Analysis of the Short Term Impact of the Argentine Social Assistance Program "Plan Jefes y Jefas" on Income Inequality Applying the Dagum Decomposition Analysis of the Gini Ratio*

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1. Introduction

Extreme poverty levels were seen in Argentina after the severe crisis unleashed at the end of 2001. This was worsened by a deep production standstill, which made the national, provincial, and municipal governments face the need to generate programs for a comprehensive support of families, specially in relation to all essential aspects, which would enable the eradication of the high levels of indigence, and favor social inclusion so as to mitigate, at least partly, the extreme household income inequality in an increasing polarized society. The "*Jefes y Jefas de Hogar*" Program is a social assistance program, focused on the unemployed heads of households with dependents under the age of 18 or with disabled individuals of any age, that the national government started out as of May 2002[1]. In order to achieve the social objectives stated above, a cash transfer of U$S45 ($150) (one-hundred and fifty Argentine Pesos) per month is given to each beneficiary, which would correspond to the cost of the basic basket for adult equivalent at the end of 2001, sum which by October 2002 was no longer up to date[2]. In consideration of this assistance, the program establishes that the plan recipients must be engaged in one of the following activities: enter into a training program (not clearly established), perform work for the community for up to 20 hours per week (which would be defined and verified

[1] Act 25.561 and Regulatory Decree 165/2002 declare the national emergency until December 31, 2002. Within this framework, on 01/22/02 a Bill with the guidelines of the Jefes Program begins to be considered, and is finally enacted under Executive Act 565 dated April, 3. Under this act, the Treasury Department shall be responsible for reallocating the resources of the National Budget necessary for the Program's implementation (sect.15). The Program was then extended (and is still in force in 2004), and in 2003, the World Bank approved a loan for U$S 600 million to be allocated, together with the National State own resources, to the expansion of the program so as to cover 1,750,000 recipients. According to the estimates, this number has been rapidly exceeded, being by mid-2004 close to 2 million recipients. For an assessment of the Program according to its value as social safety net, see, for example, Galasso y Ravallion (2004).

[2] See Table A.2 in Appendix.

locally through political mechanisms) or transform the assistance into an employment subsidy for the company hiring that person.

Among the positive aspects of the program cited, some reports[3] indicate that there is a higher degree of universalization in comparison to prior programs, such as the program *Joven*, focused on a given age group and on actions centered on labor training for technology low-workers; or the program Trabajar, scarcely transparent in the mechanisms used for granting and implementing it at the end of the 90's. However, the program also has some design weaknesses, since the amount of the subsidy scarcely covers the cost, by mid-2002, of the basic subsistence basket for one person, and is, therefore, insufficient to grant dignity and to guarantee the objectives of the "right to social inclusion" of the household as stated in the first paragraph of the executive act creating the Program. The Program also has some prognosis weaknesses as to its extension in time. It had been estimated that the potential number of eligible beneficiaries would amount to 1,750,000 recipients to be covered during the 2002 economic emergency, and that there would be a sustained decrease of this number in 2003 and 2004 when the World Bank contribution was to conclude. However, the number of recipients continued to be close to 1.6 million during the second semester of 2004, the national budget projected for 2005 provides for the continuity of the Program *Jefes*, and poverty does not seem to have decreased in the country. Thus, it seems that the main research question today has to deal with the levels of social protection the Argentina´s Plan *Jefes y Jefas* can provide to the indigents and the poor after the worst of the crisis is over. More specifically, in the paper it is argued that a rigorous short run measure of its contribution to enhance income distribution by reducing income inequality across regions and groups can be derived from a Gini Coefficient decomposition procedure, such as the one introduced by Dagum (1997).

A first assessment recently performed for the World Bank by Galasso & Ravallion, (2004) including INDEC calculations, indicates, that all in all, the Program reduced aggregate unemployment by up to 5 points. Notwithstanding the design weakness, said assessment reaches the conclusion that the Program was effective since it compensated, at least partially, many households hit by the crisis and reduced extreme poverty. But possible reductions in income inequality due to Program implementation was not included in the G&R assessment.

On the other hand, it is interesting to point out that one out of three plan recipients by October 2002 was reported as economically inactive in May of that year, which would be revealing an unexpected impact of the Program, i.e. attracting a significant number of people who had previously been outside of the economically active population (see Table A.1 of the Appendix).[4] This would also indicate that, in the case of those recipients, the legal requirements were not fully fulfilled[5], i.e., were ineligible.

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[3] See, Di Lorenzo et al, www.losocial.com.ar/plantillas/ima6.htm, page1.

[4] Approximately 74% of the recipients who were economically inactive in May 2002, declared to be employed in October of that same year.

[5] Act Nº 25561

It is then possible to conclude from the Program own characteristics and from its implementation that it is a subsidy given to people who were not always eligible, and that the recipients' counterpart work requirement was not always duly controlled. Besides, the impact on employment is uncertain, since it is not clear whether it generated new jobs in spite of the fact that the plans granted are sometimes computed as new job positions. Under these conditions, the main result of the Program should be considered through the short term impact it had on income distribution and the possible containment of social unrest[6]. That is why, it is the purpose of this work to analyze two related issues which were not incorporated in the above-mentioned assessments, namely, if the distribution of the plans has been neutral in relation to the regional distribution of income; and to what extent the decrease in aggregate unemployment reflects into an improvement of the Gini Coefficient. This work attempts to answer these questions mainly through the use of the information provided by the *Encuesta Permanente de Hogares* (EPH) (Permanent Household Survey) published by the INDEC (the Argentine Government's Statistics Institute), and is organized as follows: the next section provides the characteristics of the *Jefe y Jefas de Hogar Program* (PJJH) recipients, while Section 3 compares the income distribution functions for the subpopulations considered in this work, which result from including, on the one hand, the income derived from the plans, and on the other, from excluding this income. Section 4 describes the procedure for the decomposition analysis of the applied income inequality Gini coefficient, while Section 5 presents the results obtained. Finally, section 6 contains a summary of the main conclusions.

