DISPLACEMENT, CONFLICT AND WELFARE: AN EMPIRICAL ANALYSIS.
A PROGRESS REPORT

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I Introduction

Colombia's civil conflict over the last 40 years has displaced many families and individuals from their villages of origin. Estimates vary, but it is clear that the problem has become, especially in recent decades, a very important one. Casual visits to the main cities in Colombia provide abundant evidence of the problem: displaced individuals are visible in poor neighbourhoods and more generally on the streets. The consequence of such displacement can be dramatic. In addition to the direct act of violence that causes the displacement, individuals often loose their livelihood, productive assets and valuable skills, the human capital they possess is often inadequate in the new environments, children are removed from school and so and so forth.

The study of the consequences of displacement in Colombia has often used data on individuals or households that have been displaced from the villages of origin and that have emerged somewhere else, typically in a large city. This, however, is only part of the story. Many individuals do not leave the region of origin and decide to stay in the village of origin. This report is the first study, to the best of our knowledge, that complements the existing studies by looking at individuals who live in the same villages of origin of the displaced but, for some reason, are not displaced. These data are then compared with those of a more traditional survey which gathers information on displaced individuals and families. In particular, our research approach is to:

1. Characterize displacement and mobility. Using a first data source, we can characterize which households move from their original village and why and distinguish those that we can follow to a new location and those we cannot track down. In Sections III.2 and III.3, we compare the demographic and economic profile of the households in this first data source (both those who move and those who do not) to the profile of 'displaced households' in other data sets collected in recipient municipalities.

2. Relate the observed mobility to several environmental factors, as reported in Section II. These include:

a. Municipality data on infrastructure and social capital collected in the locality questionnaires added to the survey

b. Retrospective information on violence and displacement at the municipality level.

c. The presence (or not) of the programme *Familias en Acción* that could have diminished the level of mobility.

3. Study the consequences of mobility and displacement, as reported in Sections III.1 and III.2.

As we mentioned above, the most innovative aspect of this research is the study of households who, while living in the same villages and areas from which displaced households leave to reach the big Colombian cities, do not leave these areas. This innovation was possible because of the availability of a large and high quality data set, whose collection was started in 2002 with the purpose of evaluating a new welfare programme, called *Familias en Acción*, run by the Colombian government with a loan from the IADB and the World Bank. The programme is modelled after the Mexican PROGRESA and consists of conditional cash transfers that aim at improving the nutrition and education of the poorest Colombians. The survey collected information on 11,500 households living in 122 (relatively small) municipalities, 57 of which were targeted by the new programme and 65 of which were not. The first data collection (which we refer to as the baseline data) was done just before the start of the new programme.[1]

We thought that such a survey, if suitably expanded, could be used to study displacement and mobility. For the second data collection, which was executed in 2003, we therefore decided to add several modules to the basic questionnaire (which was already very rich). In particular, we invested a considerable amount of resources to track down households that had moved from the baseline survey and, to these households, a newly designed module on mobility was administered. Second, we constructed extensive locality questionnaires that were administered to three 'local' authorities (such as the mayor, the

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[1] The evaluation and the survey were organized by a consortium made of Econometria, IFS and SEI. In some of the 'treatment' towns, the programme was started by the government before the baseline survey. These issues and the baseline data are discussed in detail in Attanasio et al. (2004).

programme official and the priest). Third, we tried a novel way to measure social capital by means of experimental games in 12 of the 122 towns in our sample.

The follow up survey to the *Familias en Acción* database was a success: attrition was relatively low at 6%. As illustrated in Table 1, in total we lost 710 households between the baseline and follow up surveys. This was partly due to the mechanisms we put in place to track households and partly to the low levels of mobility observed between 2002 and 2003. Among these 710 households we found that 321 households were reported as having moved out of the village, while for the remaining 275 we were not able to establish the reason for non-contact in the follow up. In addition to the 321 an additional 114 households moved out of their village of residence but where eventually tracked by our interviewers. In total, therefore, only 435 households or 3.75% of the sample had changed municipality. This was less than expected given past figures on mobility rates across the FA municipalities, which give estimates between 5% and 10% (between December 1999 and July 2002 more than 40% of the sample had moved out of the municipality in which they were registered in the SISBEN lists, which constituted our population of reference). If we add the remaining 275 households that were not surveyed again at follow up for unknown reasons and assume they to left the village of residence we find migration rates at around 6.10%. However, Table 0 in Appendix A shows that these households are significantly different from the sample of migrants, which surely reflects that some of these households have not migrated out of their municipality of origin or more complex selection issues. Therefore we chose not to add these households to the sample of migrants.[2]

Total number of households		11612		
Migrants out of municipalities	435	Non migrants	11177	
	including:			*including:*
Tracked	Non tracked	Don't know	Changed location	others

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[2] In addition to the households that left the muncipality of residence we have 1136 households that changed residence but within the same village. They were all tracked, but we do not consider them as migrants (or displaced) even though some report violence as the reason for moving.

			within municipality
114	321	275	1316

We have to bear in mind that these migration flows are not representative of all migration flows in Colombia but only of the mobility among the most vulnerable households in Colombia that are strongly liquidity constrained. Given the high migration costs we describe in Section III1, it is not surprising to find very low migration rates across municipalities However, we believe that these migration flows are particularly interesting for policy makers since the well-being of these households is likely to be strongly affected by their migration decisions.

An additional innovative element of our study is the use of experimental games to construct rigorous and quantifiable measures of social capital. In 12 of the 122 municipalities we piloted a set of economic experiments aimed at measuring social capital. The games we played were risk sharing games designed in such a way so that in the second round of the game the amounts people could win depended on their ability of forming groups and trusting their partners. Our measures of social capital will therefore be the size and the number of the groups formed in the second round of the game: we will presume that a village where there are few large groups has more social capital than one with many small groups. As the games were only played in 12 villages (and we hope to extend them to all villages in the future) the analysis that relates migration decisions to the game results can only be suggestive. However, as we will see, some interesting elements seem to emerge. We also report the progress made so far with the experimental games in a separate Appendix E that describes the implementation and results of the games in the pilot areas.

In addition to the *Familias en Acción* data, we also make use of a survey collected and studied by *Econometria* that includes 1503 displaced families interviewed in towns that are traditionally recipients of displaced individuals. Such survey has modules that are similar to the modules used in the evaluation of *Familias en Acción.* We are therefore able to compare directly the characteristics of displaced households with those of non-

displaced households who may have migrated or not. This analysis constitutes the direct link between our main approach and the traditional one. To our knowledge we know of only two studies by Engel and Ibanez (2005) and Ibanez and Velez (2005) who also compare the characteristics of displaced households in Colombia to non-displaced households coming from the same areas. However, their samples are much smaller than ours, since they include 200 displaced and 175 non displaced households, which limits as well the number of control variables they use. Moreover, the generalisation of their results is questionable given numerous selection and sampling issues inherent to any study on displacement. Therefore our results complement their findings.

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The concept of mobility that is studied in the first part of the report is slightly different from that used in some of the literature on violence and displacement. In this respect, our study should be seen as a complement rather than a substitute of existing studies. Our analysis explores a different dimension. Previous studies focussed on the displaced individuals that arrive in big cities after large shocks and violent experiences. While this is surely important, it is also important to start from the small communities and check

what happens to individuals that, while affected by violence and other problems, do not necessarily move to the big cities but to other places or stay in the municipalities. These decisions are not necessarily entirely forced but we expect them to be determined directly by the high levels of violence in the municipalities. Studying whether and to what extent the mobility of poor households is linked to the displacement process in Colombia will be one focus of this report. We are also in the position to characterise the profile of the individuals within the communities that are displaced versus migrants, as developed in the second part of the report. In this respect our study is novel and unique and we think it completes the knowledge from other studies in an important way.

The rest of the report is organized as follows. In section II we discuss the determinants of household decision to leave its municipality of residence between the baseline and follow-up FA surveys. In Section III we study the consequences of mobility and displacement on the well-being of households. We also compare the households in the FA data set to displaced households who are coming from the same rural municipalities. Section IV concludes by establishing policy recommendations based on our main findings.

II Determinants of household migration

Before estimating the determinants of household migration, we present the theoretical framework that motivates the choice of variables we use to explain this decision. Our goal is to estimate the relative contribution of different factors in this decision, including household and community background variables, policy measures (namely whether the municipality of residence is under treatment of the FA programme) and violence incidence. Aside from the particularly high number of variables we are able to use given the size of our sample and the extensive data set we have from the evaluation of the FA programme, the main originality of this work is too embed new motives for migration related to violence and policy interventions in the traditional framework of economic migration.

1 Motivation of the empirical model

There is a large economic literature on the determinants of migration decisions but very few papers have studied the specific problems related to violence in politically unstable economies and the impact of policy interventions such as welfare programmes. In this section we review the determinants of migration identified in the literature and discuss how household migration incentives may be affected by the high incidence of violence that characterises most of the villages surveyed in Colombia and by policy interventions such as FA. In the second sub-section we discuss the variables we chose from the FA data set in order to capture the effects associated to each identified determinant.

