

# The Targeting and Poverty Effect of the “Jefes y Jefas” Workfare Program during the Argentine Crisis

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**Abstract:** The principal objective of this paper is to examine the poverty and targeting performance of Argentina’s main policy response to the grave economic crisis of 2002 using propensity score matching techniques. The author finds that the program’s poverty reduction ability, in particular in terms of severe poverty, was strongly increasing over time, while its targeting performance was decreasing. Based on the results from this paper and bearing in mind the recovery of the Argentine economy, the author argues in favor of a tightening of the work requirement of *Jefes y Jefas*. Thus, it is suggested to redesign the program in a way to make it more similar to its predecessor Trabajar. While this is expected to lead to an improvement in the program’s targeting performance, the impact on poverty estimates is probably very low. Further on, the author conducts some sort of robustness analysis on the evolution of poverty rates and poverty determinants by testing for different assumptions about equivalence scales, economies of scale and poverty lines.

Keywords: crisis, poverty, workfare, matching techniques, Argentina  
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## **I. Introduction:**

After the decade of slow economic growth and high government deficits in the 1980s that ended up in a process of hyperinflation, Argentina adopted a hard peg of the local currency to the U.S. dollar in 1991. The so called “Convertibility Plan” was introduced. About the same time Argentina initiated the liberalization of its economy including the deregulation of the labor market, the privatization of public owned companies and the reduction of import barriers and import substitution subsidies. As an immediate consequence of these new policies, inflation fell rapidly, the annual GDP growth rate increased and the fiscal deficit diminished in the first half of the 1990s. But unfortunately not everything turned positive. Thus, during the same time unemployment rose and poverty and inequality increased. In the first half of the 1990s, the rate of unemployment increased from 7 percent to more than 15 percent. The situation turned completely dissatisfactory when Argentina fell into a severe economic recession starting when Brazil, Argentina’s main trading partner, devalued its currency in January 1999. This event marked the beginning of a three year recession that ended in a major crisis. At the end of 2001, Argentina’s economy collapsed in a financial meltdown accompanied by a banking and currency crisis. Finally, the collapse of the “Convertibility Plan”, the subsequent sharp devaluation of the Argentine peso and the default on foreign debt, combined with the freeze on deposits, resulted in a large contradiction in national outputs, and in so far unseen high unemployment and poverty rates.

Many of the middle-class, faced with both declining wages and freeze on bank assets, moved into poverty for the first time during this crisis. In a society like Argentina, with high education levels, the presence of former middle-class members fallen into poverty constituted by those who traditionally had access to goods and to important economic and cultural services, caused a major domestic shock, public uproar and political instability. But not only the impoverished middle-class, suffered from the downturn of the economy. Beginning with the second semester of 2002, the political and social situation has calmed down. Clearly, most social indicators are still worse compared to the values before the emergence of the crisis, but an improvement of the social situation in Argentina compared to the crisis period has undoubtedly taken place. One of the principal reasons that accounts for this positive development is seen in the introduction of the workfare program *Jefes/Jefas* that has been designed by the Argentine government as a safety net for household heads in greatest needs and which is supported substantially by loans of the World Bank (WB) and the Inter-American Development Bank (IDB). In addition to the implementation of the *Jefes/Jefas* program, there were other factors that contributed to the fall of the unemployment

and poverty rates in the last three years. Particularly, a for Latin America and Argentina relatively moderate inflation rate and a revitalizing economic growth process have fostered the improvements since 2002.

In this study mainly two aspects will be investigated. First of all, the effects of the Argentine economic crisis of 2001/2002 on poverty will be analyzed and second, the workfare program *Jefes/Jefas* with respect to its poverty reduction and targeting performance will be examined.

The key motivation behind this research effort is to facilitate the understanding of how workfare programs affect poverty during an economic crisis. Further on, the self-screening performance of a workfare program and its related targeting performance are of strong interest given its importance for poverty reduction and budget sustainability. The contribution of this study to the existing literature is threefold. First of all, the time frame is substantially extended. Secondly, some slight improvements on the methodology that were used in existing studies on *Jefes/Jefas* are adopted. Thirdly, a more detailed investigation on the relationship between *Jefes/Jefas* and its poverty/targeting performance is provided.

All parts of these investigations are based on the Permanent Household Surveys conducted by the National Institute of Statistics and Census of the Republic of Argentina (INDEC) and are restricted to the Area of Greater Buenos Aires (AGBA). The time period under investigation comprises the period between April 1998 and February 2005.

After a brief discussion of some import methodological aspects, the evolution of the poverty situation during the relevant period will be depicted. Building on these results the poverty and targeting performance of the workfare program *Jefes y Jefas* will be discussed and evaluated.

## **II. General Methodology**

### **II.1 The EPH and the EPH-C**

All of the analyses conducted in this paper are based on the principal permanent Argentine household survey that gathers information on individual socio-demographic characteristics, employment status, hours of work, wages, incomes, types of jobs, education, and migration status. This survey is called “Encuesta Permanente de Hogares” (EPH) or in its new design since the second half of 2003 the “Encuesta Permanente de Hogares Continua” (EPH-C). Both surveys, the EPH and the EPH-C are/were carried out by the Argentine National Institute of Statistics and Census (INDEC)<sup>2</sup>. The EPH was applied since 1973, and had

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<sup>2</sup> Most of all research on poverty and inequality concerning Argentina is done by using the microdata from these surveys. Nonetheless, there were three other surveys in the last years that allowed for research on poverty and inequality, although not for the crisis period. The National Expenditure Survey called “Encuesta Nacional de

traditionally been carried out twice a year in May and October. First micro data are available for the AGBA since 1974. In the last round of the EPH which was conducted in May 2003, 31 urban areas were covered by the survey. Thus, the EPH was extended to cover all urban areas of the countries with more than 100,000 inhabitants and to have at least one observation in each province. The areas covered in May 2003 comprised about 87 percent of the Argentine urban population and about 70 percent of the total population (INDEC, 2003).

An important feature of the permanent household surveys is its panel structure. The EPH used a rotating panel where 25 percent of the panel was replaced in each round, whereby the longest possible stay of a household in the panel was 1.5 years.

With respect to the period from August 2003 onwards, a major methodological change was implemented by INDEC, including changes in the questionnaires, the frequency of survey visits, the structure of the rotating panel, and the number of households included in the survey. The questionnaire of the new EPH-C is intended to improve the report of labor variables and incomes, particularly those related to informal jobs and public programs.<sup>3</sup> From mid 2003 onwards, the frequency of data collection was changed to four times a year, and a new rotating panel system was introduced.<sup>4</sup> Additionally, the number of observations (individuals) per year has changed from around 90,000 in the late 1990s to around 60,000 in the early 2000s, and back to 90,000 in the EPH-C. Therefore, one has to bear in mind that the methodological changes in the permanent household survey through the implementation of the new EPH-C will probably introduce additional noise in the investigation and construction of statistics on poverty and inequality.

## **II.2 On the treatment of item non-response and misreporting of income**

The micro dataset that is finally provided by INDEC already contains some modifications on the data collected from the survey questionnaires. Thus, INDEC already imputes missing information for some variables of the dataset of the Area of Greater Buenos Aires. In a first

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Gastos de los Hogares” was conducted the last time in 1996/97. A particular feature of this survey is that it covers consumption expenditures. Since this survey is only conducted every ten years, it is not very useful in tracking poverty over time. The other two surveys are called Social Development Surveys or “Encuestas de Desarrollo Social” and were conducted in 1997 and 2001 by SIEMPRO, and have been used mainly to analyze household welfare and poverty correlates for various social programs.

<sup>3</sup> Thus, the EPH-C includes some additional questions to the original EPH to capture incomes from vouchers, tips and other items that are not included in regular wages. It also encounters more questions on the incomes from self-employment, public programs, charity, or child labor. Moreover, the EPH-C includes some questions on the household strategy to finance expenditures (disaving, borrowing, selling assets, and others), and on non-monetary items of household income (Lee, 2003).

<sup>4</sup> For more information on the new rotation system see INDEC (2005).

step for those where information on age, civil status, sex, and education features are missing, INDEC exploits the panel structure of the survey of the preceding round to impute the missing values. In a second step, in the case that in a household there is only one individual that does not report her labor market status, INDEC uses a method called Hierarchical Hot Deck to impute missing values on labor market status, occupational category, and education levels.<sup>5</sup>

Furthermore, statistics are subject to potential biases coming from income non-response and misreport. When a household refuses to answer the whole survey (known as unit non-response) INDEC's practice is to reweight observations. In the case that people answer the survey but refuse to provide information on incomes (known as item non-response) INDEC does not reweight observations. The existence of missing incomes can clearly bias the statistics if non-response is correlated with income. But even when this is the case, poverty and inequality trends may not be affected if people who do not answer the income questions are consistently the same (Gasparini, 2004a). In the micro dataset INDEC marks the answers of those people who are working for a pay but report no labor income as invalid. Thus, there are two reasons why zero labor incomes in the micro dataset exist. First of all, zero incomes can refer to individuals who declare being engaged in a productive activity but not receiving remuneration for it. Second, zero labor incomes in the micro dataset may result from individuals who were not willing to declare the amount of labor income. To treat the problem of potentially biased statistics and estimates through income non-response several options have been proposed. For the investigations in this study<sup>6</sup> earnings of labor income non-respondents will be imputed by applying the coefficients of a Mincer-equation.<sup>7</sup> Since in Argentina most workers report hours of work, even those who do not report earnings, Mincer-equations will be estimated for hourly wages, and thus for monthly earnings by multiplying predicted wages and reported work hours. The Mincer equations are estimated for log hourly wages of individuals aged 14 to 65 using Heckman Maximum Likelihood.<sup>8</sup> The coefficients

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<sup>5</sup> More information about the way INDEC is conducting the imputations can be found in INDEC (2005).

<sup>6</sup> In contrast to the methodology adopted in this study, INDEC usually drops all those cases who were identified to have done at least some work but who were not willing to report their income. Galasso and Ravallion (2003) on whom I will comment later on in this paper, followed INDEC's treatment of item non-response in their analyses.

<sup>7</sup> The original application of the Mincer-equation goes back to Mincer (1958) and Mincer and Polachek (1974). A good overview about the traditional use of Mincer-equations can be found in Heckman et al. (2003). Since the so-called Mincer-equation was introduced, several modifications and improvements of estimation techniques have taken place. Therefore, Heckman-maximum likelihood instead of the estimation procedures presented in the papers of Mincer (1958) and Mincer and Polachek (1974) will be used.

<sup>8</sup> The model used, corresponds to the bivariate normal selection model as presented in Heckman (1979)

of these equations and the distribution of estimated residuals are used further to predict wages for those workers whose earnings are missing.<sup>9</sup> Since the imputation of labor income is only made for those workers with missing labor income that were identified by INDEC as invalid and that had reported their hours of work, there is still a very small number of individuals who did not report labor income and that were identified by INDEC as invalid, but who did not report hours of work. If this was the case the respective individuals were dropped from the sample.

Another problem of the dataset arises from potential underreporting or misreporting of incomes. Income misreporting is often caused by two problems. One is that some incomes are particularly difficult to measure. This is typically the case of informal sector self-employment and small agricultural businesses, but also of the richest individuals, who usually have diversified portfolios with income flows that are not easy to value (Székely and Hilgert, 1999). The second problem is that some individuals may choose to underreport their income deliberately, even if they have a precise idea of its value. If underreporting is correlated with income or with income sources typically earned by specific sectors of society, it will introduce biases in inequality estimates. Moreover, if underreporting is found to prevail in the poorer part of the sample population, then the incidence of poverty will be overestimated as well. Generally, the richest individuals are more reluctant to disclose their assets and wealth, so underreporting tends at least to result in an underestimation of inequality.