2.Characteristics of the Population and Characteristics of the PJJH recipients

Table 1 shows the distribution of the PJJH recipients in the urban areas included in the EPH, grouped under two regions, namely: Extended Greater Buenos Aires Area (GBAA), including the City of Buenos Aires, Greater Buenos Aires, and La Plata in this study, on the one hand, and the inland (INT) which includes the rest of the large urban conglomerates considered in the EPH, in October 2002.

Table 1. Total EPH Urban Population and PJJH Recipients, by Regions – October 2002

Population	GBAA*		INT**		Country	
	PJyJH Recipients	Total	PJyJH Recipients	Total	PJyJH Recipients	Total
Total	411,283	11,412,179	382,636	9,954,103	793,919	21,366,282
Relative Weight (%)		53.4		46.6		100.0
PJyJH Recipients (% of the región)	3.6	100.0	3.8	100.0	3.7	100.0
Distribution of PJyJH Recipients (%)	51.8		48.2		100.0	

*GBAA includes the City of Buenos Aires, Greater Buenos Aires, and La Plata, **INT includes the rest of the urban areas in the EPH
Source: EPH, October 2002

According to the data corresponding to October 2002, the proportion of recipients in relation to the total population was of 3.7% in all the country, 3.8% in the inland, and 3.6%

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[6] The economic effects of social tensions derived from income inequality have been recently studied by Esteban and Ray (1994) and Duclos, Esteban and Ray (2002) through the conceptualization and measurement of polarization which are based on the notions of identification and alienation between groups of individuals.

in the GBAA area. If these rates are calculated in relation to the Economically Active Population (EAP), the results are 7.8% for the country, 8.9% for the inland, and 7.1% for the GBAA area. As it may be observed, the inland cities received slightly more assistance.

Table A.1 in the Appendix summarizes the demographics of the individuals and households receiving social plans and of the individuals and households for the total population in each one of the regions. It is possible to observe that both in the GBAA as well as in the INT areas, about 70% of the plan recipients are females, and about half of them are single. The plan recipients belong to households larger than the mean. It may also be observed that about 23% of the plan recipients declared to be unemployed the last time they were captured by the survey before October 2002 (prior status = unemployed). Besides, slightly about 33% had declared themselves to be inactive, while, approximately 43% claimed to be employed.

An aspect to be borne in mind is that the plan recipients, both in the GBAA as well as in the INT area, are older than the mean. Also, in the inland area, the recipients are slightly younger and more schooled than a similar population in the GBAA area. Table A.1 in the Appendix provides further information of help in identifying population profile.

3. The Income Distribution Functions Including and Excluding the Plans

For the purposes of this work, the total household income per capita per adult equivalent was used. It is considered that the application of this concept makes it possible to visualize better the impact of the fixed sum given through the plans, according to the household size, and it responds to the program's own statements when it indicates that it is intended to benefit household by supporting their heads so as to promote a greater social inclusion.

Table 2 below shows the proportion of the population below the poverty and indigence lines, including and excluding income of the PJJH. It is possible to observe that the plan impact was mainly focused on the reduction in the proportion of the indigent population and that, instead, its incidence as an instrument to reduce poverty was very scarce. This characteristic is seen both in the GBAA and the INT area.

Table 2. Population below the poverty and the indigence lines in two scenarios

Percentage

| Region | Scenarios | | change |
	Income from PJJH excluded	Income from PJJH included	
GBAA			
Poverty	53.4	52.6	-1.4
Indigence	28.0	25.1	-10.3
INT			
Poverty	61.3	60.5	-1.4
Indigence	34.2	30.5	-10.9

Source: Own calculation based on EPH data, October 2002

Besides, a visual comparison of the income density functions obtained from including and excluding the income of the plans would confirm that the impact of the plans on the income of the indigent is the strongest. Figures 1, for GBAA, and Figure 2, for INT have been built to show how the relevant sections in the density functions have moved in each Region after the application of the Program.

First, it is possible to observe that both in the GBAA and INT areas, the changes concentrate mainly in the lower part of the distribution, below U$S 90 ($ 300). The kurtosis increases in both distributions due to the introduction of the plan, confirming that it produces a shift of individuals with no income or with very low income towards the U$S45 region, approximately. More specifically, the estimates made indicate that the most significant change takes place in the first decile of the household income per capita per adult equivalent, where in the GBAA area it changes from U$S 8.6 ($28.66) before the plans to U$S 15.26 ($50,85) after their inclusion as of October 2002. In the inland area, that decile shifts from U$S 7.64 ($25.45) to U$S 13.16 ($43.86). At the level of the quartiles, the change is relatively less significant since in the GBAA area, there is an increase from U$S 27.49 ($91.62) to U$S 31.68n ($105.26), and in the inland area from U$S 20.27 ($67.57) to U$S 24.00 ($80.00). All this is in agreement with what has been stated above in the sense that the greatest impact of the Program is on the reduction of the proportion of indigent population, with a tiny effect on poverty reduction.