11 Traditional literature

To understand economic migration the main framework established by Harris and Todaro (1970) postulates that individuals compare the wage they are earming in the present location with that available in a potential destination, adjusted for the probability of finding a job. Models have then expanded to take into account more complex determinants of migration decisions. On one hand they outline that migration benefits and costs vary a lot across individuals having different characteristics. For example, earlier models of human capital emphasize that migration returns depend on education levels and individuals' planning horizon, which explains why young and better educated individuals are more likely to migrate (Sjaastad, 1962, Becker, 1964, Mincer, 1974, Greenwood, 1997). Also individuals have different information on destination areas and have different degrees of risk aversion, which are important factors in explaining highly uncertain decisions. This also explains why individuals may migrate repeatedly or sequentially to different local labour markets (Pessino, 1991) and accumulate human capital together with information (Da Vanzo, 1983).

More recent studies have investigated the role played by social interactions. First, in line with Stark (1991), the "New economic of migration" considers migration as a household strategy to diversify risk by sending some members in distant areas while keeping others

working on farm. Then, sociologists have outlined that social networks have a strong impact on the size of migration costs. For example, they help new immigrants in their job and house search or by proposing them services (Massey, Alarcon, Durand and Gonzalez, 1987); they play a large role in mitigating the hazard of crossing the borders between Mexico, and US (Espinosa and Massey, 1997); or they help migrants find higher paying job upon arrival in the US (Munshi, 2003). As a result migration costs become endogenous to the migration process as modelled by Carrington, Detragiache and Vishwanath (1996).

In line with these models our analysis will take into account a set of economic factors that push households out of their municipality of residence, together with household and community characteristics that determine migration costs and benefits. Note that we do not observe the destinations chosen by most of migrant households and therefore cannot control for pull factors in the destination areas.[3] Also we do not adopt the approach of the "New economic of migration" and restrict our study to the household decision to migrate as a whole unit given the limited information we have on the mobility of household members.

12 Violence and migration

The economic literature on the impact of violence on migration is not very developed, partly due to the scarcity of available data, partly because this field was left to political scientists until very recently. However, in a seminal paper, Schultz (1971) finds a positive effect of the incidence of homicides on net internal migration rates from 1951 to 1964 in Colombia. Also, Morrison and May (1994) show that political violence is a key determinant of internal migration rates in Guatemala. But using aggregate data, these authors cannot capture easily the microeconomic underpinnings of household migration decisions in violent context, which is the main objective of our study.

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[3] Only 135 households have been successfully tracked during the first follow up, which is a too small sample to test for the effects of "pull" factors.

However, in the last couple of years there has been a growing attention paid to the consequences of civil war and conflicts on displacement and asylum seekers (see for example Azam and Hoeffler, 2002, or Hatton, 2004). Although we may argue that forced migration and economic migration are of different nature, we cannot exclude that these two decisions have common factors. This may explain why, very often, only part of households from communities targeted by illegal armed groups decide to move. To capture this feature Engel and Ibanez (2005), or Ibanez and Velez (2005) extend the expected utility framework developed by Morrison and May (1994) to explain displacement decisions. This framework postulates that households leave their area of origin when their utility to stay is smaller than utility to move, taking into account all socio-political and economic benefits and costs attached to different locations. As a result, predictions of such models are sometimes opposite to those of traditional migration models. For example, households with immobile assets like large plots of land that can be easily sized by rebels may feel more threatened by violence and, hence, are encouraged to move first, contrary to what the standard economic literature would predict. Similarly, risk aversion may induce individuals to displace in a violent context, whereas the same individuals would not have migrated in a stable context, because of the uncertainties involved by migration decisions (Fischer et al, 1997). Or individuals with political responsibilities in their municipalities may be the first targeted by rebel or paramilitary forces in their strategies to destabilise rural areas and take control over them. This also outlines the complex role that social capital is likely to play in the migration decision under violence. Then any advantage to belong to a society and may discourage migration like active participation in community activities or high education levels may also turn into a risk factor and encourage displacement, as studied by Ibanez and Velez (2005).

In line with Morrison and May (1994) and the literature on displacement, our model of migration will embed factors linked to violence into a framework of expected utility. To capture the effect of violence on household well-being, we will enter different proxies measuring the level of violence prevailing in the municipality of residence among the explanatory variables of migration decisions. Furthermore, we will allow the level of

0violence to affect not only directly the well being of households attached to a given location but also the migration incentives associated to other factors. This argument, firstly outlined by Morrison and May (1994), has not been exploited further since.[4] Using micro-data we can test easily whether the effects associated to specific factors depend on the level of violence by adding interaction terms between these factors and the level of violence.

13 Impact of welfare programme on migration

Another important benefit attached to living in a municipality is whether its inhabitants receive benefits from welfare programmes. However the literature on the impacts of welfare programmes on migration is scant. To our knowledge only one paper by Angelucci (2005) investigates the effect of the PROGRESA conditional cash transfer programme in Mexico on international labour migration. However, the political and economic context of Mexico where communities have experienced large international migration flows in the past and formed important migration networks in the US is very different from Colombia.

Although the FA programme has not been designed specifically to affect migration behaviour, there are many ways in which household mobility might respond to it. On one hand, receiving the benefits of the *Familias en Accion* programme makes living in a municipality where the programme operates (hereafter "treatment municipality") more attractive than living in a municipality where it does not ("control municipality"). Accordingly we expect a negative correlation between living in a treatment municipality at baseline and the probability that a household migrates out of this municipality between the baseline and follow up surveys. On the other hand, receiving cash transfers may also help relaxing financial constraints of very poor households, and, hence, allow them to finance their migration if migration returns are high as compared to its costs. Since these

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[4] Ibanez and *al* (2005)'s results show that the determinants of displacement are different from those of migration but, given the scope of the paper and their data, they do not test for how economic determinants are modified by the level of violence.

two effects play in opposite direction, the effect of receiving the programme on a household mobility is *a priori* ambiguous.

We also expect the programme to affect differently migration decisions of households depending on their characteristics and environment. In particular the incidence of violence varies a lot across municipalities and the programme may affect differently migration incentives of households depending on whether they are threatened by violence or not. For example, by relaxing cash constraints, the programme may allow some households threatened by violence to migrate, whereas these households would not benefit from migrating in a stable environment. Or the programme may discourage migration only if violence incidence is not unduly high. We also know that, in principle, those benefiting from the programme may be different from those not benefiting from it. In particular, large households with many small children aged less than 7 years old receive larger amounts of cash transfers, as well as families with lots of children enrolled in school. We will therefore test for possible interaction effects of the programme with the violence levels in municipalities, as well as with demographic composition and size of households.

2 Data

21 Sample

To assess the determinants of the decision to migrate out of municipality we built a dummy variable that is equal to one if a household has moved out of its municipality between the baseline and the follow up and 0 otherwise. Such information is available since, at follow up, the surveyors report whether they are able to interview again the households interviewed at baseline and if not, the reason why. Among the list of reasons, 435 households were not found at follow up because they left their municipality of origin, which represents 3.73 % of the sample.

Note that the Familias en Accion data also allow us to identify 1316 households that have changed location between the baseline and follow up surveys within their municipality of

residence. However, we focus only on household decision to leave the municipality of residence for two main reasons. First, our data do not give us information on the levels of violence across different parts of the municipality and the FA programme is administrated homogenously everywhere in each municipality, such that we cannot test the main predictions of the model concerning the effect of violence and of welfare programmes for within municipality mobility decisions. Second, on *a priori* grounds, these two types of migration decisions have different economic determinants since migration costs and benefits involved are not the same. This is line with what households report when they are asked about their main motivation to have migrated, as presented below:

Main reason for having migrated	Households who migrated within their municipality (1) % of answers	Households who migrated out of their municipality (2) % of answers
Violence	1.9	14.9
For job related reasons	16.9	54.4
To find better accomodation	22.8	2.6
To live closer to relatives	8.3	14.0
To live closer to the centre of the municipality	1.0	0.0
To live closer to college	3.8	3.6
others	45.3	10.5
Total	100	100

One has to be cautious, however, while interpreting these results. These answers come only from households who were re-interviewed at follow-up, which includes households who migrated within the municipality and could be easily found for the follow-up interview, as well as 114 households who migrated out of their municipality of origin and were successfully tracked by surveyors. The latter are only a minority of the 435 households who have migrated out of their municipality and it is likely that most of the households who were not successfully tracked are the ones who did not want to leave their address to their neighbours or relatives because they were particularly threatened by violence. Therefore the sizeable proportion of reasons related to violence (14.9% of all the reasons mentioned) may still underestimate the proportion of motives related to violence among those who migrated out of their municipality of residence.

Therefore, the sample we use in our final analysis comprises 435 households who have clearly moved out of their municipality of residence -hereafter called "migrants"- as well as 11177 households who have not, the "non migrants". We summarise the characteristics of these two sub-samples in the Dictionary of Variables in Table 1 of Appendix A.

22 Household level variables

As in models of individual migration, we assume that migration costs and benefits depend strongly on household characteristics. To capture these effects in our regression framework we will control for a set of demographic variables from the FA survey such as the number of people in household, its age composition, as well as for education levels, occupation and age of parents. As shown in Table 1, non-migrant households are significantly larger (with 6.1 members on average) than migrant households (5.5). Also non-migrant households report a significantly higher number of children aged 7-17 years as compared to migrant households. We also capture whether the household head is single or not since this could motivate the household to migrate in order to join other relatives or may diminish migration costs. We observe a significantly larger proportion of single head households among migrants (26%) than among non-migrants (20%). It is also noticeable that education levels of heads of household are not significantly different between the two samples, even though spouses in non migrant households are more frequently not educated (23%) as compared to spouses in migrant households (19%). However we cannot test a selection model *a la* Borjas (1987) where migrants choose to migrate where the returns to human capital are higher since we do not observe the destination areas of most of migrants or the returns to human capital. However, in line with migration models based on human capital, we observe that head and spouses in migrant households are around three years younger on average as compared to non-migrants.

