially introduce some measurement error into the treatment group measure due to potentially slightly different eligibility criteria. However,

as the main eligibility criteria across different workfare programs were the same as highlighted beforehand and at the time of October 2001 Plan Trabajar III was the largest national workfare program, this problem does not seem to be large.

Hence, the question in the household survey whether the individuals works as part of a workfare program or not determines the classification of the treatment group. To test the validity of the informal workers in paid employment and the self-employed as possible comparable group to the treatment group, different comparison groups were constructed from the information in the household survey. In the next section these results are explained in detail.

4. Results

In the following section the three different comparison groups are described and thereafter the results for the propensity score matching for the comparison groups are discussed, with particular focus on the variables included in the propensity score, the details of the matching process in terms of common support and matching quality and also the average treatment effect on the treated (ATT).

4.1 Potential Comparison Groups

Viewing the unemployed, the self-employed and informal waged workers in terms of their access to social protection is crucial in this analysis.[15] As the social protection status is highly dependent on the labor market status at the time and on the labor market history of the individual, it is possible to look at the unemployed, the self-employed and informal waged workers as a group with limited or no access to social protection, but potentially eligible for social assistance programs, such as workfare programs (Bertranou and Bonari 2005). For Argentina Bertranou and Bonari (2005) classify three groups in the labor force for their social protection analysis when looking at unemployment insurance and workfare programs:

Formal workers with permanent status form one of the groups, unemployed and informal/self-employed workers with low-income is another group and the third group is an intermediate group which alternates between self-employed, employee and

[15] The sample sizes of the adult population, the unemployed, self-employed, informal workers and workfare participants are provided in the annex.

unemployed status.

To create a comparison group for the workfare participants, this categorization, the eligibility criteria and details of the workfare program, as mentioned previously, were taken into account.

The following three comparison groups (1,2,3) were compiled:

- **Group 1** includes the eligible labor force, the unemployed, informal and self-employed without unemployment benefit and not in formal work. This provides a very general category and the broadest comparison group from the three groupings for the workfare participants.
- **Group 2** is constructed more restrictive than Group 1. Here, the eligibility criteria from the workfare program and the element of self-targeting were taken into account. The benefit of the program is below the minimum wage (Jalan and Ravallion 2003). Only individuals with income at or below the level of the minimum wage of ARG$ 200 peso were taken into account for this group.
- **Group 3** restricts this even further as only informal workers and the self-employed, following partly the classification of Bertranou and Bonari (2005) for Argentina, are considered. In this case, the informal workers and the self-employed with low income (below or at the minimum wage), that are eligible for the workfare program, form the comparison group

In Table 2 the summary statistics for the three different comparison groups is presented.[16] As for the comparison group the most restrictive, Group 3, was chosen while the other comparison groups, group 1 and 2, were used in the robustness checks of the results. Employing Group 3 as comparison group to the workfare participants allows to test the initial hypothesis proposed in this paper.

4.2 Comparison group: Informal waged workers and the self-employed with below or at minimum wage earnings

To compare workfare participants and the constructed comparison group of low-income informal workers and self-employed eligible for workfare program, we employ single nearest neighbor propensity score matching for these two groups.

[16]Summary statistics for the workfare participants, informal workers, self-employed, the unemployed and the adult population are in the annex.

The probit model to estimate their probability of participation (the propensity score) includes different individual, household and regional characteristics (Table 3).

The *dependent variable* is a dummy for whether the individual participates in the workfare program 1 or not 0. The other characteristics included are selected closely related to the eligibility criteria and the description of the program, which included certain characteristics (see section 2). *Age, gender, head of household* and *marital status* are included as individual level characteristics and its potential to determine individual participation. In particular, age restrictions to participation and also restrictions to being the household head are relevant as they are relevant and eligibility criteria to participate in the program. The *education level* is included as different levels of completed or not completed education might play a role in the likelihood to participate in the program.[17] The *household characteristics (number of members and children, living arrangements)* are included as important determinants of participation. Having children in the household was one of the eligibility criteria at least initially invoked in Plan Trabajar.[18] *Infrastructure problems*, non-access to services and other relevant characteristics of shantytowns in Argentina, most commonly known as '*villa miseria*', are included. Any problems with access to water, sewerage, electricity, a sanitary bathroom and unstable building material of the house were seen as indicator for living in a shantytown. Given that the Plan Trabajar's design aimed at individuals self-selecting into the program, which were centered around public works projects relating to the development of local infrastructure, residence in the poor urban areas and provinces are relevant variables to determine program participation (Jalan and Ravallion 1999, 2003). For this reason also *regions* were included in the estimation, with the area of Greater Buenos Aires being the base.[19] Many of these variables were also included in the earlier literature on program impact evaluation in Argentina (Jalan and Ravallion 1999, 2003; Galasso and Ravallion

[17] Savanti and Patrinos (2005) document the rising returns to schooling in Argentina over the period 1992-2002. In particular, they find evidence of increases in the earnings premium to complete secondary and complete/incomplete tertiary education.

[18] As pointed out in section 2 eligibility criteria were amended for Plan Trabajar at several occasions and here the most relevant potential criteria are included.

[19] Pampeana, Cuyo, Patagonia, Northeast (NEA in tables) and Northwest (NOA in tables) are the other regions.

2003, 2004; Ronconi et al. 2004, 2006; Gasparini, Haimovich and Olivieri 2006). In Table 3 I include these variables in a probit regression. Age, gender, number of primary household members, location in terms of province and shantytowns were found to be significant determinants of program participation. Education levels, marital status and number of children and living arrangements were not significant in this model. The treatment and control group can be matched on some of the observables while others were not significant predictors of the probability of workfare participation. The propensity score derived from the entire vector of covariates was estimated and obtained for both control and treatment group. Figure 2 plots the densities of the propensity scores for both and one still finds an overlapping large common support. The results of the matching show that most observations of the treatment group are on the common support and only very few treatment observations are dropped (Table 4). Based on the matched sample of controls and treatment, the program impact on individual income for the treated (ATT) can be estimated (Table 5). The *individual income variable* is monthly individual income, from labor and non-labor sources. The income difference between the treated and the untreated was significant and positive. Participation in a workfare program had an individual income impact of an additional 20 Argentine Peso per month for the average 'treated' person if one compares the low income group of workfare participants and informal and self-employed earning a low income. This is only about 10 percent of the minimum wage at the time. The estimate of the program impact, the ATT, is only as good as the matching quality. A test of the balance of the covariates was performed. This t-test compares the equality of the means in the treated and non-treated groups before and after the matching (Table 6). It is possible to see that the unmatched means exhibit a significant difference in the means while the matched treatment and control group do not have a significant difference in the means for most covariates.[20] Overall, these results suggest several important insights: First, it is possible to match a treatment group of workfare participants and informal sector participants as control with nearest neighbor propensity score matching and a program impact is estimated. Second, not all observable characteristics are predicators of program participation, when using

[20] Also it is found that the bias in the sample was reduced substantially. Results for the absolute bias before and after the matching can be found in the annex.

these treatment and control groups. From these results it is possible to conclude that observable characteristics are still significantly different for the entire two groups and only a subset of workfare participants and informal sector participants exhibit similar characteristics. Hence, only a subset of individuals from the low-earning informal segment of the labor market is comparable to the workfare participants and sees this as a substitutable alternative.