Función de Densidad del Ingreso*
Para el GBAA
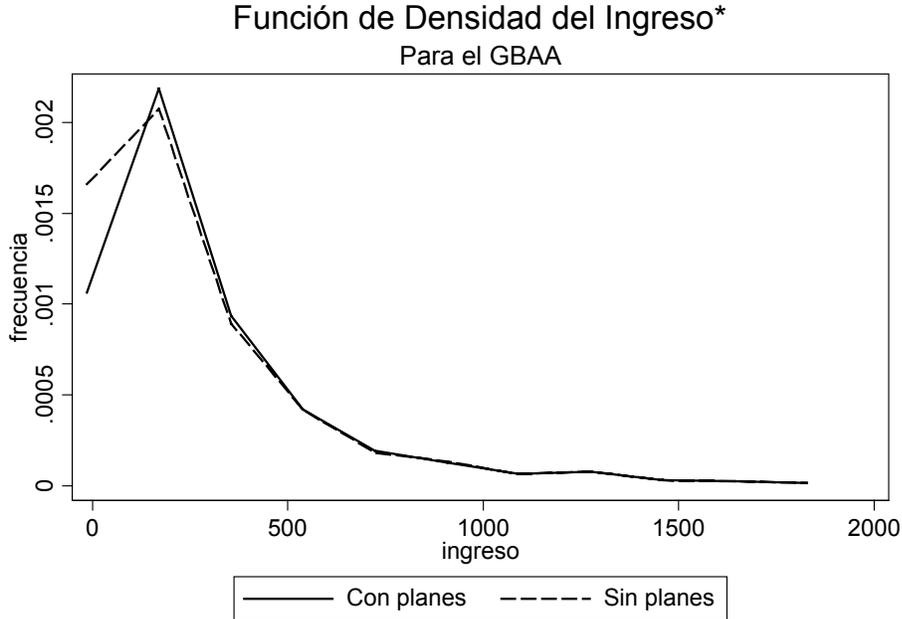
Figure 1

· *Household income per capita per adult equivalent*

6

Figure 2

Función de Densidad del Ingreso*
Para el INT
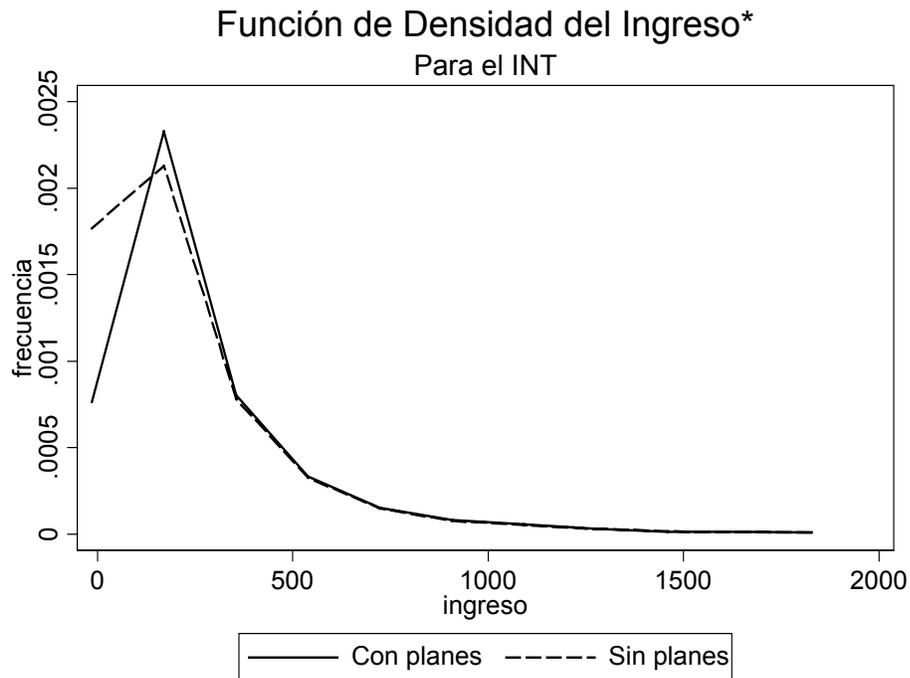
· *Household income per capita per adult equivalent*

4. Decomposition of the Income Inequality Gini Coefficient

After the description made above, it is important to see how the application of the program *Plan Jefes y Jefas de Hogar* (PJJH) has modified the total population income distribution, approximately six months after its application. To that end, an analysis of the Gini coefficient was made applying the Dagum decomposition method which proposes the breakdown explained below[7].

The starting point is the Total Gini coefficient (G), computed as:

$$G = \frac{\sum_{j=1}^{n}\sum_{i=1}^{n}\left|y_i - y_j\right|}{2n^2 Y} \tag{1}$$

where "n" is the population size to be analyzed and "Y" is the mean income of the total population. The decomposition of G is as follows:

$$G = G_w + G_{nb} + G_t \tag{2}$$

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[7] See Dagum, C.(1997)

being Gw the inequality measure within the subpopulations, Gnb, the inequality measure between subpopulations weighted for relative affluence, and Gt, the transvariation contribution between populations.