We also collected information related to the type of social insurance held by each household. In Colombia, the best type of insurance is offered privately by employers, which might contribute to attach one employee to his/her job. Table 1 in Appendix shows

that non-migrant households have more frequently unsubsidized health insurance than migrants (4% versus 2%). Also the proportion of households with a subsidized health insurance (the second best type of insurance) is significantly larger among non-migrants (69%) than among migrants (63%). This might be easily explained if good jobs with good insurance discourage the vulnerable households of our sample to move out of their municipality of residence. But this could also reflect a selection bias of more risk averse households who look for safer jobs with better insurance and are not mobile.

We also controlled for housing conditions as they determine strongly the well being of these very poor households and, hence, their willingness to change location.[5]

Variable	Non migrants Mean (sd)	Migrants Mean (sd)	Variable description
house	0.97 (0.16)	0.94* (0.24)	0 if family does not live in a house, 1 if it does.
houseown_1	0.69 (0.46)	0.53* (0.50)	1 if house is owned, 0 oth.
houseown_2	0.06 (0.24)	0.18* (0.38)	1 if house is rented or in mortgage, o oth
houseown_3	0.05 (0.21)	0.02* (0.13)	1 if house is occupied without legal agreement O oth.
houseown_4	0.20 (0.40)	0.26* (0.44)	1 if house is in usufruct O oth.
walls_mate~1	0.44 (0.50)	0.43 (0.50)	1 if walls made of brick O oth.
walls_mate~2	0.37 (0.48)	0.36 (0.48)	1 if walls made of Tapia, Abobe or Bahareque.
walls_mate~3	0.14 (0.35)	0.15 (0.36)	1 if walls made of wood
walls_mate~4	0.03 (0.18)	0.03 (0.18)	1 if walls made of bad quality wood.
walls_mate~5	0.01 (0.11)	0.02 (0.13)	1 if walls made of cardboard or no walls.
phone_3	0.90 (0.30)	0.89 (0.31)	1 if no phone,0 oth
phone_2	0.02 (0.13)	0.01 (0.12)	1 if communal or radiotelephone, 0 oth
phone_1	0.08 (0.28)	0.09 (0.29)	1 if traditional phone, 0 oth.

Note: * significantly different between migrants and non migrants

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[5] Of course these variables reflect also past investments, which are surely endogenous to migration decisions.

The statistics summarised above show that there is a significantly larger proportion of households living in a house among non migrants (97%) than among migrants (94%). Furthermore, non-migrants own significantly more frequently their house, as we understand easily if ownership reflects household intentions to stay. Also non migrant households occupy their houses more frequently without legal agreement, which may reflect that similar agreements are difficult to find in destination areas. But migrants rent or have their house in usufruct more frequently than non migrants.

23 Municipality level variables

The variables used to capture the role played by expected wages predicted by economic models are standard although we cannot control for expected wages in the destination area for the reasons already mentioned (see footnote 3). So we control for hourly wages in rural and urban parts of municipality and occupations of heads and spouses.

Geographic factors may also be important in explaining migration decisions since they determine returns to agriculture and access to markets. Therefore we included among the explanatory variables of migration decisions a few characteristics like the altitude of the municipality of residence and its square. Moreover, to capture better regional imbalances and other unobserved factors that may affect migration and differ across regions we also embedded four regional dummy variables into the migration equation, as well as the size of population living in the center and peripheric parts of the municipalities.[6]

Moreover, we expect the very poor households in our sample to be sensitive to the availability of public infrastructure like schools and hospitals that are entered as additional explanatory variables. We also include the proportion of households with sewage system or piped water in the municipality of residence, as well as the number of pharmacies, public centros and puestos as they may reflect the costs of access to these services. Table 1 shows that migrant households live, before migrating, in villages that

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[6]As the latter also capture dynamic effects linked to agglomeration in specific areas resulting from past migrations, they are potentially endogenous and we need to be cautious while interpreting their effects.

are on average better connected to pipe water or sewage systems, and with more schools, hospitals and puestos than non migrants.

An important determinant of migration emphasized by the recent literature is the presence of networks. Although we do not have a direct measure of household networks in our data, we include proxies for the level of social capital in the village, as well as variables indicating household participation in collective activities that are likely to affect migration decisions in complex ways. On one hand social capital may be considered as a positive amenity that increases the well-being to live in some municipalities and may be viewed as a social asset that is not easily transferable to another community. On the other hand, social capital may be correlated to the presence of strong networks, which may facilitate migration by decreasing its costs, as outlined in the recent literature on migration.

The FA survey provides us with several sources of information on social capital in the village. First we computed variables measuring trust in municipalities. This was possible by using a special module of the survey applied to three leaders in each municipality who have to grade the level of trust and its evolution during the last five. We averaged the answers across leaders and added them among the control variables. Second we use a detailed module of the questionnaire applied to household mothers, which describes participation of women in political, religious, sport, neighbourhood or other types of associations. As a proxy for social capital we used the proportion of women involved in each type of collective activity as well as the proportion of women involved in any of these groups. Third, we used proxies for social capital coming from the experimental games that have been implemented in 12 pilot villages. We tried successively several measures such as the average size of risk sharing groups formed during the games divided by the number of people in each session, the number of groups (the larger, the smaller the social capital) or the number of groups divided by the number of people in each session (see in Appendix F for more details on these games).[7]

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[7]For efficiency reasons, we added a dummy variable indicating whether a municipality is a pilot for the games or not (in which case no data are available). We hope to be able to extend these games in the future

To assess the impact of violence on migration decisions, different sources of information from the FA data have been used. The first type of variables comes from the part of the FA questionnaire on public infrastructure that gives information on the presence of taskforce desertion and taskforce strike due to violence in any health center (IPS) of the municipality. Table 1 shows that non-migrants households have been affected by these events significantly less than migrants. Secondly we use three variables that describe the perception by the surveyors of some problems linked to violence when they visited the municipalities. These are three dummy variables equal to one if, respectively, there was a curfew, if there were some paramilitaries/FARC/or ELN forces, or if there were some problems related to violence in the municipalities. Table 1 shows that migrants lived in more violent municipalities before migrating. There was a curfew in the municipality of 12% of non-migrant households, which is a significant lower proportion than among migrant households (15%). Furthermore, illegal armed groups are more frequently present in the municipalities of migrant households (73%) than of non-migrant households (61%). Finally, 65 % of non-migrants households live in a municipality where there are some problems of public order, which is significantly lower than among migrant households (78%). The last type of variables measuring the levels of violence comes from the special module applied to three leaders in each municipality. They mention whether some displaced households have left and joined the municipality during the year before the baseline survey. In the hope of getting rid of some measurement errors in the answers, we use the average of the answers reported by the leaders in each municipality. Table 1 shows that, on average, almost twice as much displaced households have left the municipalities of residence of migrants as compared to non migrants.

3 **Results**

We report the determinants of household decision to migrate out of the municipality of residence between the baseline and follow-up surveys after discussing several

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to the 122 municipalities, which will give us more variation in social capital and allow us to assess better its effect.

specifications we used to measure the effects of the programme and its interaction with the level of violence in the municipalities. In the last subsection, we address whether the incidence of violence modifies migration incentives of households with different characteristics.

31 Main results

Our first objective is to assess the relative importance of different determinants in explaining the household *i* decision to leave its municipality of residence *j* between baseline and follow-up, with a particular focus on the effects of violence incidence and of policy interventions like the FA programme. To do so, we estimated equation (1) using standard Probit model allowing for possible correlated decisions within village as follows:

$$Y_{ij} = \alpha_1 + \alpha_2 Treat_j + \alpha_3 X_j + \alpha_4 X_{ij} + \varepsilon_{ij}$$

where

Y_{ij}	= 1	if household i in village j migrated between period baseline

and follow up

	= 0	otherwise
$Treat_j$	= 1	if in treated municipality
	= 0	otherwise
X_{ij}		control variables for household characteristics
Xj		control variables for village characteristics
ε_{ij}		error term, correlated across households within municipalities.

Note that α_2 yields an unbiased estimate of the programme impact under the assumption that, conditional on observed characteristics, X_{ij} and Xj, there are no unobserved factors differentially affecting migration in treatment and control areas. Even though we cannot test for this assumption, potential sources of bias are minimised since the control municipalities have been chosen so to be as similar as possible to the treatment municipalities. Moreover, as in our evaluation strategy of the FA programme, we control

for many observable variables, both at the municipality and household level (see Attanasio *et al*, 2005).

The main results we discuss below are presented in Table 2 in Appendix. In the first specification presented in column (1) we used as many regressors as municipality variables as we had. Since the effects associated to the public infrastructure variables are not easy to interpret, we wanted to check for the robustness of our results when we drop these regressors, as presented in column (2). We also test for the robustness of our results when we include more control variables to capture better job related motives: in column (3), we add more education levels of the household heads and spouses, and in column (4), their occupations. Column (5) includes an additional variable "group" measuring the average participation of women in collective activities to control for the social capital in the village. All these specifications and their results are discussed below.