Furthermore, the incidence of underreporting income requires an additional decision with respect to the EPH and EPH-C microdata. Thus, INDEC identifies some persons as underreporting their incomes. Persons identified by INDEC as underreporting their incomes declare labor incomes higher than zero but the amount they mentioned as labor income seems to be too low compared to other individuals with similar socioeconomic characteristics and

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which is estimated by maximum likelihood. To avoid that substantial collinearity between the predicted inverse Mills ratio term and the remaining covariates in the outcome equation arises, which would lead to large standard errors, an instrument (marital status) will be applied in the selection equation of the model.

<sup>9</sup> Quantitative and Qualitative results regarding the imputation procedure are presented in tables 1, 2, 3 and 4 in the Appendix. As outlined in the methodology part Heckman Maximum Likelihood was used to control for selection bias when generating the data for the labor income imputations.<sup>9</sup> The variables applied for Heckman Maximum Likelihood are similar to those used in WB (2000a), and Ferreira (2004). The coefficients of the equations and the respective Rho values, which measure the degree of correlation between the residuals of the log-hourly wage and the participation equation, are very decent until the round of May 2003. When using the data from the EPH-C beginning with the second half of 2003, the values of Rho, Sigma, and Lamda increase significantly. Moreover, the round of September 2003 seems to entail some particular weaknesses. Thus, the coefficients of the log hourly wage equation for September 2003 show very unusual values, as well as some inequality statistics for this round. Since it was the first time that the EPH-C was implemented, there may have been some particular problems in the data collecting and processing process that were eliminated or reduced in the 2004 and 2005 rounds.

similar labor market status. Again there are several ways to cope with this problem.<sup>10</sup> For the upcoming analysis it will be assumed that the individuals identified by INDEC as underreporting their incomes are reporting their income properly. Thus, the income difference between those identified as underreporting labor incomes and those with similar characteristics is only due to a different return to unobservable factors as proposed by Cruces and Wodon (2003a). Hence, those individuals will not be dropped from the analysis and likewise labor income will not be imputed for individuals who were identified by INDEC as underreporting their labor incomes.<sup>11</sup>

### **II.3 Focusing on the AGBA**

A certain drawback of the upcoming investigation will be the restriction of the analyses to the Area of Greater Buenos Aires. There have been in the past several authors who limited their research to the AGBA (WB, 2001; Galasso and Ravallion, 2003; Gasparini, 2004a). One reason has been that the micro data for the AGBA are available for much longer than for other areas. Thus, when investigating poverty and inequality over a broader time period it may be useful to limit the research to this area. A second reason is due to the lack of adequate price indices and poverty lines for regions outside the AGBA until recently. Moreover, the restriction to the AGBA circumvents some other technical problems. Although the investigations are limited to the AGBA, the analyses are still expected to be a good indicator to judge the overall Argentine situation. Since the AGBA comprises a huge part of the Argentine people, it can be assumed that the results obtained are appropriate to describe the situation in Argentina on the whole. Moreover, as shown by WB (2000b) the AGBA is not an outlier with respect to its poverty and inequality performance when compared to the other Argentine regions. For instance in the pre-crisis period, the AGBA had poverty and inequality rates only slightly below the Argentine average.

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<sup>10</sup> Thus, it is possible to totally exclude persons who misreport their incomes as it is the practice of INDEC or one can use various multivariate methods as in Székeley and Hilgert (1999).

<sup>11</sup> An alternative strategy to alleviate the problem of underreporting as done in Llach and Montoya (1999) would be to apply some grossing-up procedure. Hence, income from a given source in the household survey is adjusted to match the corresponding value in the National Accounts. Since the adjustment to National Accounts inflates capital income relatively more than the other income sources, this procedure normally generates higher inequality estimates. The authors' adjustment coefficients for the various income sources for 1993 were: 1.355 for wages and salaries, 1.833 for self-employed and owners, 1.584 for pensions, and 8.5 for rents and interest payments.

### III. The Poverty and Inequality Analysis

#### III.1 The Evolution of the Poverty and Inequality Situation

The measurement of poverty requires choosing a dimension how to define poverty, selecting a poverty line, and an aggregation method, for instance a poverty index. Similar decisions have to be taken in order to measure inequality. Concerning the dimension in which poverty and inequality will be measured, the income dimension was chosen for in the analysis. To be more precise current monthly disposable income will be used. Since the income questions of the surveys are related to the month preceding the survey, the disposable individual incomes will be obtained for April and September for the EPH, and for February and August for the EPH-C. Again to be more accurate, household per capita income will be applied in the analysis of poverty and inequality.

Additionally to the use of household per capita income over individuals in this investigation, some allowance for the size and composition among households will be made. Since per capita measures generally overstate the extent of prevailing poverty the household aggregates will be adjusted for different adult equivalence scales and economies of scale.<sup>12</sup> The use of adult equivalence scales takes into account the differences in consumption needs for the different members of a household, which can result from differences in age, sex, or other characteristics. For instance, it is clear that children consume less than adults. Thus using per capita income without controlling for different consumption behaviors will lead to overestimating poverty rates. For the upcoming analyses two different equivalence scales schemes will be used. The first scheme is taken from INDEC and is provided in Table 5 in the Appendix. An advantage of adopting INDEC's scheme is that it might be the best to fit the specific Argentine context. Moreover, the application of the INDEC scheme fosters the comparison with the official poverty and inequality indices calculated by INDEC. The second scheme is based on Deaton and Zaidi (1999) and simply assumes a multiplication factor of  $\alpha_1 = 0.5$  for children under 6 years and a factor of  $\alpha_2 = 0.75$  for children under 14 but older than five years.<sup>13</sup>

Moreover, deflating household income by total household size also means ignoring any economies of scale in consumption within the household. Since people can share some goods

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<sup>12</sup> A detailed discussion about the sense of taking equivalence scales and economies of scale into account is provided in Deaton (1997).

<sup>13</sup> The choice of equivalence scales is not arbitrarily. As Deaton and Zaidi (1999) pointed out, one can expect for instance that children are relatively more expensive in rich than in poor economies. Thus, Deaton and Zaidi (1999) recommend an  $\alpha$  of 0.25 or 0.33 for poor and an  $\alpha$  of 0.9 or 1 for richer countries. Since Argentina is considered to be a middle-income country the equivalence scales applied lie between the values of 0.33 and 0.9.



and services, the cost of being equally well-off does not rise in proportion to the number of the people in the household. Thus, there are good reasons to control for economies of scales as well when constructing poverty estimates.<sup>14</sup> For the investigations  $\theta = 0.5$  like in Székely and Hilgert (1999) and  $\theta = 0.8$  like in Gasparini (2004b) will be used as economies of scale factors.<sup>15</sup>

Beside the considerations above there are still more decisions to be made with respect to the measurement of poverty. In this study the official poverty line is followed. INDEC calculates the official Argentine poverty line in terms of an absolute poverty line, and uses a consumption bundle that takes into account a food and a non-food component.<sup>16</sup> Thus, INDEC does not consider poverty entirely in terms of food. The price of the food share of the consumption bundle is calculated using the widespread applied Food-Energy Intake Method.<sup>17</sup> By only considering the price of the food bundle one receives the official Argentine indigence line, which will be used for the poverty analysis, too. While INDEC is updating the indigent line by the price development of the basic food basket, it uses the non-food CPI to adjust the non-food component of the consumption basket to inflation.<sup>18</sup>

A last decision with respect to the poverty statistics concerns the choice of an adequate aggregation method or poverty measure. Since every poverty measure in itself only provides partial information about the prevailing poverty situation, researchers normally use a variety of poverty measures to capture the poverty situation adequately. For the analysis the Poverty Head-count ratio, the Poverty Gap ratio, the Income Gap ratio, and the Foster-Greer-Thorbecke-Index (Foster et al., 1984) will be used.<sup>19</sup>

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<sup>14</sup> Finally, household equivalent per capita income including economies of scales can be written in the following way  $Y = (\sum_i y_i) / (\sum_i \alpha_i)^\theta$  whereby  $y_i$  denotes the income of individual  $i$ ,  $\alpha_i$  denotes the respective adult equivalence scale for individual  $i$ , and  $\theta$  marks the assumed economies of scale.

<sup>15</sup> The selection of economies of scale parameters is not arbitrarily either. If one thinks of economies of scales as being related to the existence of shared public goods in the household, then the economies of scale parameter  $\theta$  will be high when most goods are private and low when a substantial fraction of household expenditure is on shared goods. Since households in poorer economies spend relatively more of their budget on food than households in richer countries do, and since food is essentially a private good, economies of scales are rather limited in poorer households. Thus, Deaton and Zaidi (1999) propose a  $\theta$  of 0.9 or 1 for poorer and a  $\theta$  of 0.75 for richer countries. That the trends in the statistics can be severely influenced by the choice of equivalence scales and economies of scales was for instance demonstrated in Lanjouw and Ravallion (1995).

<sup>16</sup> The ratio of food and non-food components is determined by the so called Engel's-coefficient and is based on Engel's Law after Ernst Engel (1857) who first noted that people when they become better-off tend to spend a smaller fraction of their budget on foods.

<sup>17</sup> For a detailed description of the Food-Energy Intake and alternative methods see Ravallion (1998). For some critics on the Food-Energy Intake Method see Deaton (2004).

<sup>18</sup> A problem of indexing the non-food component of the basic consumption basket through the non-food CPI is based on the different composition of the non-food component of the consumption basket and the non-food CPI. Since the non-food CPI includes some luxury articles, the current poverty lines have a tendency to overstate the consumption of non-foods by the poor over time (WB, 2000a).

<sup>19</sup> For the analysis of inequality similar decisions have to be made. Often there are some kind of criterions that should guide the selection of an inequality measure. For a thorough discussion see Ray (1998) or Sen (1999).

When considering the poverty estimates based on the official Argentine poverty line, there are some clear trends in the development of the statistics. As shown in Tables 6, and 7 in the Appendix, poverty increased slightly over the period of 1998 and 2000, and increased substantially over 2001. Poverty estimates skyrocketed in 2002. Whether the poverty situation reached its climax in the May round or in the October round of 2002 depends on the poverty measure and the adult equivalence scale used.

The poverty headcount ratio as presented in Tables 6 and 7 determines the climax of the poverty situation for the second half of 2002, and sees falling poverty rates beginning with the first half of 2003, independently from the used adult equivalence scheme. Poverty measures that are less concerned with the number of people living in poverty, but with the depth of poverty do not provide a clear answer to the question whether poverty reached its climax in the first or the second half of 2002. As shown in Table 6 the poverty gap ratio when using INDEC's adult equivalence scheme already shows an improvement of the poverty situation for the second half of 2002.

Moreover, the income gap ratio which is presented in Tables 6, and 7 for the various adult equivalence schemes shows coherently improving values for the second half of 2002. A similar pattern shows the development of Foster-Greer-Thorbecke indices when using at least poverty aversion parameter higher or equal than  $\alpha = 1$ . One reason for the improvement of poverty indices that are investigating the depth of the poverty situation may lie in the implementation of the Jefes/Jefas workfare program, which provides for several people participating in the program not enough money to jump over the poverty line. Thus, the effect on the poverty head count ratio is rather small while nonetheless the depth of poverty decreased due to the money received from the program. With respect to the situation after 2002, poverty has fallen significantly, although poverty levels still remain higher than in the years before 2001. Moreover, one has to bear in mind that beginning with the second half of 2003 a new survey design has been implemented. Hence, the substantial fall in poverty rates between May 2003 and September 2003 may have been caused through a different methodology in the surveys. It may be possible that the new EPH-C which comprises several new questions about alternative income sources is able to capture incomes of the poor better than the old EPH, and therefore leads to lower poverty rates. Clearly, accepting that the EPH-C may cover income from the poor more accurately than the old EPH causes several problems in evaluating the poverty situation before the implementation of the EPH-C appropriately. An alternative explanation for the improvement of the poverty situation between May 2003 and September 2003 is provided by Gasparini (2004c), Bertranou and Khamis (2005) and Khamis

(2005). Thus, decent economic growth that was restored in 2003 has benefited particularly poor people and therefore driven poverty rates down since the second half of 2003.