4.3 Other comparison groups[21]

The less restrictive comparison groups, Group 1 and Group 2, are also estimated in the propensity score matching procedures. It is found that the significance of the variables included in the probit model, which estimates the propensity of participation in the program, differs slightly compared to Group 3. More variables such as education variables, more regions and number of children in the household are significant predictors of participation in the workfare program than in the Group 3 case.

Also the ATT, when using these groups as comparison, is significant and larger than when the estimation is performed with Group 3 as comparison group.

This again can be taken as an indication that workfare participants are not only sourced from the informal sector, and if from this sector only from a subset. Participants are comparable to the broader eligible labor force and the ones with low-income as well and have a considerable amount of observable characteristics in common with these groups.

5. Conclusion

Previous work on program evaluation provided some evidence on targeting leakages to informal workers and the inactive population (Ravallion and Galasso 2003) while this paper highlighted the need to analyze pre-program expansion the potential participants from the informal and self-employed sectors for which inactivity or unemployment for lack of unemployment insurance is not a feasible option for survival.

This paper tested whether a group of informal low-waged workers and the self-employed with low-income and a group of workfare program participants exhibit common observable characteristics and so are comparable. The unemployment insurance and

[21] Results for Comparison Group 1 and 2 are in the annex. The focus of this paper is on the Group 3 as the control/comparison group.

workfare program access for the time period under consideration is limited, prior a large-scale implementation of a workfare program, and the economic situation worsens from a recession into a crisis. The finding of comparability, with a simple test with single nearest-neighbor propensity score matching with replacement, implied a substitution effect for a sub-group of the informal workers: Instead of earning a low-income a subgroup of informal waged workers and the self-employed could be potential entrants to an expanded workfare program, while currently working in the low-income informal and self-employed labor market to earn a living, in the absence of access to social protection.

The construction of the comparison group was restricted to the non-participant population and its subgroup of informal employees and the self-employed, with wages and incomes less or equal to the workfare benefit. One concern here could be that this is already a selection on observable characteristics. However, this just restricts the non-participant population to a population that fulfils the general eligibility criteria of not earning a certain amount of income before the program (in this case at or below the minimum wage) and does not have access to the program. This criticism would also apply to other studies on program evaluation as well, which restrict comparison groups from the general survey population in some form, for instance to labor force participants, before the analysis (Galasso and Ravallion 2003; Ronconi, Sanguinetti and Fachelli 2004).

Here, the comparison and the treatment group exhibited a large common support and then matching along the observable characteristics, which determined participation and fulfilled the eligibility criteria, was possible. This supports the hypothesis that in terms of observables the informal waged and the self-employed with low-income who are eligible in terms of the general eligibility criteria under Plan Trabajar and other workfare programs but do not have access, are similar to the program participants and can be analyzed in workfare program evaluation as control group in general. However, as the observable characteristics between the comparison, the informal sector, and the treatment group, the workfare beneficiaries, turned to out to be significantly different from each other for many of the observables, in fact they did not predict the probability of workfare participation, we cannot conclude that for the entire group of informal workers workfare and informal jobs are substitutes. It is the sub-group of the informal sector which can be matched to the workfare participants and see informal work and program participation as

substitutable alternatives.

For this present case after making the individuals from the treated and control comparable through matching, the program impact with this control group sample is calculated and we also found that that the ATT of the program was only 20 ARG Peso per month.

In the social protection literature on Argentina, informal workers and the self-employed with low-income are a separate category of analysis when looking at protection against unemployment (Bertranou and Bonari 2005). The informal and formal distinction in terms of social security contribution is incorporated in my analysis but in addition to this informality in terms of coverage of unemployment insurance and workfare program coverage is considered. This links to the argument proposed by Levy (2008) who argues that social assistance, such as cash transfer programs, represent a subsidy to the informal workers while social protection, in terms of social security, is a tax to formal workers. He argues that these programs create incentives to stay informal instead of changing to formality.

For the incentives and design of workfare programs the results of this paper are relevant in the presence of low coverage of unemployment insurance and workfare program expansion during economic crisis. Given that some informal sector workers have similar observable characteristics to workfare participants, the low-income informal waged and the self-employed, without unemployment benefits and workfare plan access, work in order to make ends meet, as suggested by Joan Robinson's idea quoted at the beginning of this paper. Although eligible and having similar observable characteristics, access to the workfare program remains restricted to a few, often linked to political influence and clientelism (Jalan and Ravallion 1999, 2003; Narayan and Petesch 2002). For instance, in the Argentine case study of the `Voices of the Poor' project, an interviewed day care director voices this:

"We have practically no access to Plan Trabajar; it is politically organized around fifteen neighborhoods. We managed to work for six months, but after that they pulled the plug." Narayan and Petesch 2002, pp.354

This quote also highlights the political dimension and the geographical location of program participation, which is also reflected in the highly significant estimates of relevant geographical characteristics such as infrastructure and location in my results.

This paper looked at the before universal workfare programs at a time when the economic crisis in 2001 was ongoing and high unemployment was present in the labor market. The expansion of the workfare programs was decided after a period of political unrest, for instance road blocks, protests and the subsequent overturning of the government, which highlighted the difficult economic situation of many and the government's need to intervene in order to stabilize the country's situation.

The results of this paper give us further insights into the working of the labor market during this period: The labor market segments (the informal waged and self-employed with low income) could be possible future workfare entrants in the case of the expansion of workfare programs to the near universal program Plan Jefes. A substitution of low-paid informal and self-employed work for program participation, if access is granted, can be expected, at least for some, and should be considered in the design of a social protection program. Lanjouw and Ravallion (1999) also argue that the composition of program participants changes as the program expands or phases out, which may be important to consider in the design of a social assistance program that responds to an economic crisis. Overall, the informal sector, even at the lower end of income, seems to be not one group, some similar to current workfare participants and others not.[22] As for the debate in the literature on the composition of the informal sector and whether informal labor markets are segmented or integrated, these results even support further subdivisions or tiers in the informal sector and the sector's heterogeneity.

[22] For a summary on the debate of segmentation and integration see World Bank (2007). The traditional view of the Harris-Todaro model suggests segmentation of the formal and informal labor market (Harris and Todaro 1970). In this view the informal sector participants are involuntary in the informal sector. Contrary to this, Maloney (2004) supports the view of voluntary microentrepreneurs in the informal sector. Fields (1990) proposes an informal sector which is two-tiered, the lower tier being involuntary in the sector while the upper-tier being voluntary.