We find that geographic factors make some areas more attractive than others. The households living in the Oriental area and in the Pacific area have a lower probability to migrate out of their municipality as compared to households living in the Atlantic areas, the missing category. Also the altitude of the municipality increases the probability to migrate out of the municipality, which might be explained by lower returns to agriculture in the mountains or more difficult access to markets. Also economic differences across villages are reflected by the negative effect played by hourly wages in rural parts of the municipality, in line with Harris and Todaro's predictions. However, the magnitude of the latter effect is rather small since increasing hourly wages in rural parts of municipalities by 1000 pesos (which represents more than one standard deviation from the mean hourly wages in our sample) decreases the probability to migrate by less than 0.5 percent point.

Marginal effectdP/dX multiplied by 1000	(1)	(2)	(3)	(4)	(5)
hourly wage in urban	0.007	0.010	0.007	0.006	0.008

part of municipality					
	(0.010)	(0.008)	(0.010)	(0.008)	(0.010)
hourly wage in rural part of municipality	-0.005	-0.004	-0.004	-0.003	-0.005
	(0.002)**	(0.002)	(0.002)**	(0.002)	(0.002)**

Notes : Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Apart from the size of households, few household demographic variables determine significantly migration decision. We find that larger households have a lower probability of migrating out their municipality of residence, which is easy to understand since large households have important migration costs.[8] Additionnally we tested for possible interaction effects of the programme with the demographic characteristics of the households, as they determine the maximum amount of benefits they are entitled to and, hence, decrease the migrate benefits to migrate out of the municipality. But we could not find any significant effects associated to these interactions. We also find that households whose head is single are more likely to migrate. This reflects a number of reasons ranging from the absence of family networks in the municipality of residence that push single headed households to migrate, to other factors such as the degree of risk aversion for which we could not find better control in our data. [9]

The effects associated to education levels of household heads and spouses are not significant individually nor jointly, as tested in specifications (2) and (3). This remains true when we aggregate the education levels into fewer categories as shown in column (1). The absence of significant effects associated to education is somehow puzzling if migration is determined mainly by job related motives. One might argue, however, that education levels of the head and the spouse do not capture well enough job related motives of these very poor households who are mainly working in agriculture. Therefore

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[8] Note that we cannot rule out that the size of household may be endogenous to migration decisions such that this effect has to be interpreted with care.

[9] We also tried adding the proportion of total household consumption spent in lottery to capture heterogenous degrees of risk aversion across households. But this variable was not significant and suffers from many missing answers. Therefore we preferred not to keep this variable in the set of controls.

we added some control variables for occupations of heads and spouses in specification (4). We find that if the head is working the household probability to migrate is higher, and that being a self-employed worker, an employer or employed dimishes the probability to migrate, as we can easily explain with job related motives. We cannot, however, overinterpret these findings since occupations of heads and spouses just before migrating are surely endogenous to household migration decisions. Therefore we present the results with these additional controls for occupation separately from the others in column (4).

One of the strongest estimated effect is associated to the type of insurance from which households benefit. Having a private health insurance -which is most often attached to a good job in formal sector- decreases strongly the probability of migrating by around 3.5 percent points (this is to be compared to the observed migration rate around 3.7%).

Marginal effectdP/dX multiplied by 100	(1)	(2)	(3)	(4)	(5)
1 if EPS =unsubsidized health insurance, "best" type	-3.553	-3.497	-3.533	-2.844	-3.546
	(1.090)***	(1.235)***	(1.200)***	(1.153)**	(1.202)***
1 if ARS (2nd best type of insurance)	-1.282	-1.056	-1.148	-1.049	-1.178
	(0.575)**	(0.661)	(0.639)*	(0.627)*	(0.630)*
1 if Vinculado (3rd best type)	-0.696	-0.424	-0.565	-0.365	-0.611
	(0.648)	(0.728)	(0.708)	(0.677)	(0.700)

Notes : Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Moreover, very significant and large effects are associated to the type of property rights households have. Paying something for living in a house (either a rent or having a house in usufruct) increases household mobility as compared to owning the house, the missing category, which is quite intuitive. The strongest observed effect is whether the household

rents its house or has its house in mortgage, which increases the probability to migrate by around 2%. Also households who have a house in usufruct are more likely to move as compared to those who own a house. This is not surprising since these households may find easily similar contracts in other municipalities if they move. This is not the case for households who are living in a house without legal agreement and have a lower probability to migrate.

Marginal effectdP/dX multiplied by 100	(1)	(2)	(3)	(4)	(5)
1 if house is rented or in mortgage, 0 oth	1.970	2.183	2.012	1.254	2.021
	(0.554)***	(0.614)***	(0.599)***	(0.673)*	(0.600)***
1 if house is occupied without legal agreement, 0 oth	-2.998	-3.378	-3.374	-3.364	-3.363
	(1.681)*	(1.598)**	(1.592)**	(1.363)**	(1.591)**
1 if house is in usufruct, 0 oth	0.865	1.054	1.020	1.092	1.016
	(0.374)**	(0.390)***	(0.383)***	(0.370)***	(0.385)***

Notes : Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

When adding the variables measuring the level and evolution of trust in the municipalities as reported by the leaders, they were not individually nor jointly significant whatever the specification chosen. We also tried adding the other proxies for social capital described in Section II2 from the experimental games or from the module on women participation in collective activity, all turned out to be not significant at conventional levels.[10] This may simply reflect the fact that these variables are strongly correlated to the other village level characteristics, in particular to the degree of

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[10] We present in column 5 of Table 2 in Appendix A the results adding the proxy for social capital with the most significant effect, which measures the proportion of women in each village participating in any type of collective activity.

violence.[11] Moreover, we entered the household level variables measuring mother's participation in collective activities, which were not significant either. Hence we chose not to report them in the final results.

Concerning the effects of violence, we find significant positive effects associated to the presence of illegal armed groups in the municipality in specifications (2) to (4), as well as associated to the number of displaced households who left the municipalities in the past whatever the specification chosen. Moreoever, when we drop most of the controls for municipalities as in specification (2) we found that problems of violence in municipalities leading to taskforce desertion in health center increase significantly household mobility by more than one percent point. All these results show that violence plays a significant role in explaining household migration and that migration flows are closely linked to displacement process.

Marginal effectdP/dX multiplied by 100	(1)	(2)	(3)	(4)	(5)
1 if treatment village	-0.648	-0.628	-0.836	-1.124	-1.029
	(0.499)	(0.495)	(0.505)*	(0.402)***	(0.539)*
Number of displaced households in the past	0.034	0.039	0.032	0.024	0.031
	(0.012)***	(0.012)***	(0.012)***	(0.010)**	(0.011)***
curfew	1.110	0.208	0.939	1.143	0.902
	(0.550)**	(0.603)	(0.567)*	(0.527)**	(0.565)
presence of illegal armed groups	0.821	1.282	0.969	1.364	0.774
	(0.512)	(0.526)**	(0.530)*	(0.437)***	(0.514)
1 if suffered taskforce desertion, O oth.	0.732	1.107	0.512	0.013	0.675
	(0.582)	(0.626)*	(0.597)	(0.551)	(0.616)

[11] When we dropped some of these variables the proxies for social capital became significant.

Turning now to the effect of the programme, it is only significant when we add more control for municipality infrastructure and for education variables, as in columns (3) to (5). This effect is not negligible since receiving the programme decreases by around probability to migrate as compared to the observed migration rate equal to 3.73 %. Interestingly, the magnitude of this negative effect associated to the programme is comparable to the magnitude of the positive effect associated to the level of violence in the municipality as measured by the coefficient associated to the presence of illegal armed groups. This would suggest that the programme contributes to stabilise the situation in some municipalities by mitigating migration flows due to high incidence of violence.

32 Robustness checks

We were also worried that the lack of significance of the programme effect in some specifications like in columns (1) and (2) could be driven by some misspecification of the programme effect. So far, we captured the effect of the programme by a dummy variable indicating whether the municipality of residence of a household receives the programme or not. However, in order to assess the programme's effect as accurately as possible, we also exploited an interesting feature of the implementation of the programme that started at different dates in different municipalities. As a consequence some municipalities have received more payments at follow up. We captured this "intensity" effect of the programme with the variable "number of payments" and estimated the following equation (2):

$$Y_{ij} = \alpha_1 + \alpha_2 \mathrm{E}xpo_j + \alpha_3 \mathrm{X}_j + \alpha_4 \mathrm{X}_{ij} + \varepsilon_{ij}$$

where the variable $\mathrm{E}xpo_j$ measures the number of payments received in municipality j at follow up survey.

The results shown in Table 3 in Appendix show that the intensity effect of the programme is positive and significant at 10 % level (and, as expected, negative) when we add more control variables either at municipality level as in column (1) or at household level in column (3).[12] We find robust results concerning the main effects we already discussed.

Moreover we could not exclude that the effect of the programme on migration might play beyond its intensity effect like a "fixed" effect, for example if it has positive externalities in the municipalities that discourage households to migrate. Therefore we tried another specification by allowing for the programme to affect the probability to migrate separately from the number of payments received. The estimated model became:

$$Y_{ij} = \alpha_1 + \alpha_2 \text{Treat}_j + \alpha_3 Expo_j + \alpha_4 X_j + \alpha_5 X_{ij} + \varepsilon_{ij}$$

But the estimated fixed effects and intensity effects of the programme turned out to be individually not significant so that we adopted the final specification to capture the intensity effects of the programme as presented in equation (2).