The poverty trends outlined above are about the same when controlling for economies of scale. As Tables 8 in the Appendix demonstrate for economies of scale of  $\theta = 0.8$  over INDEC's adult equivalence scales, poverty reached its climax in the second half of 2002 when considering the poverty head count index. With respect to poverty depth measures and Foster-Greer Thorbecke Indices with relatively high poverty aversion parameters, the climax of the poverty situation was reached in the first half of 2002. Moreover, beside the analysis of *moderate* poverty there is often undertaken as well an investigation of so-called *extreme* poverty or indigence. INDEC determines the official indigence line by calculating just the price of the food component of the basic consumption bundle that is used for the determination of the official poverty line. In some sense the analysis of the situation of the indigent poor may be even more important than the investigations on *moderate* poverty, since the indigent poor find themselves in an even worse situation than individuals below the poverty but above the indigence line. Statistics on extreme poverty were constructed for INDEC's adult equivalence scales equivalence scales. The respective Table 9 is provided in the Appendix.

When considering the development of the headcount ratio based on the indigence line the tremendous increase in poverty and indigence estimates over the period from 1998 to 2002/3 is really impressive. Thus poverty and indigence estimates are nearly five times higher by the end of 2002 than in 1998. Although the headcount ratio based on the indigence line has declined over the last years, its level is still much higher than in the pre-crisis period. With respect to the question of whether the climax of the crisis was reached in the first or the second half of 2002, there is no clear answer to obtain from the statistics based on the indigence line. While the headcount ratio indicates that the climax was reached by October 2002, statistics that actually calculate the depth of the incidence of extreme poverty show their maximum values in the round of May 2002.

Poverty increased slightly over the period of 1998 to 2000, and started to rise significantly over 2001. The poverty situation reached its climax in 2002, when for instance the values of the Poverty Headcount Ratio more than tripled when compared to the respective values of 1998. So far it is not absolutely clear whether the situation started to improve in the second half of 2002 or in the first half of 2003. Since 2003 the poverty situation relaxed although poverty estimates are still significantly worse than those in the period before 2001. Moreover, it is not clear, whether the drop of poverty levels since the second half of 2003 is only due to

the introduction of a new survey design or not. An essential feature of the crisis was as well the tremendous rise of the incidence of extreme poverty.

### **III.2 The Determinants of Poverty in the Area of Greater Buenos Aires**

Besides of knowing that moderate and extreme poverty have substantially increased over the last years, it is quite interesting to get to know more about the circumstances that accompany the incidence of moderate or extreme poverty. Thus, so-called poverty profiles are often constructed to compare the features of moderate poor, indigent poor, and non-poor households. For the construction of the poverty profile the database had to be adjusted to take household observations and not observations over individuals into account. The set of variables used in the profile is shown in Table 10 in the Appendix. As shown in respective Table the profile consists of some general features of the household and some features that are strictly related to the household head.

Moreover, this study did not use the data of all fifteen survey rounds. Instead, the investigation was limited to the rounds of October 1999, October 2002, and September 2004.

Table 11 in the Appendix presents the statistics obtained from the construction of the poverty profile. When considering the family size of poor and non-poor households, it is quite clear from the data that poor households tend to consist of more members than non-poor households do. Moreover, when comparing the household size of moderate poor and indigent poor over time, it is shown that moderate poor households tend to have similar household sizes than indigent poor households. The quite large gap in the household size between moderate and indigent poor in the round of October 2002 shows that large households were comparatively hard hit during the crisis period. Very similar results are obtained for the dependence variable “Children 14”. Thus, poor families consist normally of more children below the age of 14 than non-poor families do. During the crisis families with a high number of children below the age of 14 seem to be hit particularly hard when comparing the respective statistics among the moderate and the indigent poor for October 2002.

The statistics on income are very expressive as well. Having in mind that for the round of October 2002 more than 50 percent of the population was declared to be poor, the income estimates provide a good intuition on how unequal income is distributed in Argentina.

Moreover, household heads of poor households tend to be substantially younger than household heads of non-poor households. During the crisis households headed by a young person seemed to be particularly vulnerable to live in extreme poverty when comparing the development of the respective values between poor and indigent households. The comparison

of education levels shows no unexpected results. Thus, household heads of poor households obtain in general lower schooling levels than household heads living in non-poor households. Due to the extent of the crisis in 2001/02 and the corresponding dramatic increase in poverty rates, the share of households that live in poverty and who are headed by a person with some secondary schooling increased. Interestingly, this development did not reverse in the aftermath of the crisis, although poverty rates declined over the last two years. Table 11 displays another puzzling development. Thus, non-poor households are more likely to be headed by a woman than poor households. Astonishingly is the strongly decreasing share of women as household heads in moderate and extreme poor households during the climax of the crisis. It might be that this development is due to rather behavioral responses to the crisis and its effects on the labor market.

Beside the construction of poverty profiles the application of multivariate regression frameworks often prove to be a very useful tool in analyzing the determinants of poverty. In the following a linear regression model<sup>20</sup> will be estimated using Ordinary Least Squares for the logarithm of the adult equivalent income of households using INDEC's adult equivalence scales. Equation 1 below illustrates the estimated regression model. Thus,  $y_i$  represents the adult equivalent income of household  $i$ ,  $\alpha$  is a constant,  $X_i$  denotes the vector of independent variables for household  $i$ ,  $\beta$  is a vector containing the coefficients for the respective independent variables, and  $\varepsilon_i$  represents the estimated residuals for household  $i$ .

$$\log(y_i) = \alpha + X_i\beta + \varepsilon_i \quad (1)$$

The set of independent variables used in the regression encounters certain household level variables, a few household asset variables, and variables capturing characteristics of the household head<sup>21</sup>. Moreover, the dataset used is the one that is based on the income imputation of labor incomes for income non-respondents. Instead of using all 15 survey rounds that were included in the calculation of poverty and inequality statistics the regressions will be restricted to the same survey rounds as used for the construction of the poverty profile. Therefore, the regressions will be conducted for the rounds of October 1999, October 2002, and September 2004.

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<sup>20</sup> Quite often researchers use categorical regressions such as probits and logits for this purpose. These regressions actually assume that the equivalent income of households is not observed. Thus, the analyst only knows whether a household is poor or not. As Cruces and Wodon (2003b) pointed out there are at least two shortcomings from using logits and probits when actually observing the equivalent income of households. First of all, the researcher is throwing away relevant information (the distribution of income). Second, regression coefficients of categorical regressions are more likely to be biased than those obtained from linear regressions.

<sup>21</sup> For a more detailed description of the variables used in the regression see Table 12 in the Appendix.

The results of the regressions are presented in Table 13 in the Appendix. The coefficient of the variable for the number of family members in the household is negative and statistically significant in all three rounds. Thus, a larger household size is expected to lead to a reduction in the expected adult equivalent income. Moreover, a higher number of income receivers in a household, and a higher number of persons in a household who obtain an occupation seem to increase the expected adult equivalent income.<sup>22</sup> Interestingly, the coefficient of the variable that captures the number of children below the age of 18 turns out to be positive and statistically significant in all three rounds. Clearly the respective coefficients obtained from the regressions are comparatively low. Although it seems more plausible that the coefficients are negative, it does not seem to be an unusual result for the coefficients.<sup>23</sup>

With respect to the coefficients for the variables that are supposed to capture household assets, the accommodation features, the results received display values that were to expect from economic theory. Since richer households should be capable to afford larger apartment sizes, and a higher level of privacy than poorer households do, the coefficients for the respective household assets are supposed to show positive values. As Table 13 displays, the respective coefficients take positive values over all three rounds, and are in most cases statistically significant. Concerning the coefficients related to the characteristics of the household head, reasonable results were obtained as well. Thus, households with female heads tend to be slightly better off than households with a male head do.<sup>24</sup> This result is not surprisingly when considering the poverty profile in Table 11 that illustrates that richer households are more likely to be headed by a female person. Moreover, it seems to be a quite common phenomenon for Latin American economies that there is no or at least not such a strong gender bias against women than in economies in other parts of the world (Walton, 2004).

The interpretation of the coefficients related to the age of the household head (Age and Age<sup>2</sup>) is rather difficult. Table 13 shows negative values for the linear term and positive values for the squared term. Both variables show over all three rounds very small and statistically significant coefficients. Often economic theory offers a quite plausible

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<sup>22</sup> The coefficient that captures the number of persons in the household who obtain an occupation turns out to be not statistically significant for the round of September 2004. In general, significance does not seem to be a problem for the majority of estimated coefficients. Hence, the R<sup>2</sup> shows quite normal values as well.

<sup>23</sup> For instance, in Bertranou and Khamis (2005) where the authors run a probit regression on the probability of being poor, the coefficient for the variable indicating the number of household members is positive, and therefore indicates that living in a comparatively large household increases the probability of being poor. In the same regression the coefficient of the variable that captures the number of children turns out to be quite small and negative.

<sup>24</sup> Since all three coefficients related to the dummy variable that captures the sex of the household head turn out to be not statistically significant, it seems that the sex of the household head did not matter in determining household per capita income.

explanation for a positive coefficient of the linear and a negative coefficient for the squared term. Thus, the age of the head may be related to experience and show a positive coefficient for the linear term to demonstrate that more experience in the job market leads to higher incomes. Since elderly people find it often more difficult to find and obtain a job in the labor market, a negative coefficient of the squared age term is supposed to show that the effect of more experience is at some point decreasing in its margin. There are several explanations available why the coefficients in Table 13 do instead show opposite signs. When looking at the poverty profile in Table 11 one can see that richer households are much more likely to be headed by an elderly persons than poorer households do. Moreover, as Cruces and Wodon (2003b) pointed out, elderly individuals may have been better protected over the last years, since they are more likely to rely on pensions that were paid during the crisis and post-crisis period than younger persons do. Therefore, elderly persons were not that much affected by the comparatively strong fluctuation of labor income over the last years. Additionally, it is possible that with the beginning of the recession in Argentina in 1999, individuals that lived in a household headed by an elderly person moved into the household of their children to protect themselves against poverty. Thus, the number of households with comparatively low income headed by an elderly person may have been substantially reduced over the last years, what affected the estimated regression coefficients of the age variables.

Being married does seem to have a small positive influence on expected adult equivalent income although one has to bear in mind that the respective coefficients of the first two rounds are not statistically significant. Coefficients related to educational characteristics of the household head show typical results either. Since completed tertiary education builds the base category all respective coefficients were expected to be negative and decreasing in its size when starting with “primary incomplete”. Table 13 displays that the education related coefficients indeed show the expected results. Thus, every higher education level does seem to generate higher expected adult equivalent income. The coefficients that capture labor market characteristics of the household head indicate that when the head of household is employed in the informal segment of the labor market, adult equivalent income is expected to be comparatively low. This is not very surprisingly, since jobs in the informal Argentine labor market are much more unstable and in general worse-paid than jobs in the formal segment of the labor market. Moreover, there are certain social security benefits, for instance health insurance, unemployment insurance and pension payments that are only available to persons who obtain a job in the formal segment of the labor market. Therefore, persons in Argentina working in the informal segment of the labor market are much more likely to fail generating

income and to suffer from recessions than persons in the formal segment of the labor market do. When taking the economic sectors into account Table 13 displays that working in the construction sector is less favorable than working in the manufacturing sector or in the service sector (base category). Somehow the coefficients of the variable “Manufacturing” turn out to be statistically insignificant for all three rounds.