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Figures

Figure 1: GDP and GDP Growth (1993-2005)

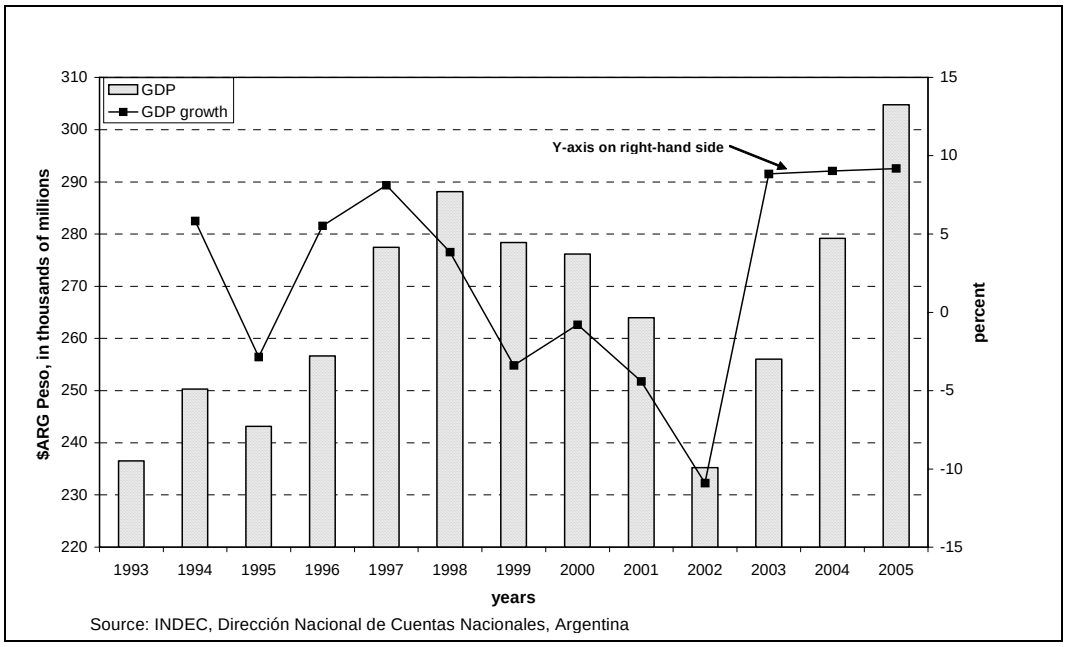
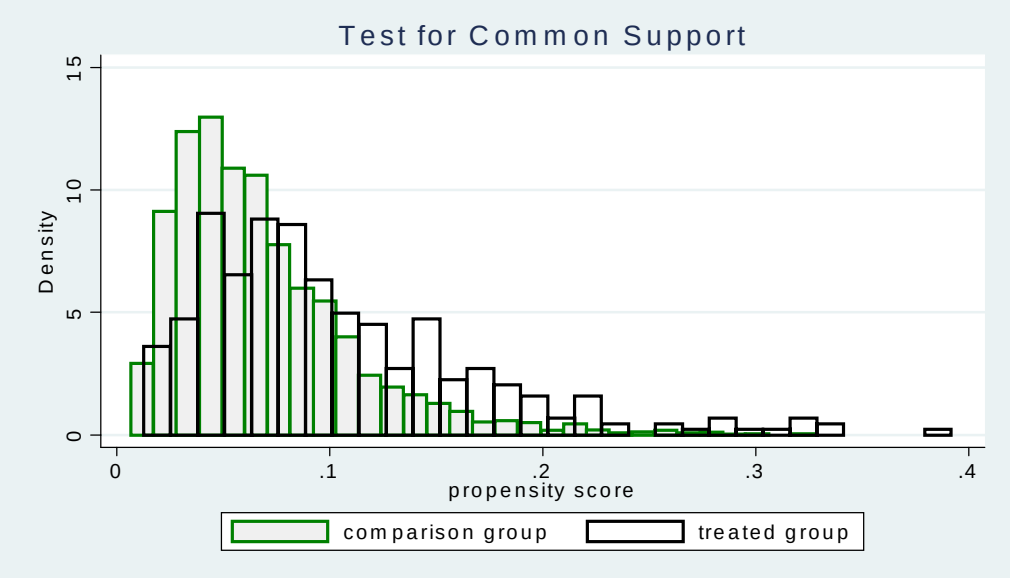


Figure 2: Common Support of Treatment and Control Group (Group 3)



Source: own calculations based on the EPH, INDEC.

Tables

Table 1: Unemployment Insurance Coverage, 2001 and 2002

Unemployment Insurance and the Unemployed				
	2001		2002	
	percent	no.	percent	no.
Unemployed without benefit	97.08	5,421	97.23	4,778
Unemployed with benefit	2.92	97	2.77	108
Sample Size		5,518		4,886

Note: Without receiving income from unemployment insurance.

Source: own calculations based on the October waves of the EPH, INDEC.

Table 2: Comparison Groups – Different measures

Comparison Groups, October 2001						
	Group 1		**Group 2**		**Group 3**	
	mean	stdv.	mean	stdv.	mean	stdv.
Individual characteristics						
Age	38.17	14.20	35.79	14.70	37.47	15.28
Male	0.59	0.49	0.52	0.50	0.44	0.50
Head of Household	0.46	0.50	0.35	0.48	0.36	0.48
Spouse	0.18	0.39	0.20	0.40	0.26	0.44
Married	0.56	0.50	0.48	0.50	0.51	0.50
Single	0.34	0.47	0.42	0.49	0.36	0.48
incomplete primary education	0.10	0.30	0.12	0.33	0.16	0.36
complete primary education	0.29	0.45	0.31	0.46	0.36	0.48
incomplete secondary education	0.21	0.41	0.23	0.42	0.23	0.42
complete secondary education	0.18	0.39	0.17	0.38	0.12	0.33
incomplete tertiary education	0.12	0.32	0.12	0.32	0.09	0.29
complete tertiary education	0.10	0.30	0.05	0.22	0.04	0.20
Household characteristics						
No. of primary hhs.members	4.41	2.27	4.69	2.41	4.79	2.53
Hhs. with secondary members	0.03	0.17	0.02	0.15	0.03	0.16
No. of Children in hhs.	1.22	1.55	1.33	1.68	1.49	1.80
House ownership	0.72	0.45	0.72	0.45	0.70	0.46
Living arrangement - unstable	0.03	0.18	0.04	0.19	0.04	0.21
House materials - unstable	0.02	0.13	0.02	0.15	0.03	0.16
Water	0.98	0.12	0.98	0.14	0.98	0.16
Bathroom - sanitary	0.84	0.37	0.78	0.42	0.73	0.44
Sewerage	0.53	0.50	0.44	0.50	0.40	0.49
Electricity	1.00	0.07	0.99	0.09	0.99	0.10
Region						
GBA	0.56	0.50	0.55	0.50	0.53	0.50
Pampeana	0.23	0.42	0.22	0.41	0.19	0.39
Cuyo	0.06	0.24	0.06	0.24	0.07	0.26
NOA	0.09	0.28	0.10	0.30	0.12	0.33
Patagonia	0.02	0.14	0.02	0.13	0.02	0.13
NEA	0.04	0.20	0.05	0.22	0.07	0.25
Sample Size	19,586		9,713		4,710	
Population	6,169,217		2,997,719		1,342,638	

Note: Without workfare participants. Above 16 years.