33 Does violence incidence interact with the programme effect ?

We already motivated why the programme could affect differently households depending on the level of violence in their municipality of residence. To test for heterogeneous effects of the programme, we first estimated separately equation (1) for municipalities with high and low incidence of violence as measured by the presence of illegal armed groups (Farc, ELN or paramilitaries). The results shown in the Table below confirm that the negative effect of the programme is only significant at conventional levels in the villages where the incidence violence is low, which correspond to columns (4) to (6).[13] This result is robust whatever the specification chosen. The magnitude of the effect of the programme is large, with estimates lying between –0.5 percent points and -2.2 percent points.

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[12]We also entered the number of payments in a quadratic relationship, but the squared term was not significant.
[13]We only present here the main results concerning the effect of the programme but we control for the same variables as specified above.

Marginal effect of receiving the programme on the probability to migrate (in percent points):

	High level	of violence		Low level	of violence	
	(1)	(2)	(3)	(4)	(5)	(6)
treat	-0.543	-0.460	-0.737	-1.185	-1.382	-1.739
	(0.685)	(0.661)	(0.537)	(0.482)**	(0.816)*	(0.532)***
Obs.	6464	6464	5099	3370	3370	2661

Robust standard errors in parentheses.
(2) & (5) with more controls for municipality characteristics
(3) & (6) with more controls for occupation of household heads and spouses
* significant at 10%; ** significant at 5%; *** significant at 1%

If we define low/high incidence of violence by the number of displaced households who left the village in the past, we obtain similar results. However their significancy depends on the threshold chosen arbitrarily to define high/low level of violence and on the number of explanatory variables used as control variables. For example, defining this threshold as being the average number of displaced households across municipalities, Table 4 of Appendix A shows that this effect is significant only if we add the occupations of household head and spouses among the control variables.

Therefore we also specified a regression model where different proxies for violence as defined by the number of displaced households in the past and by the dummy variable indicating the presence of illegal groups in the village are interacted with the effect of the programme. The Probit model's becomes:

$$Y_{ij} = \alpha_1 + \alpha_2 \text{Treat}_j + \alpha_3 \text{Violence}_j + \alpha_4 \text{Violence}_j * \text{Treat}_j + \alpha_5 X_j + \alpha_6 X_{ij} + \varepsilon_{ij}$$

where:

Violence_j control variables for violence level in village j

$\text{Violence}_j * \text{Treat}_j$ $= \text{Violence}_j$ if household leaves in village j receiving the programme

     $= 0$ otherwise

and the same assumptions as in equation (1) hold for the estimation.

The results presented in Table 5 in Appendix show that these interaction effects are significant at conventional levels whatever the specification adopted and always counteract the effect of the programme. We report below the main effects of interest :

Marginal effects	(1)	(2)	(3)	(4)	(5)
Programme effect "treat"	-1.240	-1.725	-2.326	-1.869	-1.712
	(0.666)*	(0.751)**	(0.601)***	(0.758)**	(0.780)**
Interaction effect of Programme*violence	0.041	0.052	0.039	0.053	0.063
	(0.019)**	(0.018)***	(0.017)**	(0.017)***	(0.021)***
Violence effect "displaced hhds"	0.033	0.025	0.020	0.024	0.026
	(0.011)***	(0.010)**	(0.008)**	(0.010)**	(0.011)**

Notes : Robust standard errors in parentheses
significant at 10%; ** significant at 5%; *** significant at 1%.

As before we find that receiving the programme decreases significantly the probability to migrate and that the degree of violence, as measured by the number of displaced households in the village in the past, counteracts this effect. But the programme effect is attenuated even further in municipalities where the degree of violence is high, as shown by the positive effect associated to their interaction.

To assess the magnitude of these effects, we used these estimates to compute the change in the probability to migrate due to the programme effect and its interactions with violence at the mean characteristics of the sample. Figure 1a in Appendix shows that the negative effect of the programme becomes less important the higher the degree of violence, as measured by the number of displaced households in the past. The implied change is between -2 percent points in municipalities with very low levels of violence and + 0.9 with high level of violence. However, positive effects only affect a minority of municipalities with unduly high level of violence. The results are very similar if we include or not the proxies for occupations and social capital among the set of control variables, as shown in Figures 2a and 3a.

We then performed the same computations but by adding to the programme effect and its interactions with violence the direct effect played by violence incidence in our migration equation. Figures 1b to 3b show that for the big majority of treated villages the negative effect of the programme more than offsets the effect of violence. However, the total effect becomes positive when more than 20 households have left the village in the past, which corresponds to violence levels observed in the 10% most violent municipalities of our sample.

Turning to the effects associated to the other control variables, the main results already discussed are robust but we find additional significant effects associated to social capital (that were not significant in previous specifications). The proportion of women in the village participating in collective activity (measured by the variable "group") becomes significantly positive, as presented below.

Marginal effect dP/dX multiplied by 100	Specification (4)	Specification (5)
group	1.824	1.138
	(1.078)*	(1.129)
number of risk sharing groups (from the games)		0.254
		(0.085)***
dum_game		1.721
		(1.273)

Notes : Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
The dummy variable "dum_game" is equal to 1 for pilot municipalities where experimental games were implemented, 0 otherwise.

These results suggest that the presence of networks in municipalities measured by the average women participation in collective activity in the village ("group") helps households to migrate. In this case, we would expect that better connected households migrate first. But household level dummy variables indicating if the mother is participation in collective activities turned out to be not significant when added among

the control variables.[14] Moreover, we find positive effects associated to the number of groups formed during experimental games, contrary to what we would expect if more groups is correlated to less social capital in the village. However we could not confirm these results by using other proxies for social capital resulting from the games, which turn out to be not significant; and the same variable measuring the number of groups turn out to be not significant while using different specifications (as for example in Table 2). To test for the robustness of our results concerning social capital, we would need more variation across villages in the proxies for social capital resulting from the games, which we hope to obtain in the future by extending the games to all municipalities surveyed for the evaluation.

We were also worried that the programme may have a stronger impact on migration decisions in municipalities characterised by high levels of social capital. Therefore we added some control variables for possible interaction effects of the programme with social capital. But these additional interactions turned out to be not significant, so that we do not present them in our results.

34 Does violence incidence modify household incentives to migrate ?

We also argued in the motivations of the model that the level of violence in the municipalities could affect differently household migration incentives depending on their characteristics. This is for example the case when households are displaced by violence, as outlined by Ibanez and Velez (2005). To address this issue, we interacted the proxies for violence with other household characteristics. All results are presented in Table 6 in the Appendix.

As shown in Table 6 of Appendix A, we do not find any significant effects associated to the interactions of violence with socio-economic characteristics like education levels of the head and the spouse, living in an isolated rural part of the municipality or working in agriculture, as we would have expected if these households were more threatened by

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[14]Hence we do not present the effects associated to these controls.

violence. We also did not find evidence of significant interaction effects of violence incidence with household participation in collective activities, contrary to one would expect if households with strong social connections were strategically targeted by illegal armed groups.[15]

Instead, we found that households with larger size, less children, and whose head (spouse) is older (younger) respond more strongly to the level of violence by leaving their municipality of residence. This suggests that large households who would not otherwise have migrated due to high migration costs may be pushed to migrate by high incidence of violence. Hence migration decisions of households in our sample respond differently to violence from what we would expect if mobility was forced. Another explanation for these findings is simply that the households in our sample are the most deprived households living in rural areas of Colombia. This is maybe not too surprising if illegal armed groups did not particularly target according to their socio economic statut in their strategy to destabilise rural areas.

III The consequences of mobility and displacement.

In the previous section we studied a data set that included households that were interviewed in 2002, some of which had left the municipality of residence in 2003 and characterized the differences between the households that left and those who stayed. While a considerable number of the movers moved because of violence[16], many others moved for other reasons. For this reason, we think of the analysis of the previous section as relevant for migration in general, rather than displacement in particular. In other words, our movers include both displaced and economic migrants. Moreover, probably in many cases, the two motives actually overlap. It is this aspect that differentiates our contribution from other studies existing in the literature. In this section, we make our analysis comparable and complementary to the pre-existing evidence in two ways. First,

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[15]The latter results are not presented since they are not significant.
[16] This cannot be checked for the households that we are unable to track between surveys.

we present a descriptive analysis of the households in the FA dataset that moved and were successfully tracked. The analysis is only descriptive because of the small sample size. Second, we combine the information in our dataset with another dataset that contains information on displaced individuals, as traditionally defined, interviewed in receiving municipalities, typically big cities. This combination of datasets allows us to compare the FA dataset households with displaced households and check whether they are very different and differentiate and characterize further the two inter-related phenomena we are studying: migration and displacement.

Among the households who have left their municipality of residence between the baseline and follow up, 113 households were successfully tracked by the interviewers and surveyed in their new location. Section 31 presents what we learn on the migration process and its economic consequences from the special part of the survey that was applied to these households. However, describing the reasons why these households chose to migrate, we already observed that this selected sample of migrants does not represent the population of displaced households. In order to complete our information on forced migration, Section 32 presents results from a specific survey involving displaced households in their areas of relocation. To assess their relative poverty level, Section 33 compares them to the very poor households surveyed for the evaluation of the FA welfare programme, while Section 34 compares them to the households that have chosen to migrate.