The investigation of poverty determinants has shown very interesting and typical results. Thus, low education levels, and high family sizes have usually been pointed out as the main features of poor people in Argentina. Moreover, during the crisis situation these conventional poverty determinants displayed some extra-ordinary developments. Therefore, during *normal* times, households consisting of a large number of members were even stronger exposed to the danger of becoming indigent than households with a small family size. Moreover, before the appearance of the Argentine crisis of 2001/02 households headed by a person who obtained some secondary education had a relative low chance to live in poverty. With respect to the crisis period it seems that those households whose head obtained only incomplete secondary schooling were particularly vulnerable to the threat of falling into poverty. Nonetheless, higher education levels still seem to be one of the best security nets against poverty.<sup>25</sup> Interestingly, the importance of high education as a mean to escape from poverty or to alleviate poverty is not only recognized by economists or politicians, but as well by the Argentine poor themselves.<sup>26</sup>

## **IV. The Targeting and Poverty Reduction Performance of *Jefes y Jefas***

### **IV.1 A general Overview**

Argentina’s main social policy response to the severe economic crisis of 2001/02 was the workfare program “*Jefes y Jefas de Hogares*”<sup>27</sup>, which aimed to provide direct income support for families with dependents for whom the head had become unemployed. Workfare programs in Argentina have been implemented since 1993, and while their names have changed, they

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<sup>25</sup> Individuals who had some kind of secondary education still tend to be better off than persons with merely primary education do. Nonetheless, it seems that nowadays secondary education (incomplete/complete) may not be such a good safety net than in earlier decades. Recent studies on returns on schooling in Latin American countries have shown that more and more only tertiary education inherits the property to protect people properly against poverty (Ehrenburg and Smith, 1996; De Ferranti and Perry, 2002).

<sup>26</sup> As the authors in WB (2000b) have shown, most poor people consider their low education and schooling qualification as the main obstacle to improve their own living conditions.

<sup>27</sup> Workfare programs require that participants must work to obtain benefits. They are often turned to in crises such as due to macroeconomic or agro-climatic shocks, in which a large number of poor people has become unemployed. Typically, the main objective of a workfare program is to raise the current income of poor families hurt by the crisis (Jalan and Ravallion, 1999b).



all have had similar characteristics and objectives. In 1993, it was called “Programa intensivo de Trabajo”, from 1996 to 2001 “Programa Trabajar”, and since 2002 “Programa Jefes y Jefas de Hogares”.

The *Jefes/Jefas* program was introduced in January 2002. This ambitious workfare program which has been estimated to have reached about 2 million beneficiaries by the end of 2002, provided the participants with 150 pesos per month in exchange for work in community projects or training. The transfer amount was set at a level slightly below the prevailing wage for full-time work for unskilled workers, so as not to discourage people from seeking more permanent work as soon as it become available, and therefore to avoid distortions to the labor market. Thus, the selected transfer amount should also promote effective targeting of the program to poor households. Given the magnitude of the crisis, the aim of the *Jefes/Jefas* program was to reach a broader segment of the population than *Trabajar*. Moreover at its inscription, *Jefes/Jefas* was advertised as a universal program, meaning that it was intended that anyone who wanted among those eligible could get it. Contrary to *Trabajar*, *Jefes/Jefas* does not have an explicitly stated poverty focus. Further on, at its start *Jefes/Jefas* did not demand a counterpart work from the participants.

In early 2002, concerns about the costs and about that the program was heavily captured by people not in most needs were emerging. In practice, the administrators did not check whether an applicant was really a head of household. Furthermore, the verification of a person being unemployed is quite problematic in Argentina since over half of the employment is in the informal sector. At the beginning of 2002, there were some claims that municipalities and provinces were signing up their employees to cope with the liquidity crisis, as well as claims that local civil servants were sending their wives, which were not in the workforce, to sign up for the program (Galasso and Ravallion, 2003; Franceschelli and Ronconi, 2005).

Prompted by these concerns, a counterpart work requirement was introduced some weeks after the start of *Jefes/Jefas* with the aim of helping to assure that the transfers reached those in greatest need.<sup>28</sup> The work requirement of *Jefes/Jefas* is not as demanding as for the *Trabajar* program. Participants are required to do 20 hours of basic community work, training activities, school attendance or employment in a private company with a wage subsidy for 6 months.<sup>29</sup> Given its ambitious objectives and the dramatic worsening of the social situation over 2001/02 the total spending on the *Jefes/Jefas* workfare program is much higher than the

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<sup>28</sup> Moreover, the World Bank insisted that the vast majority of *Jefes/Jefas* participants had to be doing the counterpart work as a condition for financing the program (Galasso and Ravallion, 2003).

<sup>29</sup> A more detailed description of the program can be found in WB(2003).

spending on *Trabajar*. In 2002, the Argentine government spent about U.S.\$ 500 million on *Jefes/Jefas* and in 2003, about U.S.\$ 600 million.<sup>30</sup>

## IV.2 The Methodological Background

To assess the impact of the *Jefes/Jefas* program on moderate and severe poverty, one needs to measure its benefit incidence. For this purpose it is necessary to calculate the respective statistics based on the individuals' incomes with the program and that without it. Let "1" denote the state associated with participating in the *Jefes/Jefas* program (receiving treatment) and "0" be the state when somebody is not participating in the program. The outcome variables are  $Y_1$  and  $Y_0$  respectively. Furthermore, let  $D = 1$  if a person is in state "1" and  $D = 0$  otherwise. Then the observed outcome for an individual is  $Y$  defined as<sup>31</sup>

$$Y = DY_1 + (1-D)Y_0 \quad (1)$$

The gain of participating in the program is  $\Delta = Y_1 - Y_0$ . If one could simultaneously observe  $Y_1$  and  $Y_0$ , there would be no problem since one could construct  $\Delta$  for everyone. Unfortunately, a missing data problem arises since  $Y_0$ , the income in the absence of the *Jefes/Jefas* program, is not known for the individuals that are participating in *Jefes/Jefas*. A common practice in the benefit incidence analysis has been to estimate  $\Delta$ , the gains, by the gross wages paid. Thus, the unobserved income without the program is taken to be equal to the income with the program, minus wages received<sup>32</sup>. This assumption would be a reasonable one if labor supply to a workfare program came only from the unemployed, and if those unemployed would have remained without a job in the absence of the program. Since a formerly unemployed worker participating in *Jefes/Jefas* would not necessarily have remained without a job had the program not existed, the use of gross wages to calculate  $\Delta$  seems not to be justified. Moreover, even a worker who has been unemployed for some time will typically face a positive probability of finding work during a period of search, for instance self-employment in an informal sector activity.

Another more recent approach to generate information on the forgone income of *Jefes/Jefas* participants would be to apply propensity score matching methods as outlined in

<sup>30</sup> About a quarter of the spending on *Jefes/Jefas* in 2002 was financed through a World Bank loan. In 2003, the World Bank loan covered about 50 percent of the federal government expenditures on *Jefes/Jefas* (Galasso and Ravalion, 2003).

<sup>31</sup> This model is often called the Fisher model (1951), the Roy model (1951) or the switching regression model of Quandt (1972).

<sup>32</sup> For example, the various assessments of the cost-effectiveness of workfare programs reviewed in Subbarao et al. (1997) are based on this approach. Moreover, INDEC is calculating its benefit incidence statistics on *Jefes/Jefas* this way.

Heckman et al. (1997, 1998). Matching methods generally try to use the data of a nonexperimental comparison group (for whom  $D = 0$ ) to infer the counterfactual income of participants. Let  $X$  denote the set of variables, the data, that is used for the matching procedure. Then as outlined in Heckman et al. (1997) matching methods assume that

$$(Y_1, Y_0) \perp\!\!\!\perp D|X \quad (2)$$

$$F(y_0|X, D = 1) = F(y_0|X, D = 0) \quad (3)$$

$$E(Y_0|X, D = 1) = E(Y_0|X, D = 0) = E(Y_0|X) \quad (4)$$

where  $\perp\!\!\!\perp$  denotes orthogonality in vector spaces which is equivalent to independence in this case. If (2) is true then (3) follows which states that conditional on  $X$  non-participant outcomes have the same distribution that participants would have experienced if they had not participated in the program. Moreover if (3) holds, the counterfactual mean can be constructed from the outcomes of non-participants as displayed by (4). As stretched by Heckman et al. (1997) matching on  $X$  can be very difficult in practice if the dimension of  $X$  is high. As a solution to this problem an important result from Rosenbaum and Rubin (1983) is taken, where the authors demonstrated that assumption (2) can be replaced by (5) and finally (6), whereby  $P(X) = \Pr(D = 1|X)$ .

$$(Y_1, Y_0) \perp\!\!\!\perp D|P(X) \quad (5)$$

$$Y_0 \perp\!\!\!\perp D|P(X) \quad (6)$$

Hence, matching can be performed on  $P(X)$  alone, which reduces a potentially high dimensional matching problem to a one dimensional problem. To calculate  $P(X)$ , the propensity score, standard logit models can be used as suggested by Heckman et al. (1997). In their analysis of the benefit incidence of the *Trabajar* program Jalan and Ravallion (1999a, 1999b) use a set of 79 variables for the logit model over which the propensity score is calculated. Such a large quantity of variables can not be used when using the EPH and the EPH-C survey.<sup>33</sup> Fachelli et al. (2004) analyze the poverty and employability effects of workfare programs in Argentina by using the EPH survey and apply propensity score matching methods as well in their analysis. The variables they used in their logit model are quite similar to the set of variables that were applied in this study. Nonetheless, since the EPH-C entails sometimes different questions than the EPH it was not possible to construct all the variables that were used in Fachelli et al. (2004), for example access to water and

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<sup>33</sup> The respective analysis of Jalan and Ravallion is based on the Social Development Survey (EDS) which captures several additional dimensions, for instance political party membership that are not covered by the EPH/EPH-C. Since an EDS survey has not been carried out in Argentina in the last years, and since the EDS is conducted only about all five years in Argentina, the matching will be implemented over the EPH/EPH-C surveys.

electricity. Therefore, some other variables that capture housing qualities were taken into account, for instance whether the bath room is used exclusively by the household, and which can be constructed from the data of the EPH and the EPH-C.<sup>34</sup>

Furthermore, despite using the weights provided by INDEC or choice based sampling methods as suggested by Manski and Lerman (1977) to weight the observation given that there is over-sampling of participants, the methodology of Jalan and Ravallion (1999a, 1999b) and Fachelli et al. (2004) will be adopted who follow a recommendation of Petra E. Todd. Thus, matching is carried out using the odds ratio  $p_i = P_i/(1-P_i)$  where  $P_i$  is the estimated probability of participation for individual  $i$ . Then using the respective score, one constructs matched pairs on the basis of how close the scores are across the sample that only includes the participants of *Jefes/Jefas* and the overall EPH/EPH-C sample. Heckman et al. (1997) evaluate four matching procedures that can be applied to conduct the matching over propensity scores. In the terminology of Heckman et al. the procedures are called “Simple P Nearest Neighbor Matching”, “Local Linear P Score Matching”, “Regression-Adjusted Local Linear Matching”, and “Conditional Difference-in-Difference Matching”. In this study nearest neighbor matching which was also applied in Jalan and Ravallion (1999a, 1999b) and Fachelli et al. (2004) will be used. The nearest neighbor to the  $i$ 'th participant of *Jefes/Jefas* is defined as the non-participant that minimizes  $[p(X_i) - p(X_j)]^2$  over all  $j$  in the set of non-participants, where  $p(X_i)$  and  $p(X_j)$  are the predicted odds ratio for observation  $i$  and  $j$ .