1/ Group 1: Labour force:

Unemployed (no benefit income) and not formal work (informal and self-employed)

2/ Group 2: Labour force:

Unemployed (no benefit income) and not formal work (informal and self-employed).

Below or at minimum wage ARG $200. Coherent responses for income only.

3/ Group 3: Informal workers and self-employed.

Below or at minimum wage ARG $200. Coherent responses for income only.

Source: own calculations based on the EPH, INDEC.

Table 3: Estimation of the propensity score (Group 3)

Estimation of the propensity score			
	Probit	Probit, 150 replics	Marginal effects
Age	-0.009***	-0.009***	-0.001***
	[3.46]	[3.64]	[3.46]
Male	-0.242***	-0.242***	-0.029***
	[3.87]	[3.60]	[3.87]
Head of Household	0.073	0.073	0.009
	[0.97]	[0.97]	[0.97]
Married	0.086	0.086	0.01
	[1.42]	[1.46]	[1.42]
incomplete secondary education	-0.064	-0.064	-0.007
	[0.88]	[0.94]	[0.88]
complete secondary education	-0.054	-0.054	-0.006
	[0.59]	[0.60]	[0.59]
incomplete tertiary education	-0.101	-0.101	-0.011
	[0.86]	[0.91]	[0.86]
complete tertiary education	-0.239	-0.239	-0.024
	[1.28]	[1.23]	[1.28]
No.of primary household members	0.025*	0.025*	0.003*
	[1.87]	[1.84]	[1.87]
No. of children in hhs.	0.031	0.031*	0.004
	[1.63]	[1.79]	[1.63]
living arrangement - unstable	0.144	0.144	0.019
	[1.25]	[1.50]	[1.25]
infrastructure problems/villa miseria	0.225***	0.225***	0.027***
	[3.59]	[3.62]	[3.59]
Pampeana	0.198**	0.198**	0.026**
	[2.13]	[2.21]	[2.13]
Cuyo	-0.124	-0.124	-0.014
	[1.02]	[1.03]	[1.02]
NOA	0.024	0.024	0.003
	[0.25]	[0.24]	[0.25]
Patagonia	0.669***	0.669***	0.122***
	[5.79]	[5.72]	[5.79]
NEA	-0.195*	-0.195*	-0.021*
	[1.74]	[1.82]	[1.74]
constant	-1.487***	-1.487***	
	[9.34]	[9.83]	
Observations	4961	4961	4961
pseudo R-squared	0.056	0.056	0.056

Absolute value of z statistics in brackets

* significant at 10%; ** significant at 5%; *** significant at 1%

Source: own estimations based on the October EPH, INDEC.

Table 4: Matching on and off common support (Group 3)

Matching and Common Support			
From Matching: treatment assignment	From Matching: common support off support	on support	Total
untreated	0	4,611	4,611
treated	5	345	350
Total	5	4,956	4,961

Source: own estimations based on the October EPH, INDEC.

Table 5: Program impact (Group 3)

Outcome variable: Average treatment on treated						
Variable	Sample	Treated	Controls	Difference	S.E.	T-stat
income	ATT	139.64	119.55	20.08***	6.56	3.06
					6.93	**2.90**

Note: In bold standard error and t-statistics are based on 150 bootstraps.

* significant at 10%; ** significant at 5%; *** significant at 1%, based on bootstrapped s.e..

ATT: Average Treatment Effect on the Treated.

Source: own estimations based on the October EPH, INDEC.

Table 6: Assessment of matching quality (Group 3)

Test of Matching Quality: Equality of means in the treated and non-treated groups, before and after matching									
		Mean		%reduction		t-test			sig.
Variable	Sample	Treated	Control	%bias	|bias|	t	p> |t|	
Age	Unmatched	33.637	36.477	-21.8		-3.58	0.000	***
	Matched	33.670	34.168	-3.8	82.4	-0.54	0.588	
Male	Unmatched	0.366	0.464	-20.1		-3.57	0.000	***
	Matched	0.371	0.414	-8.9	55.8	-1.17	0.243	
Head of Household	Unmatched	0.326	0.368	-8.8		-1.57	0.117	*
	Matched	0.328	0.325	0.6	93.1	0.08	0.935	
Married	Unmatched	0.563	0.520	8.6		1.55	0.122	*
	Matched	0.559	0.594	-7.0	18.7	-0.92	0.356	
incomplete secondary education	Unmatched	0.234	0.235	-0.1		-0.02	0.980	
	Matched	0.238	0.194	10.3	-7301.6	1.39	0.166	
complete secondary education	Unmatched	0.114	0.131	-5.0		-0.89	0.376	
	Matched	0.116	0.130	-4.4	12.1	-0.58	0.563	
incomplete tertiary education	Unmatched	0.066	0.084	-7.1		-1.22	0.223	
	Matched	0.067	0.046	7.7	-8.8	1.15	0.249	
complete tertiary education	Unmatched	0.020	0.035	-9.0		-1.47	0.142	*
	Matched	0.020	0.023	-1.8	80.3	-0.26	0.794	
No.of primary household members	Unmatched	5.623	4.976	23.0		4.33	0.000	***
	Matched	5.574	5.609	-1.2	94.6	-0.16	0.873	
No. of children in hhs.	Unmatched	2.134	1.561	30.6		5.66	0.000	***
	Matched	2.101	2.449	-18.6	39.4	-2.25	0.025	
living arrangement - unstable	Unmatched	0.083	0.050	13.4		2.70	0.007	***
	Matched	0.075	0.075	0.0	100.0	0.00	1.000	
infrastructure problems/villa miseria	Unmatched	0.631	0.530	20.6		3.66	0.000	***
	Matched	0.629	0.641	-2.4	88.5	-0.32	0.752	
Pampeana	Unmatched	0.297	0.246	11.6		2.14	0.032	**
	Matched	0.301	0.272	6.5	43.6	0.84	0.401	
Cuyo	Unmatched	0.071	0.122	-17.2		-2.83	0.005	***
	Matched	0.072	0.078	-2.0	88.6	-0.29	0.773	
NOA	Unmatched	0.243	0.267	-5.4		-0.97	0.333	
	Matched	0.246	0.246	0.0	100.0	0.00	1.000	
Patagonia	Unmatched	0.166	0.062	33.1		7.43	0.000	***
	Matched	0.154	0.159	-1.8	94.4	-0.21	0.834	
NEA	Unmatched	0.097	0.159	-18.6		-3.10	0.002	***
	Matched	0.099	0.113	-4.4	76.6	-0.62	0.537	

Note: Non-significance of the t-test of the difference in the means for the matched sample indicates 'good quality' match.