At the same time,

$$G_w = \sum_{j=1}^{k} G_j s_j p_j \qquad (3)$$

where G_j is the Gini Coefficient of the population in region jth and "k" is the number of subpopulations (regions) into which the original population is divided, s_j is the proportion the jth subpopulation holds of the total income and p_j is the proportion of the global population represented by the jth subpopulation.

$$G_{nb} = \sum_{j=2}^{k} \sum_{h=1}^{j-1} G_{jh} \left(p_j s_h + p_h s_j \right) D_{jh} \qquad (4)$$

where G_{jh} is the Gini Coefficient to measure inequality between the jth and hth populations calculated as:

$$G_{jh} = \frac{\sum_{j=1}^{nr} \sum_{i=1}^{ng} |y_{ig} - y_{jr}|}{(nr)(ng)(Y_r + Y_g)} \qquad ; \qquad (5)$$

D_{jh} is the relative affluence existing between subpopulations as defined in Dagum (1997), s_h is the proportion the h subpopulation holds of the total income and p_h is the proportion of the global population represented by the h subpopulation.

Finally,

$$G_t = \sum_{j=2}^{k} \sum_{h=1}^{j-1} G_{jh} \left(p_j s_h + p_h s_j \right) \left(1 - D_{jh} \right) \qquad (6)$$

The decomposition proposed was applied to the global population in each of the regions defined according to the following criteria:

1. For the income as it was previously defined
   - without including the sum from the PJJH plans.
   - including income from the PJJH.
2. For the regions
   - GBAA
   - INT

For each decomposition, the Gw, Gnb, and Gt were calculated.

The impact of the plans in each one of the Gini components arises from the comparison of both decompositions. After generalizing, and naming the effect of the application of the plans to the Gini coefficient as EG, then:

$$EG = \left[Gw_p - Gw_{sp} \right] + \left[Gnb_p - Gnb_{sp} \right] + \left[Gt_p - Gt_{sp} \right] \qquad (7)$$

where the p and sp subscripts indicate that the corresponding components refer to the income including and excluding the sum from the plans, respectively.

The first addend of the second term of (7) reflects within-group contribution of the plans to inequality; the second addend, the between-groups contribution to inequality; and the last term, the impact on the transvariation zone, i.e., the density overlap region. These calculations were made both for the Extended Buenos Aires area as well as for the inland of the country so as to examine separately the impact of the plans on the income distribution of each one of these populations, and to make a comparison of the results. For further details of the calculations made, see Tables A.3-A.6 in the Appendix.

5. Results

The two initial concerns of this work, related to the possible regional neutrality of the program and to its impact on income inequality if universalized, were addressed through the application of the decomposition model of the Gini coefficient described in the previous section. Thus it was possible to provide an answer to the following questions:

> Which was the impact on the Gini coefficient of the application of the program as executed until October 2002 in the two regions considered in this work?,
> Which would have been the impact of the program on the Gini coefficient if the recipients who did not fulfill their counterpart work had been discharged from the program?
> Which would have been the impact of the program on the Gini coefficient, if a sufficient number of plans had been granted so as to cover all those unemployed in October 2002?

Each one of these scenarios is examined separately below.

Impact of the Plans Granted as of October 2002

In order to analyze the impact of the plans granted as of October 2002, a comparison was made between the Gini Coefficient resulting from a calculation of the per capita income per adult equivalent, in which the $150 cash transfer was included for each one of the 831,155 plans valid as of that date, and the Gini Coefficient which would have resulted from a hypothetical situation in which no PJJH plan existed. For the latter, the sum received from the plan by the plan recipients who were in the EPH was subtracted from the income. The results are shown in Table 3 that was built using information about Gw, Gb and Gt provided by Tables A.3 and A.4.

Table 3 PJJH Impact on the Gini Coefficient decomposition – October 2002
       All recipients are included

Concept		G*	Gw			Gnb	Gt
Population included	PJyJH Income is:		INT	GBAA	Total		
All cases	Not included	0.5559	0.0926	0.1874	0.2800	0.1270	0.1488
All cases	Included	0.5299	0.0878	0.1791	0.2669	0.1229	0.1400
PJyJH Impact							
Gini Coefficient reduction		0.026	0.0048	0.0083	0.0131	0.0041	0.0088
Change in Gini (%)		4.7%	5.2%	4.4%	4.7%	3.2%	5.9%
Relative Composition		100.0%	18.5%	31.9%	50.4%	15.8%	33.8%

* of per capita family income per adult equivalents

Table 3 shows that there is a 0.026 reduction in the value of the total Gini Coefficient - equivalent to 4.7% - with the addition of the plans, which represents a decrease in the extent of income inequality. The Gw component which reflects inequality within each one of the populations, represents 50.4% of total reduction. This means that half the impact of the introduction of the plan is seen in the internal inequality reduction in each region. This reduction was not uniform since in the INT area it amounted to 5,2%, while in GBAA it was of 4.4%. The rest of the impact is seen in the net inequality between distributions, related to the degree of separation of the curves (Gb), and in the inequality in the transvariation zone (Gt), corresponding to the overlap of both distributions. The Gb coefficient experienced a reduction in the 3.2% range, and Gt experienced the greatest relative improvement (5,9%).

Figures 3 and 4 help to further understand the changes which the $150 cash transfer produced on the income curves in each one of the above described subpopulations, even when it is necessary to point out that the truncation of the graphs does not allow a true appreciation of the size of the economic distance existing among the distributions. The economic distance[8] between regions is only slightly modified, after the application of the PJJH program, which is coherent with the fact that they were applied in the two regions with similar intensity. After applying the plan, there is, in both distributions, a shift of individuals who had no income or whose income is close to zero towards the region of the corresponding modal values, producing an increase in the kurtosis values, which continue to maintain the preexisting relation between them (INT kurtosis greater than the GBAA kurtosis). The income gap between regions, also called affluence, had a value close to 0.46 before the program application, indicating that the separation between curves was slightly less than half of the possible path, being practically unaltered after the implementation of the PJJH program, as seen in Tables A.3-A.4 of the Appendix. This could indicate that after the implementation of the PJJH program, the separation between the income density functions of the two regions have not experienced a significant change.