In Fachelli et al. (2004) the authors included only one nearest neighbor in their matching procedure and faced some consistency problems of their estimators due to a comparatively low number of appropriate matching partners. This study will follow their recommendation and will use the five nearest neighbors in the matching procedure to circumvent potential similar problems. The estimates obtained from the propensity score matching will be based on the same surveys as used before, starting with October 2002, when for the first time explicit information on *Jefes/Jefas* participants were included in the permanent household survey. Moreover, the adult equivalent scheme as provided by INDEC, no economies of scale, and the official poverty and indigence lines will be used to calculate poverty indices. Furthermore, the dataset of the EPH and the EPH-C that results from the imputation of labor incomes for those income non-respondents that were identified by INDEC as providing invalid answers was taken for the investigations.

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<sup>34</sup> Table 14 in the Appendix displays some descriptive statistics on the number of participants in the *Jefes/Jefas* program in the respective survey rounds. Moreover, the set of variables used in the logit regression and their respective coefficients and standard errors are provided in Table 15 in the Appendix.

Whether using matching techniques in the analysis of the benefit incidence of the *Jefes/Jefas* program is a good way to receive information on the forgone income of *Jefes/Jefas* participants is not totally clear. Heckman et al. (1997) outline four criteria that should be fulfilled to assure an appropriate application of propensity score matching techniques. Thus, the same questionnaire should be administered to the treatment and the control group, participants and controls should be placed in a common economic environment, participants and controls should have the same distribution of observed and unobserved attributes. Since all individuals and families received the same questionnaires the first condition is clearly fulfilled. Furthermore, it seems to be justifiable to assume that individuals in the treatment and in the control group are placed in a common economic environment. It remains unclear whether treated and controls have the same distribution of observable and unobservable characteristics. Fachelli et al. (2004) argue that since *Jefes/Jefas* became almost universal by October 2002, it might not be possible to find a reliable matching pair to each participant from the group of non-participants, since most of the poor and unemployed people were in the program. Moreover, the propensity score matching estimator will give a biased estimate of the income gains from *Jefes/Jefas* if there are unobserved variables that jointly influenced incomes and workfare participation, conditional on the observed variables in the data used for matching. Heckman et al. (1997) conclude that the bias stemming from differences in unobservables only accounts for a relatively small part of conventionally measured biases when using propensity score matching. Thus, it is much more important that the other conditions are met when applying propensity score matching techniques.

In this study no test was conducted to control for biases due to differences in unobservables which might be a quite critical decision. Jalan and Ravallion (1999a, 1999b) adopt a kind of Sargan-Wu-Hausman test, that looks for partial correlation between incomes and the residuals from the participation model, which was used to construct the propensity scores, to control for actual participation and hence differences in unobservables. Fachelli et al. (2004) did not comment on whether they have tested their estimates on potential biases or not.

Finally, there may have been several other behavioral responses in Argentina that had an impact on forgone income which will remain unconsidered. Thus, there are likely to be effects on time allocation within the household. For instance, Datt and Ravallion (1994) found that other family members took up the displaced productive activities when someone joined a workfare program in rural India. Moreover, the household composition may have been influenced by changing living arrangements as a response to the receipt of a public transfer

(Duflo, 2000) or by delaying the formation of new households (Foster and Rosenzweig, 2002). Additionally, there may have been substantial risk benefits from knowing that the program exists.

### **IV.3 Results of the Targeting and Benefit Analysis**

In an optimal scenario the *Jefes/Jefas* program would display a perfect self-targeting mechanism, which means that the program was captured only by those in greatest needs or at least only by poor people. Self-Targeting can be explained nicely by following the model as outlined in Ravallion (1991). Ravallion assumes that the forgone income from accepting a workfare program is  $F(Y)$ , a smoothly increasing function of pre-intervention income  $Y$  (scaled to lie between zero and one). Clearly, forgone income increases with pre-intervention income due to differences in education, experience and so on which are correlated with both earnings and family income. Further it is assumed that the workfare program offers a wage  $W$ , with  $F(0) < W < F(1)$  and that workers care only about the net wage gain. Under these conditions only those worker with pre-intervention income less than  $F(W)$  will participate in the workfare program. Thus, the program will perfectly screen “poor” ( $Y < F(W)$ ) from “non-poor” ( $Y > F(W)$ ). The respective gains of the workfare program will accordingly be  $G = W - F(Y)$  for individuals characterized by  $Y < F(W)$  and  $G = 0$  for persons with  $Y > F(W)$  while post-intervention income is  $Y + G$ . Even when assuming that a certain level of  $W$  exists that would lead to perfect self-targeting with respect to the *Jefes/Jefas* program there still remains the question how we can determine the desired level of  $W$ . Since the transfer amount from participating in the *Jefes/Jefas* program with 150 pesos per month is set at a level slightly below the prevailing wage for full-time work for unskilled workers, and a counterpart work was officially required, a quite high level of self-targeting of poor people in the *Jefes/Jefas* program can be expected. Nonetheless, since rumors about selecting *Jefes/Jefas* participants on a rather clientelistic basis exist as explained before and some of the *Jefes/Jefas* participants did not have to do the official counterpart work requirement, it is possible that non-poor people participate in the program although the official design of *Jefes/Jefas* itself would only have attracted poor or indigent people.

Some general information on *Jefes/Jefas* are presented in Tables 16 and 17 in the Appendix. Table 16 illustrates the percentages of *Jefes/Jefas* participants that are classified as poor or indigent after three different categories. Presumably, the eligibility of *Jefes/Jefas* participants during the selection process should have been based on category I. or if one assumes that participants would have remained unemployed or inactive in the absence of *Jefes/Jefas* on

category II. As Table 16 indicates all of the *Jefes/Jefas* participants in the round of October 2002 would have been poor if *Jefes/Jefas* did not exist independently of whether one considers category I. or II.. Moreover, about 90 percent of *Jefes/Jefas* participants were to be classified as extreme poor or indigent in the round of October 2002. For the rounds of September 2003 and September 2004 there is a non-negligible number of about 10 percent of program participants that were not poor under category I. or II. Simultaneously, the number of indigent people that took part in *Jefes/Jefas* decreased significantly over 2003 and 2004. Taking into account the results from Table 17 which displays the percentages of poor and indigent people that are *Jefes/Jefas* participants it seems that the trend as displayed in Table 16 is partly due to a lower number of poor and indigent people in the AGBA, thanks to the strong recovering of the Argentine economy over 2003 and 2004. Nonetheless, it is obvious that the targeting performance of the *Jefes/Jefas* program has decreased over the considered time period. Thus, since the number of non-poor people participating in *Jefes/Jefas* has increased over 2003 and 2004, one might conclude that the transfer amount should have been slightly reduced to lower the attractiveness of *Jefes/Jefas* to non-poor persons and to cut down the costs of *Jefes/Jefas* or if the participation of non-poor people is rather due to an abuse of the program, a better control mechanism is needed. This result is particularly importing bearing in mind the high spending and administrative costs related to *Jefes y Jefas*, and that *Jefes y Jefas* already had a much lower targeting and benefit performance than *Trabajar*. Since *Jefes y Jefas* is supposed to continue as a social protection scheme in Argentina and provided the evidence in this paper it seems that the Argentine government should consider to modify the conditions under which *Jefes y Jefas* is working and redesign it in manner that is closer to that of its predecessor *Trabajar*.

Moreover, if one takes the differences between the values of category III. in Table 16 and the values of category I. or II. one obtains some information about the success of *Jefes/Jefas* with respect to its performance to help out participants to escape from moderate or extreme poverty. Looking at the differences it seems that *Jefes/Jefas* provided a rather small support in helping persons to escape from moderate poverty while it substantially contributed to escape from severe poverty. Notwithstanding, for a great part of participants the transfer amount from *Jefes/Jefas* remained too low to would have changed its poverty status if the program had not existed. As Table 17 displays, the share of moderate and poor people that took part in the program had increased between 2002 and 2004. Since it seems implausible to me that the attractiveness of *Jefes/Jefas* in times of economic recovery had increased, it is rather likely that it has become easier to become selected for *Jefes/Jefas* since the absolute number

of moderate and indigent poor has decreased substantially over 2003 and 2004. Hence, the percentages of poor and indigent persons that are program participants have increased in the last years.

The effect of *Jefes/Jefas* on poverty rates is illustrated in Table 18 in the Appendix. where the head-count ratio was calculated over individuals while using INDEC's adult equivalence scales, and the official poverty (I.) and indigence (II.) lines.<sup>35</sup> Moreover "A" refers to estimates that were calculated for the case when the transfer amount of *Jefes/Jefas* participants was subtracted and zero forgone income for *Jefes/Jefas* participants was assumed. "B" is related to the statistics that were calculated over the actual income distribution, and "C" displays the statistics when the forgone income of *Jefes/Jefas* participants was calculated using Propensity Score Matching techniques.

As Table 18 shows, moderate and extreme poverty rates have been reduced by *Jefes/Jefas* independently of whether one compares the poverty rates of "B" to "A" or "C". Moreover, as already noticed in the analysis of Table 16, *Jefes/Jefas* rather seems to have helped people to escape from severe than from moderate poverty. Clearly, the effect of *Jefes/Jefas* on moderate and severe poverty rates depends on whether one assumes that "A" or "C" is the correct way to simulate forgone income. Expecting that *Jefes/Jefas* participants would not have remained unemployed in the absence of the program ("C") decreases the effect of *Jefes/Jefas* to bring moderate and extreme poverty rates down. Assuming that "C" is the appropriate way instead of "A" seems to half the effect of *Jefes/Jefas* on reducing moderate and extreme poverty rates.<sup>36</sup>

Furthermore, it is worthwhile to compare the characteristics of families whose head of household is employed through *Jefes/Jefas* to those of moderate or extreme poor households. Table 19 in the Appendix illustrates the respective mean values calculated over the actual income distribution ("B"). The description of variables is the same as displayed in Table 10.

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<sup>35</sup> It would have been more illustrative to compare the findings of the study ("Author") to the results from other investigations. Unfortunately, there are not a lot of statistics of *Jefes/Jefas* on poverty available from other sources. The ones that are presented stem from INDEC (2005) and Galasso and Ravallion (2003). While the estimates from Galasso and Ravallion were calculated for the AGBA, the statistics from INDEC refer to the poverty situation in all of the surveyed agglomerates in Argentina.

<sup>36</sup> To quantify the effect by saying that assuming "C" instead of "A" halves the impact of *Jefes/Jefas* on moderate and extreme poverty rates is rather a rough estimate, since the effect varies between the different survey rounds. Nonetheless, the statement does not seem to be too far away from the statistics obtained and therefore can function as kind of rule of thumb for the investigated periods. Interestingly, the effect seems not to increase in the last survey rounds. Originally, it could have been expected that the estimated poverty rates calculated over the matched wages will become more and more similar to the statistics obtained from the actual income distribution over time, since matched wages should increase for most persons due to the recovery in the Argentine labor market in the last years. Perhaps several of the *Jefes/Jefas* participants of the last rounds are hard-core unemployed, and therefore their matched wages remained zero or increased only slightly, and hence the effect kept being the same.