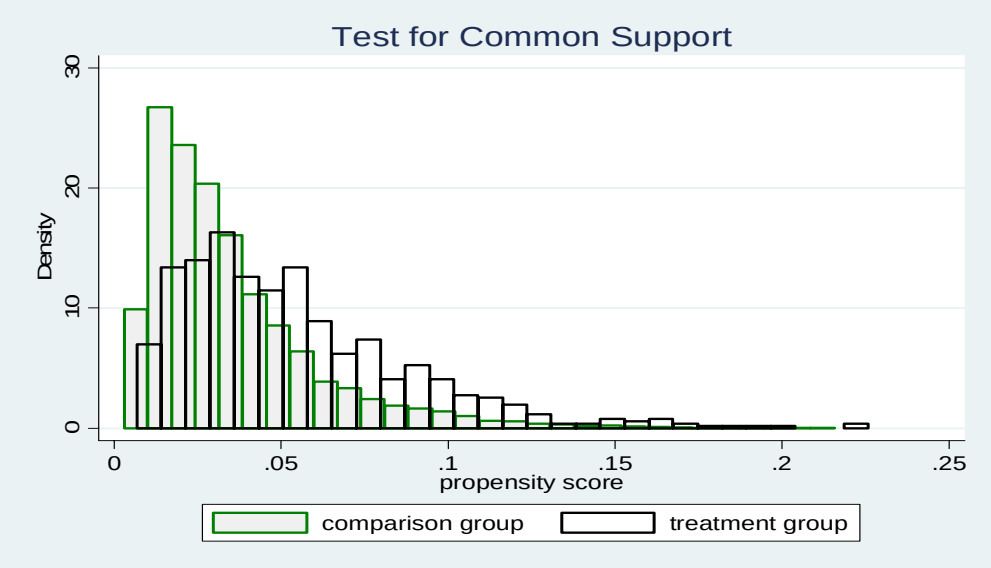
* significant at 10%; ** significant at 5%; *** significant at 1%

Source: own estimations based on the October EPH, INDEC.

Annex: Descriptive Statistics, Additional Figures and Tables

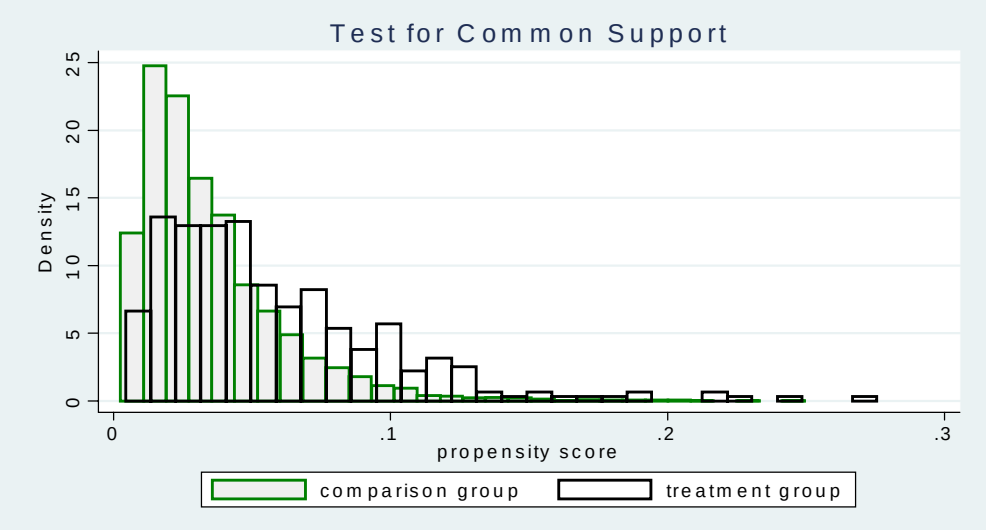
Figures

Figure A.1: Common Support of Treatment and Control Group (Group 1)



Source: own calculations based on the EPH, INDEC.

Figure 5.A.2: Common Support of Treatment and Control Group - Group 2 (Labor force participants with below or at minimum wage earnings)



Source: own calculations based on the EPH, INDEC.

Table A.1: Summary Statistics

Summary statistics for different groups, October 2001										
	Workfare Participants 1/		**Informal Workers 2/**		**Self-employed 3/**		**Unemployed 4/**		**Adults 5/**	
	mean	stdv.	mean	stdv.	mean	stdv.	mean	stdv.	mean	stdv.
Individual characteristics										
Age	35.87	12.11	34.85	13.76	43.49	13.25	34.40	14.12	42.02	18.31
Male	0.46	0.50	0.52	0.50	0.66	0.47	0.60	0.49	0.46	0.50
Head of Household	0.40	0.49	0.38	0.48	0.61	0.49	0.36	0.48	0.41	0.49
Spouse	0.24	0.43	0.19	0.40	0.20	0.40	0.14	0.35	0.26	0.44
Married	0.53	0.50	0.49	0.50	0.70	0.46	0.46	0.50	0.56	0.50
Single	0.35	0.48	0.40	0.49	0.20	0.40	0.46	0.50	0.31	0.46
incomplete primary education	0.19	0.39	0.10	0.31	0.11	0.31	0.10	0.30	0.11	0.31
complete primary education	0.36	0.48	0.30	0.46	0.29	0.45	0.28	0.45	0.27	0.44
incomplete secondary education	0.18	0.38	0.23	0.42	0.19	0.39	0.23	0.42	0.20	0.40
complete secondary education	0.12	0.33	0.17	0.37	0.17	0.38	0.20	0.40	0.18	0.38
incomplete tertiary education	0.10	0.30	0.12	0.32	0.09	0.29	0.13	0.34	0.14	0.34
complete tertiary education	0.06	0.23	0.08	0.26	0.14	0.35	0.05	0.23	0.11	0.31
Household characteristics										
No. of primary hhs.members	5.32	2.78	4.58	2.46	4.14	2.07	4.62	2.30	4.14	2.17
Hhs. with secondary members	0.03	0.17	0.05	0.21	0.02	0.13	0.02	0.14	0.03	0.16
No. of Children in hhs.	1.96	2.08	1.32	1.62	1.20	1.54	1.23	1.58	1.08	1.47
House ownership	0.65	0.48	0.67	0.47	0.75	0.43	0.72	0.45	0.75	0.43
Living arrangement - unstable	0.06	0.23	0.04	0.20	0.03	0.17	0.03	0.18	0.03	0.16
House materials - unstable	0.05	0.21	0.02	0.14	0.02	0.13	0.02	0.13	0.01	0.12
Water	0.96	0.18	0.98	0.14	0.99	0.11	0.98	0.14	0.99	0.10
Bathroom - sanitary	0.63	0.48	0.81	0.39	0.87	0.34	0.81	0.39	0.88	0.33
Sewerage	0.33	0.47	0.51	0.50	0.57	0.50	0.47	0.50	0.58	0.49
Electricity	0.99	0.10	0.99	0.07	1.00	0.07	1.00	0.07	1.00	0.06
Region										
GBA	0.42	0.49	0.55	0.50	0.54	0.50	0.57	0.49	0.54	0.50
Pampeana	0.24	0.43	0.22	0.41	0.24	0.43	0.24	0.43	0.24	0.43
Cuyo	0.06	0.24	0.06	0.24	0.07	0.25	0.05	0.21	0.06	0.24
NOA	0.08	0.27	0.10	0.30	0.09	0.28	0.08	0.27	0.09	0.28
Patagonia	0.07	0.26	0.02	0.14	0.02	0.14	0.02	0.14	0.03	0.16
NEA	0.12	0.33	0.05	0.21	0.05	0.21	0.04	0.18	0.05	0.21
Sample Size	716		7,224		7,059		5,421		56,310	
Population	136,267		2,218,176		2,163,994		1,787,105		16,699,295	

Note:

1/ Workfare participants - Plan Trabajar and other workfare plans, only included in workfare participant category.