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[8] The concept of directional economic distance was proposed by Dagum (1980). This is closely linked to the notion of polarization, as developed by Esteban, Gradin & Ray (1999).

Figura 3   Función de Densidad del Ingreso*

Sin ingresos provenientes de planes

Valor medio de la medida del ingreso (GBAA) $328.00

Valor medio de la medida del ingreso (INT.) $228.00

279

ingreso

——— GBAA   - - - - - INT
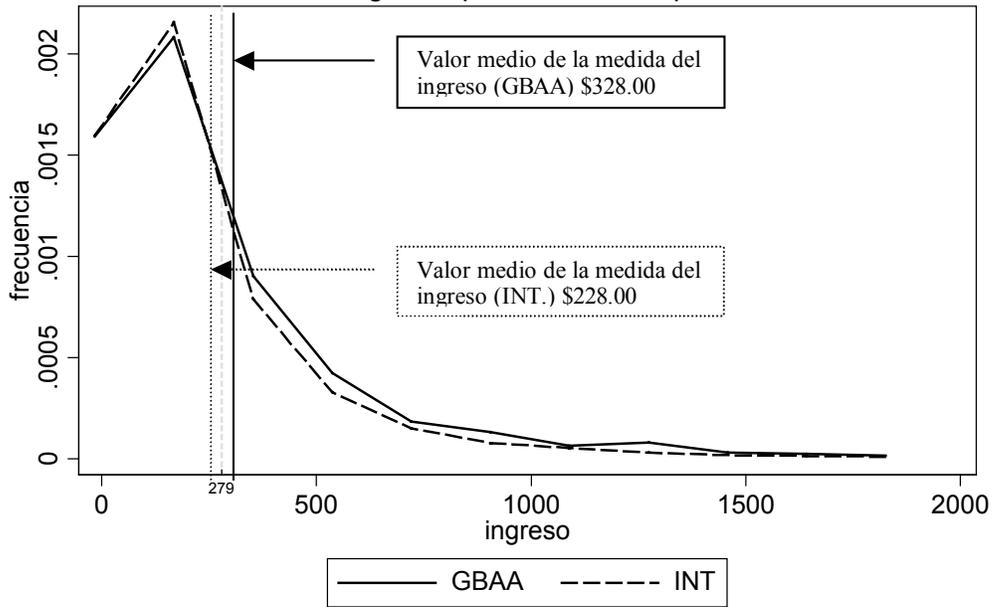
Figura 4

Función de Densidad del Ingreso*

Con ingresos provenientes de planes
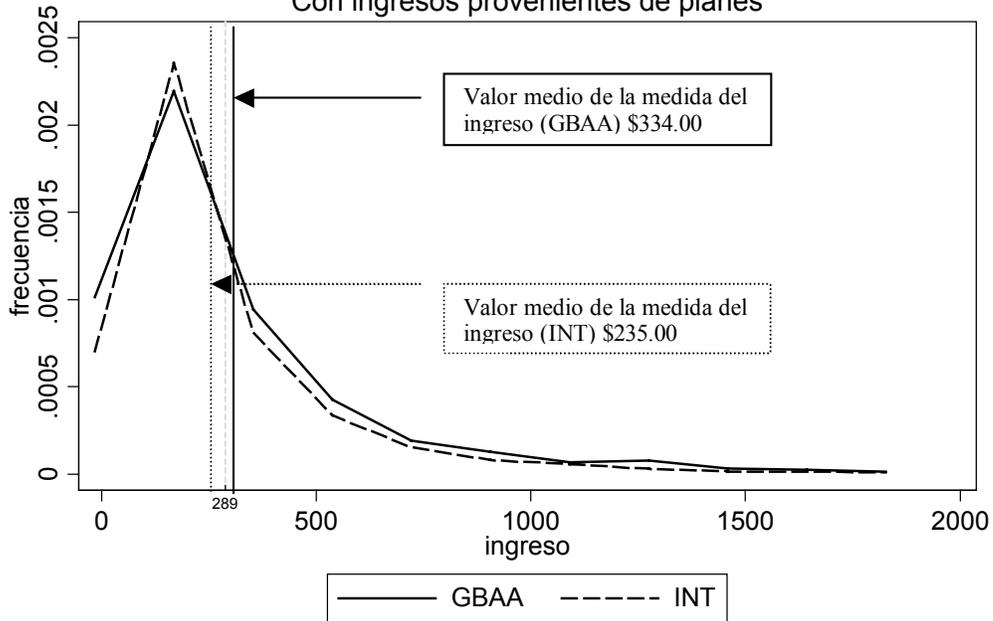
Valor medio de la medida del ingreso (GBAA) $334.00

Valor medio de la medida del ingreso (INT) $235.00

289

ingreso

——— GBAA   - - - - - INT

*Total household income, per capita, per adult equivalent

11

Impact of the Plans Granted as of October 2002 if the Recipients Who did not Fulfill their Counterpart Work were Excluded

There is debate about the number of plans allocated during the period herein analyzed and on the criteria applied for their granting. As stated in the introduction, the guidelines for the implementation of the PJJH are provided for in the executive decree No. 505/02. However, when analyzing Table A-1 of the Appendix, under "position in household", in the GBAA area, 43% of the recipients are heads of household, therefore there is compliance of the current legislation. The remaining 57% corresponds to spouses, children, and other members of the household who are not included within the recipients eligible for this plan. Besides, when analyzing in this same table the prior status of the recipients, always in the GBAA area, one notices that about 33% of the plan recipients in October 2002 were inactive in the prior EPH survey of May 2002. The situation is similar in the inland area. These two simple observations suggest that when granting the plans, the legislation may not have been strictly observed.