III 1 consequences of household migration

11 Reasons for migration

Amongst the 113 successfully tracked households, only 16 households report that they have migrated because of movements of illegal armed groups in the municipality. 13 households have moved because they had been thinking about it for a long time. However, most of the households (83 of them) are not explicit about the reason why they moved, and one household does not answer. This is at this stage not very informative

since there are many reasons why the households who moved due to the violence might be reluctant to give information about it. Moreover we mentioned already that there might be a selection bias of the sample since households who migrated because of violence may be more likely not to have been successfully tracked and, hence, are not part of these answers.

The households also explain why they chose the destination municipality where they are interviewed (the answers are not exclusive). The main reasons are that they had better opportunities to work (53 answers) or that some friends or relatives living in the municipality advised them to move in (32 answers). 10 households chose to live in municipalities close to their origin municipalities, others in municipalities that provide them with better services for the education of their children (6 answers) or better health services (2 answers) and 4 households chose to live in safer municipalities. Accordingly it seems that none of them have been relocated into the destination municipality without choosing it, even though some of them have moved because of the increasing level of violence in their origin municipalities.

12 Intentions to move again in the future
Most of households who are tracked by interviewers after migration do not consider staying in the destination area for ever. 16 households intend to stay in the new location until they can return to their origin municipality, while 40 intend to stay permanently and 32 do not know. The remaining households intend to stay in the destination municipality for 2 years on average, with an expected duration lying between 1 and 4.3 years.

Surveyors also ask households whether they wish to leave the destination municipality in the future: among 47 positive answers, 30 households would like to move to their origin municipalities and 17 to another municipality. None of them considers migrating to a foreign country. When asked about their motivations, most of these households want to return to their municipality of origin (19 answers), or to find better job opportunities (18 answers). Others want to find a better quality of life (3 answers), or good education services (4 answers) or good health services (4 answers). Only 6 households mention the

problems related to violence as being the main reason explaining why they consider migrating again in the future.

The importance of temporary migration emphasizes the role played by uncertainties in the migration process. This is also confirmed by the importance of networks in explaining migration. 90% of the sample knew at least one family in the destination municipality before leaving, and, on average, each household knew 6.5 families. 12 households moved simultaneously with other relatives.

13 Migration benefits and costs

To assess economic benefits of migration we first compare the municipalities of origin with the municipalities chosen by migrant households using aggregate data at municipality level we obtained from the National Planning Department. The results are presented in the table below.

	Municipalities of Origin		Municipalities of Destination	
	Mean	Standard Deviation	Mean	Standard Deviation
Population	23,584	17,104	524,065	1,326,760
Urban Population	11,927	12,445	504,760	1,318,758
Rural Population	11,656	8,905	19,304	22,041.1
Proportion of urban /total population	0.44	0.20	0.61	0.27
Proportion of municipalities with a principal road nearby*	0.12	0.33	0.37	0.49
Literacy rate	82.85	7.14	86.18	8.96
Enrolment rate in school	68.53	7.77	72.66	8.71
Total income of the municipality	4,237	2,124	170,700	473,919
Number of municipalities in each sample	68		54	

Notes: *this variable comes from the "Instituo Nacional de Vias". Other data come from National Planning Department data sets matched to our data on migrant households.
To compute these statistics, the municipalities are weighted according to the number of households they represent in our sample.

Destination municipalities are much larger than origin municipalities, more urbanised, richer and more developed as measured by the fact that they are more often close to a main road, they have a higher literacy rate and children are more often enrolled in schools.

More directly, migrant households are asked about the economic consequences of migration. Expected benefits of migration are mainly job related: 88 households think that their job opportunities are better in destination than in origin municipality, while 25 households do not think it is the case. Moreover, 48 household heads changed job after migration and 9 do not work, while 56 household heads have a similar job as the one they had before migrating.

However migration costs are also non negligible for these very poor households and have many dimensions. Firstly, monetary migration costs are sizeable, as reported by migrants to the interviewers. The distribution of migration costs is represented in the figure above. The median costs are around 50.000 pesos and the mean around 103.037 pesos. These figures represent respectively 21% and 43% of the average monthly total income in the treated municipalities (according to the baseline report). To finance these costs, 2/3 of households used their own funds, 1/3 was helped by friends or relative and none relied on any kind of credit or loan. This shows that the poor households interviewed for FA have no access to credit markets to finance their migration, even though these costs represent a sizeable part of their income.
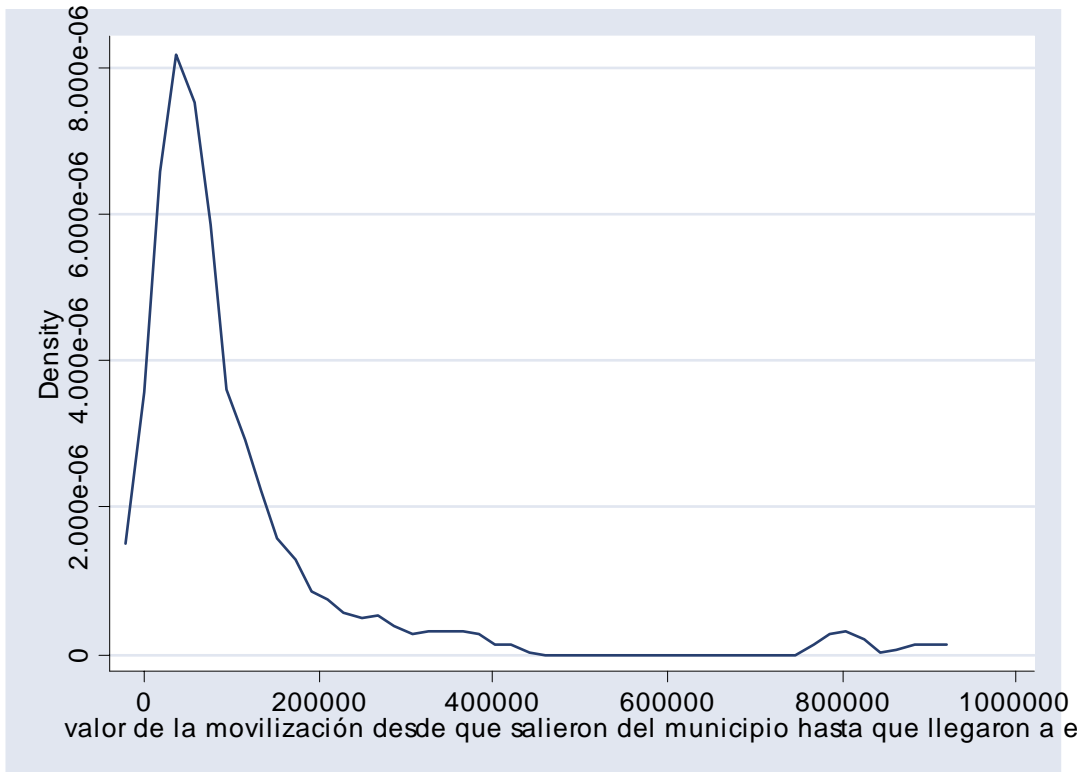
As a consequence 35 households had to sell some goods to pay for these costs and 25 households received for these goods less than their market value. Amongst the 10 remaining households who sold goods at their market values pooled with the 78 households who did not have to sell goods to pay for migration costs, 70 households claim not to have suffered from any economic losses. The 18 remaining households who suffered from economic losses and the 25 households who sold goods below their market prices describe the type of goods they lost (non exclusive answers are reported): 21 households lost goods that they could not carry with them and 13 sold goods in order to pay for the travel costs. 6 households lost some land while 4 households lost their house.

Secondly there are other non monetary migration costs that are more difficult to quantify. Among these costs, 29 households report that some of their children had to interrupt school when they moved, which may have important long run consequences on household poverty. To assess better the latter consequences, we compare in the table below enrolment rates in school of migrant children to non migrant children coming from the same rural municipalities. These rates are computed at the date of the follow-up survey of the FA evaluation. Because dropouts are very frequent around 14 years old, we

first look separately at children below 14 and above. We observe that enrolment rates are significantly lower for children in migrant households, whatever the age group considered. The difference is larger for older (aged 14-17) children.

Age groups	Migrant households (FA) at follow up	Non migrant households (FA) at follow up
7-13 years old children	79 %	92 %
14-17 years old children	52 %	64 %
7-11 years old children	81 %	94 %
12-17 years old children	61 %	72 %

We also present in the last two rows the enrolment rates of migrant/non migrant children aged 7-11 and 12-17 that correspond broadly to ages at which children go to primary and secondary school. Results are very similar: enrolment rates are significantly lower for children in migrant households than in non migrant households and the difference is larger the older the children.

One limitation of our study comes from the small size of the sample and the possible non random selection of these 113 households who were successfully tracked by surveyors in their destination municipality. This could be the case if households that disappeared were more particularly threatened by high violence incidence and forced to migrate. If it is the case, we expect economic prospects of these households to be worse than the ones we observed for the successfully tracked migrants. To address this question, the remaining sections of this report use additional information that is provided in the specific survey involving 1503 displaced households.