As shown by Table 19 families whose head of household participated in *Jefes/Jefas* tend to have comparatively large household sizes and dependency rates. Since one of the eligibility criteria to participate in *Jefes/Jefas* was to have children below the age of 18 these results are not that astonishing. Moreover, household heads participating in *Jefes/Jefas* tend to be relatively young compared to household heads living in moderate or severe poverty. Interestingly, household heads that are *Jefes/Jefas* participants are much more likely to be female than heads of households of poor families. There are two very different explanations available for this phenomenon. First of all, it can be that the work assigned to *Jefes/Jefas* participants is much more suitable to women than to men, and therefore rather female poor household heads tend to register for *Jefes/Jefas*. Such an explanation is supported by the analysis of Jalan and Ravallion (1999a, 1999b) where the authors found that particularly women were taking part in public employment programs.<sup>37</sup> Although this may explain some part of the difference between the share of female household heads among families of *Jefes/Jefas* participants and those of generally poor families, there is another good explanation available as provided in Galasso and Ravallion (2003) where the authors are quite suspicious of the credibility of the declaration of *Jefes/Jefas* participants that they are heads of households. Thus, the authors assume that *Jefes/Jefas* attracts rather women than men, while some of the women participating in the program are in practice no real heads of household. Finally, this behavior drives the respective values artificially high.

Moreover, Table 19 displays that for the rounds of September 2003 and September 2004 the mean incomes of *Jefes/Jefas* participants are higher than those of heads of households of poor families. Since in the rounds of September 2003 and September 2004 about 10 percent of *Jefes/Jefas* participants would not have been poor in the absence of the program, and about 20 percent were not to be considered as poor after the program's implementation compared to zero and three percent respectively for the survey round of October 2002 as illustrated in Table 16, one can suspect this development to be the reason for the gap in the respective mean incomes for the survey rounds of September 2003 and September 2004.

Besides the questions raised and aspects investigated so far there remain other important issues to analyze with respect to *Jefes/Jefas*. Thus, in a future version of this paper and as it was partly done in Galasso and Ravallion (2003), the employability effect of the *Jefes y Jefas* program will be investigated. Moreover, there are some issues about *Jefes/Jefas*

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<sup>37</sup> An exception to this generalization is actually the *Trabajar* program in which most participants were male. Since the work requirements of *Jefes/Jefas* rather consist of "easy" work, it seems very likely that the work under *Jefes/Jefas* was much more attractive to women than the work under *Trabajar*.

completely neglected so far in the economic literature. For instance, there does not exist any cost-benefit analysis of the *Jefes/Jefas* program. *Jefes/Jefas* has clearly contributed to bringing down poverty rates, but it remains quite unclear whether the money spend on *Jefes/Jefas* could not have been used more efficiently. For instance, there is a significant part of *Jefes/Jefas* participants in the surveys that reports not to have done any counterpart work at all. For example, some people declare that no work was assigned to them, others mention that they could not do the assigned work since they had to care for other household members. Moreover, it is difficult to assess how much money is *lost* due to administrative procedures.

#### **IV. Conclusion**

This study attempted to discuss mainly two aspects. First of all, the impact of the Argentine crisis on poverty was investigated. The peak of the social crisis was clearly determined to be in 2002. Depending on the measure adopted, the climax was located to be in the round of May or October 2002. Poverty measures that are related to the absolute number of poor people under a certain income threshold indicate that the poverty situation was worst in the round of October 2002, while indices that rather measure the depth of poverty show the highest values in the round of May 2002. Poverty indices show a substantial improvement since 2003 onwards. Nonetheless, poverty rates are still higher than in the pre-crisis period. A problem emerged when evaluating the extent of the improvement of the poverty situation between 2003 and 2005. Due to the introduction of a new survey design, the EPH-C, it might be that estimates based on the EPH-C are distorted compared to the statistics calculated from the EPH. In this study it was assumed that differences in the values of the indices are rather due to the consequences of the strong economic growth process that started in 2003 than to changes in the survey methodology. The trends in the poverty development as outlined above remained to be roughly the same independently of the applied adult equivalence scales and economies of scales. Moreover, poverty trends were about the same over a variety of different absolute poverty lines. Although the analysis was restricted to the Area of Greater Buenos Aires the results are expected to be representative for the poverty and inequality situation in Argentina. Two principal reasons account for this assumption. Thus, the population of the AGBA comprises about 1/3 of the Argentine population and therefore covers a large part of the Argentine people. Secondly, the AGBA has poverty and inequality rates that are relatively close to the average Argentine poverty and inequality estimates as calculated by INDEC.

Further on, at the beginning of the 1990s Argentina had poverty and inequality levels that were one of the lowest by LAC standards, the country has drifted more and more into reaching quite average poverty and inequality rates for the region. The exacerbation of Argentine poverty and inequality rates seem to be particularly worrisome when taking into account that several other LAC countries, as for example Brazil and Mexico have accomplished substantial improvements in the respective social indicators during the same period.

Additionally, to the analysis of changes in poverty statistics, the determinants of poverty were examined. Thus, individuals who live in families with large household sizes and dependency rates were particularly likely to live in poverty. Moreover, families who are headed by a person with comparatively low schooling levels seem to be affected by poverty. In the pre-crisis period rather families whose head had no better education experienced than primary education were exposed to poverty. During the crisis and even in the post-crisis period families whose head possessed incomplete or complete secondary education were hit as well. Hence, an increasing relative number of families living in poverty is headed by a person who obtains some sort of secondary education. Moreover, the study of poverty determinants displayed that the sex of the household chief had no statistically significant impact on living in poverty.

The second principal aspect that was examined in this study was the effect of the *Jefes/Jefas* workfare program on poverty rates. Furthermore, the targeting performance of *Jefes/Jefas* was investigated. *Jefes/Jefas*, which was the Argentine's government main response to the social crisis of 2001/02, was found to have a rather small impact on poverty rates. Nonetheless, *Jefes/Jefas* seems to have contributed in helping families or individuals in escaping or avoiding a situation of indigence. The assessment of the effect of *Jefes/Jefas* on poverty and indigence rates crucially depends on whether one assumed that program participants would have remained inactive or unemployment in the absence of the program or not. Assuming that *Jefes/Jefas* participants would potentially have found another work had the program not existed, seems to half the effect of *Jefes/Jefas* on poverty and indigence rates.

Moreover, there are a lot of poor people that do not participate at all in the program. When comparing the characteristics of poor and indigent households to the features of households whose head participated in *Jefes/Jefas*, it is shown that *Jefes/Jefas* participants live in households with an extraordinary large family and dependency size. This result seems to be plausible since program participants must officially have children below the age of 18. Further on, *Jefes/Jefas* participants were found to be relatively young. Interestingly, there is a

relatively high share of women who participates in *Jefes/Jefas*. On the one hand, it might be that the work required under the program is much more appealing to women than to men. Thus, households which are headed by a woman are represented comparatively often under *Jefes/Jefas*. On the other hand, it is possible that some of the women that participated in *Jefes/Jefas* were no real head of households. Hence, the respective statistics that capture the sex of the household head will be distorted to some degree that is difficult to quantify.

With respect to the targeting performance of *Jefes/Jefas*, it seems that the program was mainly been captured by people who can be classified as poor. Nonetheless, an increasing number of non-poor individuals seem to participate in the program. Furthermore, considering the high administrative costs and the claims of abuse/clientelism and the economic recovery it is recommendable to redesign *Jefes/Jefas* in a way that makes it more similar to its predecessor *Trabajar*. Thus, tighter work requirements and a more efficient way in checking whether an applicant is really eligible should be enforced.

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## Appendix:

**Table 1: Comparative Statistics on Data Imputation**

Year	Month	N1	Invalid	Imputed	Dropped	N2	Imputed /N2	Dropped /N1
1998	May	11807	385	253	132	11675	.022	.011
1998	Oct.	11911	398	260	138	11773	.022	.012
1999	May	11818	426	283	143	11675	.024	.012
1999	Oct.	11759	508	341	167	11592	.029	.014
2000	May	11883	482	324	158	11725	.028	.013
2000	Oct.	11993	465	312	153	11840	.026	.013
2001	May	11905	477	307	170	11735	.026	.014
2001	Oct.	11756	548	356	192	11564	.031	.016
2002	May	11854	595	396	199	11655	.034	.017
2002	Oct.	5965	240	139	101	5864	.024	.017
2003	May	5847	252	151	101	5746	.026	.017
2003	Sept.	16266	1891	1272	619	15647	.081	.038
2004	March	7647	631	406	225	7422	.055	.029
2004	Sept.	9383	1032	708	324	9059	.078	.035
2005	March	9484	1148	757	391	9093	.083	.041

Source: The author's calculations based on the EPH and the EPH-C

Notes: Sept. = September, Oct. = October, N1= Number of individuals in the survey data provided by INDEC, Invalid= Number of individuals providing invalid zero labor income answers; Imputed= Number of individuals who received an labor income imputation; Dropped: number of individuals who were dropped of the survey due to missing data on monthly hours of work; N2= Number of individuals used in the analysis

**Table 2: Explanation of Variables used in the Mincer-Equations**

Variable	Explanation
Age	Age of an individual
Age <sup>2</sup>	Squared age of an individual
Fem	Dummy variable: 1=female, 0=male
Emp	Dummy variable: 1= individual is employer, 0=otherwise
Self	Dummy variable: 1= individual is self-employed, 0= otherwise
Princ	Dummy variable: 1= primary school incomplete, 0=otherwise
Pric	Dummy variable: 1=primary school complete, 0=otherwise
Secin	Dummy variable: 1=secondary school incomplete, 0=otherwise
Secc	Dummy variable: 1= secondary school complete, 0=otherwise
Terti	Dummy variable: 1= tertiary school incomplete, 0=otherwise
Cons	Constant

Notes: Schooling Degree refers to the highest education level achieved by a person; Omitted Category is: tertiary school complete



**Table 3: Estimated Coefficients of the Mincer-Equations**

Year	Month	Age	Age <sup>2</sup>	Fem	Emp	Self	Princ	Pric	Secin	Secc	Terti	Cons
1998	May	0.07 *	-0.001 *	-0.29 *	0.86 *	0.49 *	-1.01 *	-0.89 *	-0.83 *	-0.63 *	-0.54 *	0.08
1998	Oct.	0.07 *	-0.001 *	-0.30 *	0.79 *	0.39 *	-1.02 *	-0.93 *	-0.87 *	-0.65 *	-0.56 *	0.13 **
1999	May	0.07 *	-0.001 *	-0.28 *	0.56 *	0.35 *	-0.93 *	-0.89 *	-0.78 *	-0.57 *	-0.51 *	0.02 ***
1999	Oct.	0.07 *	-0.001 *	-0.25 *	0.69 *	0.38 *	-0.90 *	-0.86 *	-0.79 *	-0.58 *	-0.50 *	0.02
2000	May	0.07 *	-0.001 *	-0.25 *	0.73 *	0.36 *	-0.93 *	-0.84 *	-0.77 *	-0.58 *	-0.51 *	0.04
2000	Oct.	0.07 *	-0.001 *	-0.25 *	0.66 *	0.37 *	-0.96 *	-0.90 *	-0.81 *	-0.60 *	-0.53 *	0.11 ***
2001	May	0.07 *	-0.001 *	-0.24 *	0.82 *	0.32 *	-0.94 *	-0.88 *	-0.83 *	-0.61 *	-0.56 *	0.05
2001	Oct.	0.06 *	-0.001 *	-0.22 *	0.66 *	0.31 *	-0.96 *	-0.90 *	-0.80 *	-0.63 *	-0.50 *	0.10
2002	May	0.07 *	-0.001 *	-0.18 *	0.75 *	0.26 *	-0.91 *	-0.86 *	-0.74 *	-0.61 *	-0.50 *	0.04
2002	Oct.	0.07 *	-0.001 *	-0.21 *	0.77 *	0.24 *	-1.02 *	-0.93 *	-0.80 *	-0.69 *	-0.57 *	0.03
2003	May	0.07 *	-0.001 *	-0.18 *	0.79 *	0.37 *	-1.00 *	-0.88 *	-0.75 *	-0.65 *	-0.50 *	-0.08
2003	Sept.	0.10 *	-0.001 *	-0.19 *	0.04 *	-0.2 *	-1.10 *	-0.89 *	-0.78 *	-0.60 *	-0.24 *	-0.44
2004	March	0.09 *	-0.001 *	-0.23 *	0.28 *	-0.2 *	-1.01 *	-0.85 *	-0.74 *	-0.60 *	-0.34 *	-0.30
2004	Sept.	0.09 *	-0.001 *	-0.23 *	0.23 *	-0.1 *	-1.09 *	-0.87 *	-0.79 *	-0.58 *	-0.22 *	-0.13
2005	March	0.09 *	-0.001 *	-0.26 *	0.30 *	-0.1 *	-0.89 *	-0.77 *	-0.71 *	-0.51 *	-0.28 *	-0.35