On the other hand, Table 4 shows that 26.3% of the recipients in the GBAA area did not fulfill the counterpart work requirement, while 21.9% did not in the INT area.

Table 4 PJJH recipients by counterpart work requirements declared. October 2002

percentage

Counterpart work requirements	Region	
	GBAA	INT
principal job declared	71.8	74.1
subsidiary job declared	1.9	4.0
no counterpart work declared	26.3	21.9
Total	100.0	100.0

Source: Own calculation based on EPH

In the face of this, it was considered convenient to further study this latter situation, hence extending the analysis to the impact of the application of the PJJH plans on the inequality of income distribution, to the hypothetical situation in which the plans corresponding to recipients not fulfilling their counterpart work requirement were eliminated. Thus, for the purpose of this simulation, the $150 cash transfer received by this individuals was not calculated so as to quantify the net impact of the Program on the Gini Coefficient of income inequality.

Table 5 is based on Tables A.3 and A.5 and shows the results obtained when calculating the impact of the PJJH corresponding to the scenario described in the prior paragraph, i.e., when excluding a total of 200,775 recipients in October 2002 who declared that they were not doing any counterpart work in return for the $150 they received. The impact was determined by comparing the Gini Coefficient obtained for this latter situation with the Gini Coefficient resulting from the consideration of the hypothetical situation in which there was no PJJH plan, as used in the calculations of Table 3. The comparison of both decompositions yields the net impact attributed to each one of the components.

Table 5 PJJH Impact on the Gini Coefficient decomposition – October 2002
   Recipients with no counterpart work declared are not included

Concept		G*	Gw			Gnb	Gt
Population included	PJyJH Income is:		INT	GBAA	Total		
All cases	Not included	0.5559	0.0926	0.1874	0.2800	0.1270	0.1488
All cases, except PJyJH recipients with no counterpart work declared	Included	0.5358	0.0889	0.1810	0.2700	0.1236	0.1422
PJyJH Impact							
Gini Coefficient reduction		0.0201	0.0037	0.0064	0.0100	0.0034	0.0066
Change in Gini (%)		3.6%	4.0%	3.4%	3.6%	2.7%	4.4%
Relative Composition		100.0%	18.4%	31.8%	49.8%	16.9%	32.8%

* of per capita family income per adult equivalents

It is possible to observe that when the recipients who did not provide any counterpart work are excluded from the total number of plans considered, the improvement in the Gini Coefficient due to the impact of the program is of 0.0201 (equivalent to 3.6%), which is less than the reduction observed in Table 3. The participation of each component in the total coefficient is within values similar to those observed in said Table 3. This means that the exclusion of the plans corresponding to the population who did not comply with the counterpart work requirement would not have modified the internal structure of the income distribution among the regions herein considered.

Towards Universality: The Impact of Granting 1.8 Million Plans

As already pointed out, one of the explicit objectives of the PJJH Program is to universalize it in order to reach all individuals meeting the requirements established. As also indicated, as of October 2002, it was estimated that there were approximately 1,814,000 unemployed in the area covered by the EPH, as observed in Table A1. In order to make an approximation to the measurement of the short term impact of universalizing the program, the number of recipients was then extended to 1.8 millions by simulation, obtaining as a result the Gini Coefficient and the decomposition shown in Table 6, based on information obtained from Tables A.3 and A.6.

Table 6 PJJH Impact on the Gini Coefficient decomposition – October 2002
   1.8 million recipients simulation

Concept		G*	Gw			Gnb	Gt
Population included	PJyJH Income is:		INT	GBAA	Total		
All cases	Not included	0.5559	0.0926	0.1874	0.2800	0.1270	0.1488
All cases	Included (simulation for 1.8 mill recipients)	0.5174	0.0861	0.1745	0.2606	0.1190	0.1378
PJyJH Impact							
Gini Coefficient reduction		0.0385	0.0065	0.0129	0.0194	0.0080	0.0110
Change in Gini (%)		6.9%	7.0%	6.9%	6.9%	6.3%	7.4%
Relative Composition		100.0%	16.9%	33.5%	50.4%	20.8%	28.6%

* of per capita family income per adult equivalents

It is possible to observe that the Gini Coefficient decreases by 0.00385 in comparison to the situation resulting from the consideration of the income as of October 2002 without including the $150 cash transfer of the plan recipients. This variation is equivalent to a 6.9% improvement in the income inequality coefficient attributable to the universalized Program, and is certainly the one with largest magnitude if compared with the impact calculated for the two scenarios previously considered. If the cost of the Program for this number of recipients were U$S 1,080,000 per annum, then each percentage point reduction in the Gini Coefficient has an approximate associate cost of U$S 156 million per year.

As regards the relative participation of each one of the regions, this is not substantially modified, but with the expansion of the number of recipients, there is an increase in Gb, the Gini Coefficient component that reflects the net differences in income between regions (from 15.8% to 20.8%), also decreasing the relative significance of the income overlap area.

6. Conclusions

By using the Gini Coefficient, the work analyzed the short-term impact on income inequality attributed to the PJJH Program for three alternative scenarios and according to the regional division adopted to capture possible differences between the area of the capital of the country and the inland. The first scenario considered all plans granted, the second estimated only the recipients who complied with the counterpart work requirement, and the third was expanded to include 1.8 million recipients in order to consider universalizing the the program.