III 2 Consequences of displacement: evidence from a survey on displaced population

21 Motivations and data

In this part we study the characteristics of displaced population and assess their relative poverty level in order to understand the problems they have to face to cope with poverty.

This is an important question for policy makers who have to decide whether they should target them with specific anti-poverty programmes. To our knowledge, this question has been largely ignored even in past evaluations of some specific programmes targeted to displaced households that exclusively focused on displaced households. The main problem is to find good data that permit to compare displaced households with non-displaced ones.[17]

We use as a benchmark the survey designed for the evaluation of FA since it provides us with very detailed data both at municipality and household levels on the poorest of the poor households living in rural areas of Colombia. We also exploit another survey about living conditions of the population displaced by the violence in Colombia that included a questionnaire very similar to that of the FA data. In 41 municipalities randomly selected among destination areas of displaced households, 1503 households were surveyed in March 2003 about their living and food security conditions, their food acquisition, as well as the coping mechanisms they used after displacement. Using these data, a first report was released in June 2003 by the WFP on the "Vulnerability to food insecurity of the population displaced by violence in Colombia". This report shows that displaced households suffer from major deficiencies in nutritional requirements and are affected by serious food insecurity conditions, mainly due to their inability to generating enough income to allow for the provision of their food needs. The WFP report also compares the situation of the population displaced by the violence with the poorest population in urban zones and finds that the former are worse-off. Even though this report is an interesting step to describe the food insecurity of displaced households in destination areas, no attempt has been made to compare displaced households with poor households coming from the same rural areas, which is our main objective. Moreover, the very rich FA data set on non displaced populations improves the precision of our estimates and makes our sample at least as informative as that in Ibañez and Velez (2005).

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[17] Most of existing surveys are exclusively focused on displaced households given the very specific methods required to survey them.

Based on the results of the previous section, we are also quite confident that displacement rates and migration rates are intrinsically linked. The results presented in Section II suggest that a sizeable part of migration is determined by the high level of violence in the municipalities. To increase our confidence, we compared the magnitudes of migration flows out of the municipalities surveyed for the evaluation of FA with displacement rates we computed using the data on displaced population from the Red de Solidaridad. The comparison was made for the same period around the baseline survey and for the same 122 municipalities. The results presented in Appendix B suggest that migration rates are larger than displacement rates, but that a non-negligible part of them (1/4 on average) is due to displacement.

However, the displaced households may not be representative of the households who migrated out of the poor municipalities surveyed for FA. This is why the last section of the report will describe in details the living conditions of households after displacement and compare, as much as the data allow us to do so, the displaced households with the migrant households surveyed for the FA programme. One shortcoming is that the survey on displaced populations has selected randomly municipalities in urban zones where the displaced populations are concentrated, whereas the Baseline of *Familias en Accion* survey was implemented in rural zones. However, since we want to compare displaced households -who come mainly from rural areas- to poor households who are living in the same areas as where they used to live before displacement, this is not a big concern. Therefore we kept in the "restricted sample" only the 1225 displaced households who used to live in areas where some municipalities have also been selected for the Familias en Accion programme[18].

22 Migration history of displaced households

Where do displaced households come from? As shown in Table 1, the displaced households in our sample are coming from all areas of Colombia affected by the conflict

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[18] Hence, when we compare displaced and non displaced households, we exclude 278 displaced households for whom we could not find a comparison group.

(see in Appendix B a map of the armed conflicts in Colombia from 1997-2002 and see http://www.c-r.org/accord/col/accord14/largermap.shtml for more details on the departments affected by the conflicts and civilian peace initiatives).

Table 1: Distribution of households by region and department before first displacement

	Atlantico	Oriental	Central	Pacifico	Total
Antioquia			315		315
Bolívar	158				158
Sucre	102				102
Nte. Santander		99			99
Magdalena	96				96
Cordoba	88				88
Cesar	65				65
Chocó				64	64
Santander		56			56
Cauca				52	52
Valle del Cauca				49	49
Tolima			43		43
Nariño				38	38
Total	**514**	**182**	**385**	**203**	**1,225**

After displacement, they have been surveyed in departments that are spread all over the areas affected by the conflict. Indeed the survey was implemented to have a nationally representative sample of all areas of destination of displaced households. We also note that the main regions of destination of displacement correspond to the main regions of origin of displacement, as illustrated in Table 2a since displaced populations often migrate from one rural municipality to a big city nearby. We still find this picture when we look at the more disaggregated level of the departments, as illustrated by Table 2b.

Table 2a: areas of origin and current residence of displaced households

REGION	Origin of 1st. displacement % HH	Current residence % HH

Atlantico	34.2	36.6
Central	25.6	24.7
Municipality not in FA	14.6	9.4
Pacifico	13.5	16.0
Oriental	12.1	13.3
Total	**100**	**100**

Table 2b: departments of origin and current residence of displaced households

DEPARTMENTS	Origin of 1st displacement % HH	Current residence % HH
Antioquia	21.0	15.4
Bolívar	10.5	8.0
Sucre	6.8	8.0
Nte. Santander	6.6	6.7
Magdalena	6.4	5.7
Putumayo	6.1	3.4
Cordoba	5.9	7.7
Caquetá	5.1	
Cesar	4.3	2.7
Chocó	4.3	3.4
Santander	3.7	5.3
Cauca	3.5	3.3
Valle del Cauca	3.3	6.7
Tolima	2.9	1.3
Nariño	2.5	2.7
Meta	2.2	2.7
Huila	1.3	5.3
Atlántico	-	4.7
Bogotá	-	3.3
Otros	3.9	4.0
Total	**100**	**100**

The description of origin and destination municipalities of displaced households in the table below shows that destination municipalities are much larger, urbanised, richer and developed than the municipalities left by displaced households. This simply reflects that

displaced households are relocated in very big cities, whereas they come from rural municipalities.

Table 3 municipalities of origin and destination of displacement

	Municipalities of Origin		Municipalities of Destination	
	Mean	Standard Deviation	Mean	Standard Deviation
Population	61,468	137,910	620,424	1,335,816
Urban Population	41,322	133,163	592,845	1,334,430
Rural Population	20,147	13,577	27,579	23,083
Proportion of urban /total population	0.45	0.23	0.79	0.20
Proportion of municipalities with a principal road nearby*	0.22	0.41	0.66	0.47
Literacy rate	79.98	8.28	88.79	8.66
Enrolment rate in school	66.33	9.14	78.44	6.81
Total income of the municipality	12,885	33,228	165,388	466,011
number of municipalities in each sample	306		41	

Notes: *this variable comes from the "Instituo Nacional de Vias". Other data come from National Planning Department data sets matched to our data on displaced households.
To compute these statistics, the municipalities are weighted according to the number of households they represent in our sample.

Many households migrate several times after displacement. However, the households of our sample have mostly been surveyed after their first move, as shown in Table 4. Only 6 % of the surveyed households have already moved a second time after displacement. This might reflect the selection bias of the survey: it takes place among the households that still live at the address where they registered after displacement in order to get the minimum help provided to displaced households. It surely under-represents the households who choose to move again after their first move in order to improve their economic situation or because they still feel unsafe. In this case, they do not necessarily register again or might live outside the specific urban areas where displaced households are concentrated and surveyed.

Table 4: repeated migration

	% of HH
1 migration	93.9
More than 1 migration	6.1

How long have they been displaced for?

Table 5: distribution of durations since first displacement

	Months
Percentiles	
1%	0*
25%	7
50%	12
75%	20
99%	26
Min	0*
Max	136
Mean	13.1
Std. Dev.	8.4

* Less than a month

Table 5 shows that the mean duration since the first displacement is 13 months, while almost all of them have been displaced since less than 2 years and a fourth of them less than 6 months. This confirms our latter explanation that households who have been displaced for a longer period do not belong to this sample. We may also expect living conditions of displaced populations to vary a lot depending on the duration since they moved, in particular if the mechanisms with which they cope with poverty are effective. We will address this issue below.

Why did they move?

Table 6: reason for first displacement

REASON	% HH
Victims of direct threats	48.4
Family members murdered, kidnapped, disappeared	10.6
Frightened by the situation	40.3
Others	0.7
Total	**100**

40 % of the displaced households have moved because they were frightened by the situation in their municipality of origin, 48 % because they received direct threats and 11% because they had a family member murdered or kidnapped. Even if these reasons vary across departments of origin as described in Table 7, the big majority of displaced households migrate in anticipation of violent actions that could target them. Hence it is difficult to consider displacement as being completely exogenous or as being forced by the situation. Instead, we might consider that this decision is the outcome of a rational decision that weights the costs and benefits to stay or migrate in origin municipalities. Given the very uncertain environment in which households are living, in particular in rural areas, we understand that the expectations they have on violence play an important role.