2/ Informal workers includes workers without pensions and without pay.

3/ Self-employed: independent workers and microentrepreneurs (1-5 employee firm boss).

4/ Unemployed without unemployment benefit recipients.

5/ Above 16 years.

Source: own calculations based on the October EPH, INDEC.

Table A.2: Summary Statistics - Group 1 (Labor force participants)

Matching Sample 1					
Variable	Obs	Mean	Std. Dev.	Min	Max
Age	20296	37.20526	13.75308	13	98
Male	20302	0.596838	0.490545	0	1
Head of Household	20302	0.461186	0.498504	0	1
Married	20300	0.563202	0.496002	0	1
incomplete secondary education	20290	0.225579	0.417973	0	1
complete secondary education	20290	0.180877	0.384926	0	1
incomplete tertiary education	20290	0.104682	0.306151	0	1
complete tertiary education	20290	0.084081	0.277516	0	1
No.of primary household members	20008	4.602109	2.422007	1	22
No.of children in hhs.	20302	1.325387	1.612969	0	11
living arrangements - unstable	20298	0.036752	0.188158	0	1
infrastructure problems/villa miseria	20302	0.436558	0.495971	0	1
Pampeana	20302	0.312482	0.463516	0	1
Cuyo	20302	0.105507	0.307213	0	1
NOA	20302	0.212688	0.409219	0	1
Patagonia	20302	0.092553	0.289811	0	1
NEA	20302	0.116688	0.321056	0	1

Base: GBA, Single, Primary education.

Note: infrastructure problems/villa miseria dummy indicates whether household has access to sewerage, electricity, a sanitary bathroom, water and stable built housing or not.

Source: own calculations based on the EPH, INDEC.

Table A.3: Summary Statistics - Group 2 (Labor force participants with below or at minimum wage earnings)

Matching Sample 2					
Variable	Obs	Mean	Std. Dev.	Min	Max
Age	10068	34.79996	13.91601	17	98
Male	10070	0.519861	0.49963	0	1
Head of Household	10070	0.350646	0.477196	0	1
Married	10068	0.477553	0.499521	0	1
incomplete secondary education	10069	0.24054	0.427433	0	1
complete secondary education	10069	0.164565	0.370806	0	1
incomplete tertiary education	10069	0.104082	0.305382	0	1
complete tertiary education	10069	0.042507	0.201752	0	1
No.of primary household members	9934	4.927924	2.602038	1	22
No.of children in hhs.	10070	1.441708	1.730223	0	11
living arrangements - unstable	10067	0.044204	0.205558	0	1
infrastructure problems/villa miseria	10070	0.504171	0.500007	0	1
Pampeana	10070	0.293645	0.455454	0	1
Cuyo	10070	0.105065	0.306652	0	1
NOA	10070	0.238828	0.426389	0	1
Patagonia	10070	0.076266	0.265437	0	1
NEA	10070	0.126912	0.332891	0	1

Base: GBA, Single, Primary education.

Note: infrastructure problems/villa miseria dummy indicates whether household has access to sewerage, electricity, a sanitary bathroom, water and stable built housing or not.

Source: own calculations based on the EPH, INDEC.

Table A.4: Summary Statistics - Group 3 (Informal workers and self-employed with below or at minimum wage earnings)

Matching Sample 3					
Variable	Obs	Mean	Std. Dev.	Min	Max
Age	5066	36.17548	14.36488	17	98
Male	5067	0.452141	0.497753	0	1
Head of Household	5067	0.357608	0.479343	0	1
Married	5065	0.513722	0.499861	0	1
incomplete secondary education	5066	0.231938	0.422112	0	1
complete secondary education	5066	0.129688	0.335993	0	1
incomplete tertiary education	5066	0.087446	0.282515	0	1
complete tertiary education	5066	0.033952	0.181123	0	1
No.of primary household members	4965	5.018933	2.701293	1	22
No.of children in hhs.	5067	1.580028	1.82583	0	11
living arrangements - unstable	5065	0.051925	0.221898	0	1
infrastructure problems/villa miseria	5067	0.533057	0.498955	0	1
Pampeana	5067	0.250641	0.433425	0	1
Cuyo	5067	0.1194	0.324291	0	1
NOA	5067	0.26564	0.441717	0	1
Patagonia	5067	0.068877	0.25327	0	1
NEA	5067	0.154529	0.361491	0	1

Base: GBA, Single, Primary education.

Note: infrastructure problems/villa miseria dummy indicates whether household has access to sewerage, electricity, a sanitary bathroom, water and stable built housing or not.

Source: own calculations based on the EPH, INDEC.

Tables: Further results for the comparison groups

Table A.5: Estimation of the Propensity Score (Group 1)

Estimation of the propensity score			
	Probit	Probit, 150 replics	Marginal effects
Age	-0.005***	-0.005***	-0.000***
	[2.74]	[3.01]	[2.74]
Male	-0.333***	-0.333***	-0.024***
	[8.51]	[8.11]	[8.51]
Head of Household	0.025	0.025	0.002
	[0.55]	[0.55]	[0.55]
Married	0.019	0.019	0.001
	[0.49]	[0.45]	[0.49]
incomplete secondary education	-0.051	-0.051	-0.003
	[1.09]	[1.23]	[1.09]
complete secondary education	-0.101*	-0.101*	-0.006*
	[1.90]	[1.82]	[1.90]
incomplete tertiary education	-0.035	-0.035	-0.002
	[0.53]	[0.55]	[0.53]
complete tertiary education	-0.093	-0.093	-0.006
	[1.26]	[1.33]	[1.26]
No.of primary household members	0.021**	0.021**	0.001**
	[2.30]	[2.01]	[2.30]
No. of children in hhs.	0.044***	0.044***	0.003***
	[3.36]	[3.12]	[3.36]
living arrangement - unstable	0.001	0.001	0.000
	[0.01]	[0.01]	[0.01]
infrastructure problems/villa miseria	0.138***	0.138***	0.009***
	[3.61]	[3.71]	[3.61]
Pampeana	0.262***	0.262***	0.019***
	[4.05]	[3.77]	[4.05]
Cuyo	0.274***	0.274***	0.022***
	[3.48]	[3.53]	[3.48]
NOA	0.210***	0.210***	0.016***
	[3.04]	[2.99]	[3.04]
Patagonia	0.762***	0.762***	0.090***
	[10.48]	[10.16]	[10.48]
NEA	0.530***	0.530***	0.052***
	[7.53]	[7.69]	[7.53]
constant	-2.001***	-2.001***	
	[19.10]	[21.19]	
Observations	19987	19987	19987
pseudo R-squared	0.0546	0.0546	0.0546

Absolute value of z statistics in brackets

* significant at 10%; ** significant at 5%; *** significant at 1%

Source: own estimations based on the October EPH, INDEC.