The three scenarios show that the Gini Coefficient improves in relation to the hypothetical situation in which there is no PJJH Program. When considering all plan granted as of October 2002, the coefficient decreases by 4.7% indicating that there was a relative improvement in the personal income inequality, which somehow explains the decrease in social unrest for that time[9].

If the plans received by individuals whose situation do not fulfill the legal requirements (do not fulfill the counterpart work requirement) are excluded, the Gini coefficient improves less, with a 3.6% relative reduction.

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[9] An additional calculation of a polarization measure, as proposed in Duclos, Esteban and Ray (2002) to capture the changes in social tensions, was performed by the authors of this paper using information of per capita family income per adult equivalents for EPH, October 2002. Results, given $\alpha=1$, indicated that polarization in Argentina decreased from 0.25 under a situation where incomes from PJJH were not computed, to 0.241 when income of PJJH for 1.8 millions recipients were considered, showing a positive effect of the program. These results are fairly consistent with those obtained in Horenstein and Olivieri (2004). However, it should be remarked that this improvement in the polarization measure associated to the implementation of the PJJH is not big enough to restore the observed value of 0.2285 obtained by Horrenstein y Olivieri for 1998. A slight modification of example 4 and figure 4b (Esteban and Ray, 1994:827) can help in providing an interpretation for the improvement. Let the population be divided into three groups: the indigent, the poor and middle class, and the rich. The indigents and poor are far from the rich and the rich are a tiny fraction of the whole population. Any movement in the mass of indigents to the right of the distribution (i.e. due to the perception of the $150 of the PJJH) causes a reduction in the polarization measure.

Finally, when universalizing was introduced as a possible scenario, the greatest impact is obtained, of about 6.9% in the example, equivalent to a 0.0385 (3.85 percentage points) reduction in the coefficient.

Thus, the granting of a fixed $ 150 monthly cash transfer, even when there is consensus that is lower than the requirements of a typical family to emerge from poverty, improves, in the short term, the income inequality indicator. In this sense, the 3.85 per cent point reduction which would be obtained in the Gini coefficient in this third scenario would be associated to a U$S 1.080 million annual cost; thus, in general terms for this program, each percentage point improvement in the Gini coefficient represents a U$S 156 million cost.

As regards the structure of the decomposition of the Gini coefficient in the scenario which covers all plans, half of the impact produced by their incorporation is seen in the reduction of the internal inequality in each region, i.e., the capital city and the inland area. However, the reduction was not uniform since it amounted to 5.2% in the inland, and to 4.4% in the capital of the country. The rest of the impact was observed through the net inequality between distributions as well as in the inequality in the overlap area, although the economic distance is not significantly modified.

When the recipients who did not perform their counterpart work are excluded from the total number of plans, the share of each one of the components in the total coefficient does not record either significant changes, indicating that the income distribution inequality between regions is not affected by this anomaly in the execution of the Program. In the last scenario considered, again, the relative participation of each one of the components is not substantially modified, reasserting the neutral character of the plan in relation to the regional distribution of the pre-existing income to its application.

Finally, although the program seems to have a significant and positive short term impact on income distribution inequality, as measured with the Gini coefficient, and besides being neutral in relation to the preexisting regional distribution, there is still doubt as to whether this program is a mechanism sustainable through time, mainly due to the incognita on other effects not included in this analysis and to the possibilities of long term financing.

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APPENDIX

Tabla A.1. Caracterización de la población

Características	GBAA				INT			
	Con Planes	%	GBAA Total	%	Con Planes	%	INT Total	%
Total	411,283	100.00	11,412,179	100.00	382,636	100.00	9,954,103	100.00
Sexo								
Varón	142,214	34.58	5,980,170	52.40	112,197	29.32	4,706,583	47.28
Mujer	286,960	69.77	6,675,677	58.50	270,439	70.68	5,247,520	52.72
Edad Promedio	36.10		32.20		35.32		30.35	
Estado Civil								
Casado y unido	186,805	45.42	6,718,350	58.87	198,397	51.85	6,297,961	63.27
Soltero	224,478	54.58	4,693,829	41.13	184,239	48.15	3,656,142	36.73
Posición en el hogar								
Jefe	178,269	43	3,402,165	30	166,234	43	2,764,510	28
Cónyuge	161,109	39	2,216,906	19	114,955	30	1,673,401	17
Hijo	52,701	13	4,754,477	42	71,881	19	4,353,954	44
Otro	19,204	5	1,196,861	9	29,566	8	1,162,238	12
Años de Escolarización Promedio	7.7		8.1		8.2		8.0	
Estado Actual *								
Ocupado	353,840	86.03	4,370,789	38.30	342,219	89.44	3,351,775	33.67
Desocupado	33,429	8.13	1,093,931	9.59	18,334	4.79	720,492	7.24
Inactivo	41,905	10.19	7,191,127	63.01	41,428	10.83	6,624,447	66.55
Estado Previo **								
Ocupado	177,839	43.24	3,852,752	33.76	167,901	43.88	3,021,070	30.35
Desocupado	98,790	24.02	1,073,886	9.41	85,634	22.38	789,360	7.93
Inactivo	134,654	32.74	6,485,541	56.83	129,101	33.74	6,143,672	61.72
Tamaño del Hogar	5.33		4.42		5.51		4.78	

* Onda Octubre 2002; ** Estado reportado en Mayo 2002 por personas encuestadas en ambas ondas (Mayo y Octubre)

Fuente: Elaboración propia en base a datos de EPH, INDEC.