Source: The author's calculations based on the EPH and the EPH-C

Notes: Sept. = September, Oct. = February, \*=significant at the 1-percent level,  
\*\*=significant at the 5-percent level, \*\*\*= significant at the 10-percent level

**Table 4: Statistics on the Mincer-Equations**

Year	Month	Rho	Sigma	Lamda
1998	May	0.10	0.66	0.012
1998	Oct.	0.08	0.67	0.011
1999	May	0.02	0.66	0.002
1999	Oct.	0.04	0.67	0.002
2000	May	0.01	0.68	0.006
2000	Oct.	0.02	0.67	0.013
2001	May	0.01	0.67	0.003
2001	Oct.	0.01	0.68	0.006
2002	May	0.03	0.65	0.018
2002	Oct.	0.04	0.67	0.030
2003	May	0.02	0.67	0.010
2003	Sept.	0.22	0.80	0.174
2004	March	0.23	0.80	0.189
2004	Sept.	0.25	0.75	0.194
2005	March	0.33	0.81	0.273

**Table 5: Caloric Needs by age and gender (INDEC)**

Age	Gender	Calories needed (kcal)	Units per adult equivalent	
1 year	Girls and Boys	1170	0.43	
2 years		1360	0.5	
3 years		1500	0.56	
4 to 6 years		1710	0.63	
7 to 9 years		1950	0.72	
10 to 12 years		Men	2230	0.83
13 to 15 years			2580	0.96
16 to 17 years	2840		1.05	
10 to 12 years	Women	1980	0.73	
13 to 15 years		2140	0.79	
16 to 17 years		2140	0.79	
18 to 29 years	Men	2860	1.06	
30 to 59 years		2700	1	
60 and more years		2210	0.82	
18 to 29 years	Women	2000	0.74	
30 to 59 years		2000	0.74	
60 and more years		1730	0.64	

**Table 6: Poverty Indices based on official poverty line**

**Without: - Economies of scale**

**With: - INDEC's adult equivalence scales**

**- Imputation of invalid non-income respondents**

Year	Month	HC Ratio	Poverty Gap Ratio	Income Gap Ratio	FGT $\alpha=0.5$	FGT $\alpha=2$	FGT $\alpha=3$
1998	May	24.34	9.47	38.89	14.10	5.44	3.77
1998	Oct.	26.37	11.24	42.63	16.10	6.75	4.76
1999	May	26.90	11.32	42.10	16.25	6.92	5.02
1999	Oct.	26.64	10.89	40.89	15.80	6.55	4.69
2000	May	29.56	12.48	42.22	18.00	7.43	5.25
2000	Oct.	28.86	12.75	44.17	18.01	7.92	5.81
2001	May	33.16	14.90	44.91	20.78	9.45	7.01
2001	Oct.	35.20	16.69	47.41	22.79	10.88	8.20
2002	May	49.33	26.70	54.12	34.53	18.60	14.49
2002	Oct.	52.93	26.22	49.53	35.21	17.09	12.45
2003	May	50.28	24.48	48.88	33.43	15.40	10.75
2003	Sept.	45.81	22.20	48.46	30.08	14.55	10.92
2004	March	45.64	21.16	46.36	29.34	13.22	9.54
2004	Sept.	39.73	18.33	46.14	25.41	11.48	8.29
2005	March	41.28	18.26	44.22	25.64	11.49	8.48

**Table 7: Poverty Indices based on official poverty line****Without: - Economies of scale****With: - Adult equivalence scale;  $\alpha_1=0.5$   $\alpha_2=0.75$** **- Imputation for invalid non-income respondents**

Year	Month	HC Ratio	Poverty Gap Ratio	Income Gap Ratio	FGT $\alpha=0.5$	FGT $\alpha=2$	FGT $\alpha=3$
1998	May	29.75	11.36	38.19	17.13	6.37	4.32
1998	Oct.	31.43	13.05	41.53	18.84	7.75	5.40
1999	May	31.63	13.20	41.73	19.08	9.94	5.64
1999	Oct.	31.79	12.77	40.15	18.73	7.52	5.29
2000	May	33.01	14.38	42.41	20.72	10.77	5.92
2000	Oct.	33.61	14.64	43.56	20.73	8.99	6.49
2001	May	38.11	16.96	44.50	23.76	10.64	7.80
2001	Oct.	40.42	18.84	46.61	25.80	12.14	9.02
2002	May	54.54	29.56	54.20	38.31	20.49	15.86
2002	Oct.	59.71	29.83	49.96	40.05	19.37	14.08
2003	May	57.59	28.19	48.95	38.36	17.68	12.36
2003	Sept.	51.48	25.17	48.90	34.00	16.46	12.27
2004	March	51.62	24.28	47.03	33.52	15.23	10.96
2004	Sept.	44.67	20.81	46.58	28.73	13.04	9.35
2005	March	46.42	21.08	45.41	29.49	13.13	9.53

**Table 8: Poverty Indices based on official poverty line****With: - Economies of scale of  $\theta=0.8$** **- INDEC's adult equivalence scales****- Imputation of invalid non-income respondents**

Year	Month	HC Ratio	Poverty Gap Ratio	Income Gap Ratio	FGT $\alpha=0.5$	FGT $\alpha=2$	FGT $\alpha=3$
1998	May	15.66	6.14	39.22	9.07	3.65	2.65
1998	Oct.	18.84	7.59	40.28	11.10	4.58	3.36
1999	May	18.14	7.73	42.59	10.94	4.90	3.69
1999	Oct.	17.35	7.31	42.14	10.48	4.54	3.40
2000	May	20.60	8.28	40.18	12.10	5.03	3.72
2000	Oct.	20.10	8.78	43.65	12.30	5.65	4.34
2001	May	23.39	10.42	44.55	14.44	6.84	5.26
2001	Oct.	25.98	12.15	46.78	16.62	8.03	6.20
2002	May	40.37	21.05	52.15	27.54	14.57	11.38
2002	Oct.	41.50	20.13	48.50	27.44	12.68	8.98
2003	May	40.87	18.31	44.79	25.94	10.81	7.30
2003	Sept.	35.55	16.67	46.89	22.68	11.04	8.43
2004	March	34.95	15.28	43.71	21.56	9.53	7.00
2004	Sept.	30.03	13.29	44.26	18.74	8.28	6.09
2005	March	29.40	12.94	44.02	18.10	8.33	6.33

**Table 9: Poverty Indices based on official indigent line****Without:** - Economies of scale**With:** - INDEC's adult equivalence scales

- Imputation of invalid non-income respondents

Year	Month	HC Ratio	Poverty Gap Ratio	Income Gap Ratio	FGT $\alpha=0.5$	FGT $\alpha=2$	FGT $\alpha=3$
1998	May	5.61	2.74	48.91	3.64	1.98	1.67
1998	Oct.	7.65	3.64	47.61	4.87	2.58	2.14
1999	May	8.07	3.88	48.02	5.12	2.83	2.40
1999	Oct.	7.07	3.46	49.00	4.53	2.58	2.23
2000	May	7.75	3.76	48.45	4.95	2.78	2.40
2000	Oct.	8.72	4.43	50.81	5.72	3.35	2.90
2001	May	10.69	5.47	51.17	7.06	4.03	3.38
2001	Oct.	12.41	6.43	51.84	8.28	4.80	4.09
2002	May	23.06	12.56	54.47	16.13	9.02	7.33
2002	Oct.	24.09	11.16	46.32	15.56	6.78	4.72
2003	May	22.73	9.18	40.42	13.51	5.29	3.63
2003	Sept.	19.07	9.61	50.42	12.64	6.79	5.52
2004	March	17.49	8.03	45.91	10.90	5.48	4.40
2004	Sept.	15.38	6.93	45.06	9.46	4.75	3.84
2005	March	15.15	7.27	47.97	9.66	5.17	4.29

**Table 10: Variables used for the Poverty Profile**

Variables	Description
<u>General Features</u>	
Household size 1	Size of the household
Household size 2	Size of the household when using INDEC's adult equivalence scales
Children 14	Number of children below the age of 14 in the household
Income 1	Household per capita income
Income 2	Household per adult equivalent income (INDEC's adult equivalence scales)
<u>Features of the Head</u>	
Average age	Average age of the household head
Female head	Dummy Variable: 1 = household head is female, 0 = household head is male
Primary inc.	Highest schooling degree is: Primary incomplete
Primary	Highest schooling degree is: Primary complete
Secondary inc.	Highest schooling degree is: Secondary incomplete
Secondary	Highest schooling degree is: Secondary complete
Tertiary inc.	Highest schooling degree is: Tertiary incomplete
Tertiary	Highest schooling degree is: Tertiary complete

**Table 11: A Poverty Profiles for the AGBA**

Variables	P Oct. 1999	I Oct. 1999	NP Oct. 1999	P Oct. 2002	I Oct. 2002	NP Oct. 2002	P Sept. 2004	I Sept. 2004	NP Sept. 2004
<u>General Features</u>									
Household size 1	4.67	4.57	3.06	4.29	4.82	2.73	4.32	4.28	2.84
Household size 2	3.67	3.60	2.46	3.40	3.79	2.19	3.43	3.26	2.28
Children 14	1.69	1.74	0.57	1.37	1.80	0.40	1.40	1.53	0.48
Income 1	73.46	24.60	485.54	99.00	45.39	527.37	104.38	47.07	669.07
Income 2	92.96	30.97	607.40	124.30	57.19	663.33	130.42	59.04	844.50
<u>Features of the Head</u>									
Average age	29.53	29.63	40.97	31.52	27.50	44.48	31.42	31.26	43.11
Female head	0.26	0.30	0.27	0.19	0.18	0.30	0.25	0.26	0.30
Primary inc.	0.28	0.29	0.12	0.18	0.23	0.09	0.16	0.19	0.08
Primary	0.48	0.51	0.29	0.43	0.45	0.24	0.45	0.42	0.27
Secondary inc.	0.10	0.08	0.12	0.17	0.19	0.11	0.20	0.18	0.15
Secondary	0.05	0.04	0.13	0.08	0.05	0.14	0.13	0.12	0.19
Tertiary Inc.	0.06	0.04	0.15	0.09	0.05	0.17	0.02	0.02	0.12
Tertiary	0.04	0.03	0.19	0.06	0.03	0.24	0.03	0.04	0.19