Table A.6: Matching on and off common support (Group 1)

Matching and Common Support			
From Matching: treatment assignment	From Matching: common support off support	on support	Total
untreated	0	19,282	19,282
treated	2	703	705
Total	2	19,985	19,987

Source: own estimations based on the October EPH, INDEC.

Table A.7: Program impact (Group 1)

Outcome variable: Average treatment on treated						
Variable	Sample	Treated	Controls	Difference	S.E.	T-stat
income	ATT	269.24	233.79	35.45*	18.66	1.90
					23.36	**1.52**

Note: In bold standard error and t-statistics are based on 150 bootstraps.

* significant at 10%; ** significant at 5%; *** significant at 1%, based on bootstrapped s.e..

ATT: Average Treatment Effect on the Treated.

Source: own estimations based on the October EPH, INDEC.

Table A.8: Assessment of matching quality (Group 1)

Test of Matching Quality: Equality of means in the treated and non-treated groups, before and after matching								
		Mean		%reduction		t-test		sig.
Variable	Sample	Treated	Control	%bias	|bias|	t	p>|t|	
Age	Unmatched	34.967	37.373	-18.9		-4.57	0.000	***
	Matched	34.959	34.061	7.0	62.7	1.43	0.153	*
Male	Unmatched	0.433	0.607	-35.5		-9.32	0.000	***
	Matched	0.434	0.442	-1.7	95.1	-0.32	0.747	
Head of Household	Unmatched	0.394	0.471	-15.5		-3.99	0.000	***
	Matched	0.394	0.391	0.6	96.3	0.11	0.913	
Married	Unmatched	0.569	0.571	-0.4		-0.09	0.927	
	Matched	0.569	0.548	4.3	-1127.8	0.81	0.421	
incomplete secondary education	Unmatched	0.234	0.226	1.8		0.48	0.633	
	Matched	0.235	0.233	0.3	81.4	0.06	0.95	
complete secondary education	Unmatched	0.156	0.182	-7.0		-1.78	0.074	**
	Matched	0.156	0.145	3.0	56.8	0.60	0.551	
incomplete tertiary education	Unmatched	0.095	0.103	-2.6		-0.67	0.502	
	Matched	0.095	0.098	-1.0	63.6	-0.18	0.857	
complete tertiary education	Unmatched	0.065	0.085	-7.6		-1.88	0.061	**
	Matched	0.065	0.065	0.0	100.0	0.00	1.000	
No.of primary household members	Unmatched	5.187	4.582	23.3		6.53	0.000	***
	Matched	5.175	4.992	7.1	69.7	1.27	0.203	
No. of children in hhs.	Unmatched	1.838	1.318	30.0		8.40	0.000	***
	Matched	1.824	1.716	6.2	79.2	1.13	0.260	
living arrangement - unstable	Unmatched	0.052	0.036	7.8		2.22	0.026	**
	Matched	0.051	0.050	0.7	91.2	0.12	0.903	
infrastructure problems/villa miseria	Unmatched	0.50213	0.43657	13.2		3.45	0.001	***
	Matched	0.50071	0.50071	0.0	100.0	0.00	1.000	
Pampeana	Unmatched	0.26809	0.31335	-10.0		-2.55	0.011	***
	Matched	0.26885	0.25747	2.5	74.9	0.48	0.628	
Cuyo	Unmatched	0.08936	0.10611	-5.6		-1.42	0.155	*
	Matched	0.08962	0.07681	4.3	23.6	0.87	0.385	
NOA	Unmatched	0.17447	0.21377	-9.9		-2.51	0.012	***
	Matched	0.17496	0.17781	-0.7	92.8	-0.14	0.889	
Patagonia	Unmatched	0.20426	0.08879	33.1		10.40	0.000	***
	Matched	0.20199	0.20341	-0.4	98.8	-0.07	0.947	
NEA	Unmatched	0.18723	0.11404	20.6		5.95	0.000	***
	Matched	0.18777	0.2091	-6.0	70.8	-1.00	0.316	

Note: Non-significance of the t-test of the difference in the means for the matched sample indicates 'good quality' match.

* significant at 10%; ** significant at 5%; *** significant at 1%

Source: own estimations based on the October EPH, INDEC.

Table A.9: Summary of the distribution of the absolute bias (Group 1)

Summary of the distribution of the abs(bias)				
Before Matching				
	Percentiles	Smallest		
1%	0.351	0.351		
5%	0.351	1.820		
10%	1.820	2.614	Obs	17
25%	7.035	5.640	Sum of Wgt.	17
50%	9.977		Mean	14.276
		Largest	Std. Dev.	10.984
75%	20.560	23.339		
90%	33.080	29.962	Variance	120.653
95%	35.475	33.080	Skewness	0.639
99%	35.475	35.475	Kurtosis	2.232
After Matching				
	Percentiles	Smallest		
1%	0	0		
5%	0	0		
10%	0	0.338	Obs	17
25%	0.576	0.408	Sum of Wgt.	17
50%	1.734		Mean	2.701
		Largest	Std. Dev.	2.604
75%	4.311	5.994		
90%	7.045	6.227	Variance	6.779
95%	7.070	7.045	Skewness	0.572
99%	7.070	7.070	Kurtosis	1.782

Source: own estimations based on the October EPH, INDEC.

Table A.10: Estimation of the Propensity Score (Group 2)

Estimation of the propensity score			
	Probit	Probit, 150 replics	Marginal effects
Age	-0.005**	-0.005**	-0.000**
	[2.13]	[2.11]	[2.13]
Male	-0.345***	-0.345***	-0.023***
	[6.27]	[6.21]	[6.27]
Head of Household	0.039	0.039	0.003
	[0.59]	[0.58]	[0.59]
Married	0.110**	0.110**	0.007**
	[2.02]	[2.34]	[2.02]
incomplete secondary education	-0.127**	-0.127**	-0.008**
	[1.97]	[2.09]	[1.97]
complete secondary education	-0.232***	-0.232***	-0.013***
	[2.89]	[2.84]	[2.89]
incomplete tertiary education	-0.208**	-0.208*	-0.012**
	[2.03]	[1.92]	[2.03]
complete tertiary education	-0.368**	-0.368**	-0.018**
	[2.26]	[2.04]	[2.26]
No.of primary household members	0.018	0.018	0.001
	[1.54]	[1.55]	[1.54]
No. of children in hhs.	0.047***	0.047**	0.003***
	[2.70]	[2.53]	[2.70]
living arrangement - unstable	0.170*	0.170	0.013*
	[1.65]	[1.57]	[1.65]
infrastructure problems/villa miseria	0.204***	0.204***	0.013***
	[3.71]	[3.66]	[3.71]
Pampeana	0.131	0.131*	0.009
	[1.62]	[1.70]	[1.62]
Cuyo	-0.018	-0.018	-0.001
	[0.17]	[0.16]	[0.17]
NOA	0.125	0.125*	0.009
	[1.49]	[1.67]	[1.49]
Patagonia	0.558***	0.558***	0.057***
	[5.61]	[6.17]	[5.61]
NEA	-0.051	-0.051	-0.003
	[0.50]	[0.55]	[0.50]
constant	-1.868***	-1.868***	
	[13.10]	[13.74]	
Observations	9928	9928	9928
pseudo R-squared	0.058	0.058	0.058

Absolute value of z statistics in brackets

* significant at 10%; ** significant at 5%; *** significant at 1%

Source: own estimations based on the October EPH, INDEC.