Tabla A.2.Canasta Básica Alimentaria y Linea de Pobreza para un Hoga

Mes	Adulto Equivalente		Hogar Tipo	
	CBA	CBT	CBA	CBT
Jun-01	61.76	151.93	190.84	469.46
Jul-01	61.59	151.51	190.31	468.17
Ago-01	61.37	150.97	189.63	466.50
Sep-01	61.02	150.11	188.55	463.84
Oct-01	60.50	150.04	186.95	463.62
Nov-01	60.75	150.05	187.72	463.66
Dic-01	60.46	149.34	186.82	461.45
Ene-02	62.41	154.15	192.85	476.33
Feb-02	65.82	161.26	203.38	498.29
Mar-02	69.83	169.69	215.77	524.33
Abr-02	81.76	193.77	252.64	598.75
May-02	86.20	202.57	266.36	625.94
Jun-02	90.67	210.35	280.17	650.00
Jul-02	94.93	218.34	293.33	674.67
Ago-02	100.94	227.12	311.90	701.79
Sep-02	104.87	231.76	324.05	716.15
Oct-02	103.74	230.31	320.56	711.66
Nov-02	105.08	232.23	324.70	717.59
Dic-02	105.72	232.59	326.67	718.70
Ene-03	106.92	235.22	330.38	726.83
Feb-03	107.56	235.56	332.36	727.88
Mar-03	107.83	233.99	333.19	723.03
Abr-03	106.55	232.28	329.24	717.75
May-03	104.60	229.07	323.21	707.83
Jun-03	103.13	227.92	318.67	704.27
Jul-03	102.31	227.13	316.14	701.83
Ago-03	102.08	225.60	315.43	697.10
Sep-03	101.99	224.38	315.15	693.33
Oct-03	104.12	228.02	321.73	704.58
Nov-03	105.24	229.42	325.19	708.91
Dic-03	105.76	231.61	326.80	715.67
Ene-04	105.81	231.72	326.95	716.01
Feb-04	106.17	232.51	328.07	718.46
Mar-04	106.02	232.18	327.60	717.44
Abr-04	106.52	233.29	329.15	720.87
May-04	106.66	233.58	329.58	721.76
Jun-04	106.88	234.08	330.26	723.31
Jul-04	106.14	234.57	327.97	724.82
Ago-04	107.90	236.30	333.41	730.17

Table A.3 Gini Decomposition for income distribution of total urban population. October 2002
Simulation without computing income from PJyJH

	INT	Gw — GBAA	Gnb	Gt	Total
	0.0926	0.1874	0.1270	0.1488	0.5559
	16.66%	33.71%	22.85%	26.77%	100%

	Gini	pi	si	pc	sc
INT	0.5329	0.4659	0.3731	0.5341	0.6269
GBAA	0.5597			0.5341	0.6269

	Between Gini	Affluence	pi	si	pc	sc
Gnb	0.5615	0.4605	0.4659	0.3731	0.5341	0.6269
Gt	0.5615	0.4605	0.4659	0.3731	0.5341	0.6269

Table A.4 Gini Decomposition for income distribution of total urban population. October 2002
Includes income from all PJyJH

	INT	Gw — GBAA	Gnb	Gt	Total
	0.0878	0.1791	0.1229	0.1400	0.5299
	16.58%	33.79%	23.19%	26.43%	100.0%

	Gini	pi	Si	pc	sc
INT	0.5017	0.4659	0.3758	0.5341	0.6242
GBAA	0.5371			0.5341	0.6242

	Between Gini	Affluence	pi	si	pc	sc
Gnb	0.5349	0.4674	0.4659	0.3758	0.5341	0.6242
Gt	0.5349	0.4674	0.4659	0.3758	0.5341	0.6242

Note: includes about 794,000 plans corresponding to recipients captured by EPH.

Table A.5 Gini Decomposition for income distribution of total urban population. October 2002

Simulation includes income from PJyJH whose recipients comply with counterpart work requirements

	Gw			Gnb	Gt	Total
	INT	GBAA	Total			
Gini	0.0889	0.1810	0.2700	0.1236	0.1422	0.5358
	16.59%	33.79%	50.38%	23.07%	26.54%	100.0%

Gini		INT					Affluence	Gnb				Between Gini	Gt			
		pi	si	Gini	pc	sc		pi	si	pc	sc		pi	si	pc	sc
0.5084		0.4659	0.3754	0.5427	0.5341	0.6246	0.4650	0.4659	0.3754	0.5341	0.6246	0.5409	0.4659	0.3754	0.5341	0.6246

Note: includes about 601,000 recipients in this category

Table A.6 Gini Decomposition for income distribution of total urban population. October 2002

Simulation includes total number of PJyJH recipiens expanded to 1.8 million

	Gw			Gnb	Gt	Total
	INT	GBAA	Total			
Gini	0.0861	0.1746	0.2606	0.1190	0.1378	0.5174
	16.64%	33.74%	50.37%	23.00%	26.62%	100%

Gini		INT					Affluence	Gnb				Between Gini	Gt			
		pi	si	Gini	pc	sc		pi	si	pc	sc		pi	si	pc	sc
0.4869		0.4662	0.3792	0.5268	0.5338	0.6208	0.4635	0.4662	0.3792	0.5338	0.6208	0.5221	0.4662	0.3792	0.5338	0.6208

Note: through a simulation, plans recipients have been expanded to 1.8 million