Source: The author's calculations based on the EPH and the EPH-C

Notes: Sept. = September, Oct. = October, P=Poor, I=Indigent, NP=Non-Poor; all values are mean values; the classification of being indigent, poor, or non-poor is based on official poverty and indigence lines, while using INDEC's adult equivalence scales, and no economies of scales

**Table 12: Variables used in the Regression of Income Determinants**

Variables	Description
<u>General HH Characteristics</u>	
Number of HH Members	Number of persons living in the household
Number Occupation	Number of persons in the household who obtain an occupation
Number Income Earners	Number of persons in the household who receive some kind of earnings
Persons under the age of 18	Number of persons below the age of 18 in the household
<u>Accommodation Features</u>	
Number of Rooms	Number of rooms that are exclusively used by the household
Bath exclusively	Dummy variable: 1= bathroom is used exclusively by the household; 0= otherwise
Bath shared	Dummy variable: 1= bathroom is shared with other households; 0=otherwise; Base category: no bathroom available to the household
<u>Characteristics of the Head of HH</u>	
Female	Dummy variable: 1= female, 0=male
Age	Age of the household head
Age <sup>2</sup>	Squared age of the household head
Informal	Dummy variable: 1= Head of HH obtains job in the informal segment of the labor market, 0=otherwise
Married	Dummy variable: 1= Head of HH is married, 0=otherwise
Primary School incomplete	Highest schooling degree is: Primary incomplete
Primary school complete	Highest schooling degree is: Primary complete
Secondary schooling incomplete	Highest schooling degree is: Secondary incomplete
Secondary schooling complete	Highest schooling degree is: Secondary complete
Tertiary schooling incomplete	Highest schooling degree is: Tertiary incomplete
Employed	Base category: completed tertiary education degree
Manufacturing	Dummy variable: 1=Head of HH obtains an occupation
Construction	Dummy variable: 1= Head of HH is working in the manufacturing sector of the economy, 0=otherwise
	Dummy variable: 1= Head of HH is working in the construction sector of the economy, 0=otherwise
	Base category: Service Sector

**Table 13: Regression Estimates for Income Determinants**

Variables	October 1999	October 2002	September 2004
<u>General HH Characteristics</u>			
Number of HH members	-0.35* (0.017)	-0.33* (0.025)	-0.34* (0.021)
Number occupation	0.92*(0.024)	0.09* (0.037)	0.02 (0.030)
Number of income earners	0.31*(0.023)	0.31* (0.039)	0.36* (0.029)
Persons under the age of 18	0.09* (0.019)	0.07* (0.027)	0.12* (0.026)
<u>Accommodation Features</u>			
Number of rooms	0.12* (0.012)	0.12* (0.018)	0.05* (0.014)
Bath exclusively	0.33* (0.087)	0.35* (0.102)	0.22 (0.174)
Bath shared	0.33* (0.101)	0.14 (0.135)	0.40* (0.192)
<u>Characteristics of the Head of HH</u>			
Female	0.29 (0.034)	0.03 (0.048)	0.05 (0.038)
Age	-0.01* (0.004)	-0.01* (0.006)	-0.01*** (0.005)
Age <sup>2</sup>	0.0002* (0.00004)	0.0002* (0.00006)	0.0002* (0.00005)
Married	0.03 (0.029)	0.04 (0.042)	0.09* (0.033)
Primary schooling incomplete	-0.88* (0.047)	-0.95* (0.066)	-0.91* (0.068)
Primary schooling complete	-0.74* (0.039)	-0.81* (0.057)	-0.75* (0.049)
Secondary schooling incomplete	-0.53* (0.043)	-0.72* (0.063)	-0.59* (0.053)
Secondary schooling complete	-0.34* (0.044)	-0.36* (0.068)	-0.43* (0.051)
Tertiary schooling incomplete	-0.30* (0.042)	-0.36* (0.065)	-0.11* (0.057)
Employed	0.38* (0.041)	0.32* (0.059)	0.38* (0.053)
Informal	-0.23* (0.032)	-0.37* (0.051)	-0.32* (0.040)
Manufacturing	-0.04 (0.030)	-0.02 (0.050)	-0.05 (0.039)
Construction	-0.16* (0.041)	-0.37* (0.061)	-0.34* (0.057)
Constant	5.87* (0.143)	5.87* (0.172)	6.66* (0.210)
R <sup>2</sup>	0.5454	0.5722	0.4815
Observations	3348	1689	2694

Source: The author's calculations based on the EPH and the EPH-C

Note: HH=household; \*=significant at the 1 percent level, \*\*= significant at the 5 percent level, \*\*\*= significant at the 10 percent level; standard errors are presented in parenthesis

**Table 14: Descriptive Statistics on Jefes/Jefas**

Month	Observation Treated Jefes/Jefas participants (A)	Observation Control Non- participants	Total Observation (B)	% A/B
October 2002	193	5671	5864	3.29
May 2003	190	5556	5746	3.31
September 2003	411	15219	15630	2.63
March 2004	239	7161	7400	3.23
September 2004	286	8766	9052	3.16
March 2005	241	8835	9076	2.66

**Table 15: Estimated Coefficients for the Propensity Score Calculation**

Variables	Oct. 2002	May 2003	Sept. 2003	March 2004	Sept. 2004	March 2005
<u>General Characteristics</u>						
Head	0.672 (0.227)	0.719 (0.261)	0.173 (0.145)	1.261 (0.188)	1.546 (0.172)	1.292 (0.185)
Age	-0.010 (0.007)	-0.023 (0.008)	-0.024 (0.004)	-0.010 (0.005)	-0.016 (0.005)	-0.005 (0.005)
Female	0.824 (0.185)	-0.113 (0.163)	1.462 (0.142)	1.533 (0.187)	1.645 (0.169)	1.896 (0.192)
Married	0.256 (0.108)	0.582 (0.132)	-0.561 (0.043)	-0.698 (0.208)	-0.519 (0.052)	-0.468 (0.056)
Persons 65+	-1.229 (0.285)	-0.272 (0.220)	-0.244 (0.131)	0.224 (0.204)	-0.503 (0.177)	-0.961 (0.231)
Primary school complete	0.518 (0.222)	0.377 (0.258)	0.994 (0.188)	0.224 (0.204)	0.691 (0.212)	0.452 (0.212)
Secondary schooling inc.	0.200 (0.213)	-0.103 (0.214)	0.789 (0.187)	-0.054 (0.221)	0.519 (0.213)	0.302 (0.219)
Secondary schooling complete	-0.665 (0.339)	-0.359 (0.319)	-0.256 (0.231)	-0.348 (0.240)	-0.370 (0.263)	-0.644 (0.273)
Tertiary schooling incomplete	-0.713 (0.343)	-0.878 (0.341)	-0.287 (0.278)	-2.147 (0.604)	-1.132 (0.402)	-1.558 (0.486)
Tertiary schooling complete	-1.758 (0.534)	-2.153 (0.733)	-1.940 (0.445)	-2.815 (0.731)	-2.156 (0.539)	-2.900 (0.735)
<u>Accommodation Features</u>						
Bath exclusively	-0.840 (0.334)	-0.850 (0.298)	-0.356 (0.394)	-0.122 (0.568)	-1.141 (0.349)	0.367 (0.546)
Bath shared	-0.474 (0.460)	-0.684 (0.483)	-0.222 (0.435)	0.395 (0.601)	-0.668 (0.409)	0.779 (0.584)
Constant	-3.316 (0.359)	-1.802 (0.315)	-1.925 (0.456)	-2.139 (0.632)	-1.656 (0.432)	-3.423 (0.613)
R2	0.08	0.06	0.163	0.165	0.174	0.172
Observations	5838	5746	15630	7400	9052	9076

**Table 16: Percentages of Program Participants that are Poor or Indigent**

Month/Year	Poor I.	Indigent I.	Poor II.	Indigent II.	Poor III.	Indigent III.
October 2002	100%	88.73%	100%	90.14%	97.18%	69.01%
September 2003	85.33%	69.02%	89.19%	71.35%	84.86%	49.19%
September 2004	87.16%	55.41%	92.62%	65.10%	81.88%	38.26%

Source: Estimates are based on the author's calculation from the EPH/EPH-C

Note: I. refers to classification when income of Jefes/Jefas participants was matched using Propensity Score Techniques; II. refers to classification when the transfer amount of Jefes/Jefas participants was subtracted and zero forgone income was assumed for workfare program participants. III. refers to the actual income distribution (including the transfer amounts from Jefes/Jefas)

**Table 17: Percentages of Poor and Indigent People that are Program Participants**

Month/Year	Poor I.	Indigent I.	Poor II.	Indigent II.	Poor III.	Indigent III.
October 2002	9.83%	20.32%	9.82%	20.45%	9.61%	16.96%
September 2003	10.54%	20.85%	10.93%	21.29%	10.60%	16.73%
September 2004	16.75%	26.37%	17.67%	29.57%	15.99%	21.35%

**Table 18: Head-Count Ratios when using Propensity Score Matching**

Year	Month	I. INDEC	II. INDEC	I. Galasso	I. Author	II. Author
2002	A Oct.	58.1	30.5	54.7	53.18	25.79
		57.5	27.5	54.3	52.93	24.08
		-	-	54.5	53.07	25.47
2003	A May	55.3	29.7	-	50.84	25.09
		54.7	26.3	-	50.28	22.73
		-	-	-	50.77	24.74
2003	A Sept.	48.5	23.5	-	46.67	21.87
		47.8	20.5	-	45.81	19.06
		-	-	-	46.12	21.35
2004	A March	45.3	19.7	-	46.62	20.58
		44.3	17.0	-	45.64	17.49
		-	-	-	45.88	20.30
2004	A Sept.	40.9	18.2	-	40.45	18.69
		40.2	15.0	-	39.73	15.38
		-	-	-	39.95	17.58
2005	A March	-	-	-	41.89	17.17
		-	-	-	41.28	15.15
		-	-	-	41.51	16.57

Note: Galasso refers to the statistics obtained from Galasso and Ravallion (2003)

**Table 19: A Profile of Jefes/Jefas Participants**

Variables	P Oct. 2002	I Oct. 2002	Jefes Oct. 2002	P Sept. 2003	I Sept. 2003	Jefes Sept. 2003	P Sept. 2004	I Sept. 2004	Jefes Sept. 2004
<b>General Features</b>									
Household size 1	4.29	4.73	4.82	4.12	4.08	4.37	4.32	4.28	4.59
Household size 2	3.40	3.68	3.79	3.26	3.19	3.37	3.43	3.36	3.62
Children 14	1.37	1.80	1.86	1.27	1.35	1.66	1.40	1.53	1.64
Income 1	99.00	45.39	70.55	95.35	40.23	109.82	104.38	47.07	161.61
Income 2	124.3	59.19	92.17	120.07	51.15	139.06	130.42	59.04	196.55
<b>Features of the Head</b>									
Average age	31.52	27.50	24.00	33.59	33.34	25.52	30.66	31.26	25.66
Female head	0.19	0.18	0.35	0.27	0.32	0.45	0.25	0.26	0.52
Primary inc.	0.18	0.23	0.27	0.15	0.17	0.12	0.16	0.19	0.15
Primary	0.43	0.45	0.42	0.42	0.42	0.50	0.45	0.42	0.48
Secondary inc.	0.17	0.19	0.17	0.20	0.17	0.22	0.20	0.18	0.25
Secondary	0.03	0.05	0.03	0.14	0.13	0.10	0.13	0.12	0.09
Tertiary Inc.	0.06	0.05	0.06	0.03	0.03	0.03	0.02	0.02	0.01
Tertiary	0.06	0.03	0.06	0.04	0.05	0.01	0.03	0.04	0.01

Note: P=Poor households, I = Indigent households, Jefes= households whose head is employed in Jefes/Jefas