Table A.11: Matching on and off common support (Group 2)

Matching and Common Support			
From Matching: treatment assignment	From Matching: common support off support	on support	Total
untreated	0	9,578	9,578
treated	1	349	350
Total	1	9,927	9,928

Source: own estimations based on the October EPH, INDEC.

Table A.12: Program impact (Group 2)

Outcome variable: Average treatment on treated						
Variable	Sample	Treated	Controls	Difference	S.E.	T-stat
income	ATT	139.90	71.92	67.98***	5.97	11.40
					8.77	**7.75**

Note: In bold standard error and t-statistics are based on 150 bootstraps.

* significant at 10%; ** significant at 5%; *** significant at 1%, based on bootstrapped s.e..

ATT: Average Treatment Effect on the Treated.

Source: own estimations based on the October EPH, INDEC.

Table A.13: Assessment of matching quality (Group 2)

Test of Matching Quality: Equality of means in the treated and non-treated groups, before and after matching								
		Mean		%reduction		t-test		sig.
Variable	Sample	Treated	Control	%bias	| bias |	t	p> | t |	
Age	Unmatched	33.637	34.907	-10.0		-1.68	0.093	**
	Matched	33.63	34.467	-6.6	34.1	-0.9	0.367	
Male	Unmatched	0.366	0.529	-33.4		-6.03	0.000	***
	Matched	0.367	0.352	2.9	91.2	0.39	0.694	
Head of Household	Unmatched	0.326	0.356	-6.5		-1.18	0.238	
	Matched	0.324	0.312	2.4	62.7	0.32	0.746	
Married	Unmatched	0.563	0.480	16.5		3.03	0.002	***
	Matched	0.564	0.596	-6.3	61.7	-0.84	0.400	
incomplete secondary education	Unmatched	0.234	0.243	-2.0		-0.37	0.710	
	Matched	0.235	0.229	1.3	33.9	0.18	0.858	
complete secondary education	Unmatched	0.114	0.167	-15.2		-2.61	0.009	***
	Matched	0.115	0.117	-0.8	94.6	-0.12	0.906	
incomplete tertiary education	Unmatched	0.066	0.103	-13.4		-2.26	0.024	**
	Matched	0.066	0.089	-8.3	38.3	-1.13	0.258	
complete tertiary education	Unmatched	0.020	0.043	-13.2		-2.11	0.035	**
	Matched	0.020	0.029	-4.9	62.8	-0.74	0.462	
No.of primary household members	Unmatched	5.623	4.904	25.9		5.08	0.000	***
	Matched	5.613	5.493	4.3	83.3	0.55	0.586	
No. of children in hhs.	Unmatched	2.134	1.429	38.6		7.49	0.000	***
	Matched	2.120	1.969	8.3	78.5	1.01	0.314	
living arrangement - unstable	Unmatched	0.083	0.043	16.5		3.58	0.000	***
	Matched	0.080	0.060	8.3	49.9	1.04	0.300	
infrastructure problems/villa miseria	Unmatched	0.631	0.502	26.4		4.77	0.000	***
	Matched	0.630	0.645	-2.9	89.0	-0.39	0.694	
Pampeana	Unmatched	0.297	0.293	1.0		0.19	0.853	
	Matched	0.298	0.295	0.6	37.7	0.08	0.934	
Cuyo	Unmatched	0.071	0.106	-12.2		-2.08	0.038	**
	Matched	0.072	0.057	5.0	58.7	0.77	0.442	
NOA	Unmatched	0.243	0.238	1.1		0.2	0.843	
	Matched	0.244	0.269	-6.0	-460.3	-0.78	0.436	
Patagonia	Unmatched	0.166	0.073	28.8		6.42	0.000	***
	Matched	0.163	0.181	-5.4	81.4	-0.6	0.548	
NEA	Unmatched	0.097	0.128	-9.7		-1.69	0.090	**
	Matched	0.097	0.069	9.1	6.5	1.37	0.171	

Note: Non-significance of the t-test of the difference in the means for the matched sample indicates 'good quality' match.

* significant at 10%; ** significant at 5%; *** significant at 1%

Source: own estimations based on the October EPH, INDEC.

Table A.14: Summary of the distribution of the absolute bias (Group 2)

Summary of the distribution of the abs(bias)				
Before Matching				
	Percentiles	Smallest		
1%	1.008	1.008		
5%	1.008	1.076		
10%	1.076	2.032	Obs	17
25%	9.706	6.480	Sum of Wgt.	17
50%	13.386		Mean	15.909
		Largest	Std. Dev.	11.244
75%	25.933	26.372		
90%	33.359	28.835	Variance	126.426
95%	38.608	33.359	Skewness	0.485
99%	38.608	38.608	Kurtosis	2.301
After Matching				
	Percentiles	Smallest		
1%	0.628	0.628		
5%	0.628	0.826		
10%	0.826	1.344	Obs	17
25%	2.914	2.417	Sum of Wgt.	17
50%	5.044		Mean	4.916
		Largest	Std. Dev.	2.739
75%	6.558	8.265		
90%	8.316	8.286	Variance	7.500
95%	9.074	8.316	Skewness	-0.090
99%	9.074	9.074	Kurtosis	1.832

Source: own estimations based on the October EPH, INDEC.

Table A.15: Summary of the distribution of the absolute bias (Group 3)

Summary of the distribution of the abs(bias)				
Before Matching				
	Percentiles	Smallest		
1%	0.139	0.139		
5%	0.139	5.026		
10%	5.026	5.433	Obs	17
25%	8.590	7.078	Sum of Wgt.	17
50%	13.362		Mean	14.943
		Largest	Std. Dev.	9.227
75%	20.598	21.760		
90%	30.637	23.000	Variance	85.142
95%	33.137	30.637	Skewness	0.394
99%	33.137	33.137	Kurtosis	2.314
After Matching				
	Percentiles	Smallest		
1%	0.000	0.000		
5%	0.000	0.000		
10%	0.000	0.609	Obs	17
25%	1.778	1.236	Sum of Wgt.	17
50%	3.820		Mean	4.781
		Largest	Std. Dev.	4.754
75%	6.982	7.701		
90%	10.253	8.862	Variance	22.601
95%	18.576	10.253	Skewness	1.482
99%	18.576	18.576	Kurtosis	5.102

Source: own estimations based on the October EPH, INDEC.