Table 7: reasons for first displacement by department of origin

	Victims of direct threats	Family members murdered, kidnapped, disappeared	Frightened by the situation	Others	Total
Antioquia	48.7	10.5	40.8	0.0	100.0
Bolívar	27.4	7.6	65.0	0.0	100.0
Cauca	63.5	21.2	15.4	0.0	100.0
Cesar	35.9	18.8	45.3	0.0	100.0
Cordoba	40.9	10.2	48.9	0.0	100.0
Chocó	53.1	12.5	34.4	0.0	100.0
Magdalena	47.4	12.6	40.0	0.0	100.0
Nariño	31.6	21.1	44.7	2.6	100.0
Nte. Santander	33.3	4.0	60.6	2.0	100.0
Santander	60.7	3.6	35.7	0.0	100.0
Sucre	26.5	9.8	63.7	0.0	100.0
Tolima	76.7	9.3	14.0	0.0	100.0
Valle del Cauca	36.7	10.2	46.9	6.1	100.0
Others	72.7	10.4	15.5	1.4	100.0
Total	48.4	10.6	40.3	0.7	100.0

23 Comparing movers and stayers

Having looked at the reasons for moving, we now move on to compare the households in the displacement data base and households in the FA database, that is movers and stayers. We start by looking at their composition and move on to their assets, consumption and so on.

Demographics

Table 8 shows that, in terms of demographics, they are remarkably similar on average to non-displaced households surveyed for FA.

Table 8: household composition of displaced and non displaced households

	Number of people in HH	Kids 0-6	Kids 7-11	kids 12-17	kids 7-17	Adults	Female older than 18
DISPLACED HOUSEHOLDS							
Percentiles							
1%	1	0	0	0	0	1	0
25%	4	0	0	0	1	2	1
50%	6	1	1	1	2	2	1
75%	7	2	2	2	3	3	2
99%	15	5	4	4	6	8	4
Mean	5.99	1.39	1.01	0.93	1.94	2.66	1.35
Std. Dev	2.75	1.25	1.04	1.07	1.61	1.43	0.78
NON-DISPLACED HOUSEHOLDS							
Percentiles							
1%	2	0	0	0	0	1	0
25%	4	0	0	0	1	2	1
50%	6	1	1	1	2	2	1
75%	7	2	2	2	3	3	2
99%	14	4	4	4	6	7	4
Mean	5.98	1.15	1.04	1.03	2.07	2.76	1.36
Std. Dev	2.42	1.15	0.95	1.02	1.39	1.36	0.72

Note: the non-displaced households are from the FA survey.

But displaced households have more nuclear families living together than non-displaced ones, as shown in Table 9. This suggests that displaced households have joined some

relatives living in the destination municipalities, and, hence form more complex households. So, why does household size not differ significantly across the two samples?

Table 9: number of nuclear families living together

	Displaced	Non-displaced
Only 1 family lives in the household	88.0	94.1
Only 2 nuclear families live in the household	9.1	4.6
3 or more nuclear families live in the house	3.0	1.2
Total	**100**	**100.0**

Table 10 shows that more household members have died during the last 12 months among displaced households than among non-displaced households. This might be both due to the high level of violence that pushed them to leave their municipalities of origin and to the poor living conditions prevailing in destination areas. So we need now to address whether displaced households surveyed in destination areas are relatively poorer than the poor households who have been surveyed for the FA programme.

Table 10: Number of deaths in the household during the last 12 months

Percentiles	Displaced	Non-displaced
1%	0	0
25%	0	0
50%	0	0
75%	0	0
90%	1	0
95 %	1	0
99%	2	1
Mean	0.146	0.020
Std. Dev.	0.433	0.146

Assets

Displaced populations own less frequently their houses than non-displaced households, and, more often, rent their houses or occupy them without paying a rent, as described in Table 11.

Table 11: house property	Displaced	Non-displaced
House is owned	27.2	64.3
House is rented or in mortgage	32.4	9.9
House is occupied or borrowed	29.8	4.6
House is in usufruct	10.7	21.3
Total	100.0	100.0

The houses of displaced households have more often a worse quality of floor (in sand) than those of non-displaced households.

Table12: floor materials	Displaced	Non-displaced
Sand	51.0	40.4
Conglomerate	37.5	50.5
Tiles	6.4	4.4
Wood	5.1	4.6
Total	100.0	100.0

They also have more frequently cardboard or no walls, and less frequently walls of good quality (in bricks, rock, or processed wood).

Table13: wall materials	Displaced	Non-displaced
Brick, rock, processed wood	38.3	44.8
Wood	25.9	14.8
Cardboard or no walls	17.2	1.3
Tapia, adobe, bahareque	12.4	35.7
Bad quality wood	6.2	3.3
Total	100.0	100.0

But the quality of the roof of the houses is not significantly different across samples.

ROOF	Displaced	Non-displaced
Roof without "cielo raso"	72.9	71.2
Roof made with cardboard, plants, etc.	17.4	18.4
Roof with "cielo raso"	9.7	10.4
Total	100.0	100.0

SERVICES	Displaced	Non-displaced
Rubbish collection	65.3	31.8
Water by pipe	59.9	61.4
Sewage	44.8	25.8
Phone	11.2	8.3
Gas by pipe	8.5	7.7

As shown in the Table above, displaced households are better connected to public facilities than non-displaced households. However, since they are living in urban areas, they might be more easily connected to the public sewage, water, gas or rubbish collection systems than the poor non-displaced households living in rural areas. On the other hand, 30 % of displaced households drink bad water that comes neither from the pipe system nor from a well and this is slightly more frequent than among the non-displaced households, as described below.

Source of drinking water	Displaced	Non-displaced
Pipe system	59.6	60.1
Not from pipe, not from well	29.9	25.7
Well	10.5	14.1
Total	**100.0**	**100.0**

The following table shows that presence of plagues in displaced households and the presence of bad smells nearby is very frequent. However, we cannot compare these answers across samples since similar questions were not applied to non-displaced households.

OTHERS	Displaced	Non-displaced
Toilet connected to sewage or dwell	55.0	52.9
Toilet is of exclusive us of HH members	77.6	N.A
Presence of plagues	98.8	N.A
Presence of bad smells near HH	55.8	N.A

All these tables allow us to describe the differences in living conditions between displaced households and non-displaced households coming from the same geographical

regions. However, such differences are difficult to interpret since displaced households are interviewed in urban areas and non-displaced households are interviewed in rural areas, which might explain a large part of these differences.

Another way to assess the relative poverty levels of displaced and non-displaced households is to compare their expenses. There are both conceptual and pragmatic reasons why expenditures available from both surveys might be preferred to another indicator such as household income. If the income stream accruing to a consumer and his needs were constant over time, it could be argued that income is an appropriate measure of its standard of living. But in our context of displaced households by violence, such assumptions are particularly unrealistic such that income after displacement might be a very poor indicator of households' standard of living. Moreover, most of the households have to look for a job after displacement, which might last for a very long time since many of them were working in agriculture in rural areas before displacement and have to adapt to a new urban environment after displacement. As a consequence most of their sources of income are not from the labour market and are more difficult to measure[19]. Hence we preferred to compare their total expenditures, as presented in the table below.

Table: Distribution of total expenses of displaced and non-displaced households

	Displaced households	Non displaced households
1%	29,600	45,483
25%	192,600	225,723
50%	308,501	338,342
75%	469,234	490,402
99%	1,380,803	1,174,228
Mean	370,571	385,286
Std. Dev.	273,563	237,109

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[19] See Deaton and Grosh (2000) and Hentschel and Lanjouw (1996) for a detailed argument about the appropriate measures welfare measure in the context of developing countries. We also have some indicators of other sources of income of displaced households suach as the interests they receive as well as the value of debts. However the questions were not very clearly asked, so that the quality of this information is poor and not comparable with the information we have in the FA survey. Appendix C presents a few descriptives on these other sources of income.

Total expenditures of displaced households are lower than those of non-displaced poor households. This is true when comparing all the percentiles of the distribution except for the higher percentile. This suggest that there is a big heterogeneity in standards of living among displaced households, and an interesting question would be to understand what are the sources of income of the richest ones as compared to the others.

We also have detailed information on the animals they own. Only 22.4 % of displaced households own animals as compared to 67.1 % of non-displaced households. This might be explained once again by the fact that displaced households have been surveyed in urban areas, whereas non-displaced households are surveyed in rural areas, or by their different poverty levels. The animals owned by displaced households are described in the table below (the answers are not exclusive):

% of displaced HH who have :	
Horses	0.7
Chickens	19.2
Cows, bulls	0.7
Donkeys	2.3
Pigs	3.3
Rabbits	1.7
Sheep	0.1
Ducks	1.9

To overcome our difficulties to compare households living in different types of areas and having suffered from obvious shocks in their recent past, we also wanted to study how poor the displaced households were before they left their place of origin, as compared to non displaced households of the same areas. Therefore we need a more permanent index of the household poverty levels. The best proxy we could find in our data is the education level of household heads and spouses. When assessing the schooling of the head of household and his spouse, we find that 24.1 % (19.8%) of the head (of the spouse) has no education, and 42.5% (46.85%) has only completed a primary level, as shown below compared to 26% (21%) and 46% (47%) for non-displaced households.

	Displaced		Non displaced	
	head	spouse	head	Spouse
None	24.08	19.76	26.04	20.94
Incomplete primary	42.5	46.85	45.9	47.03
Primary	17.96	17.07	14.64	16.75
Incomplete secondary	10.63	12.99	9.47	10.69
Secondary or more}	4.84	3.34	3.94	4.58
TOTAL	100	100	100	100

We also checked that displaced households have significantly larger proportion of heads having an incomplete secondary or higher education level and that the proportion of heads having low education levels (no education level, less than an incomplete primary or less than a complete primary level) is significantly lower among displaced households than non-displaced households. So we can conclude that, overall, the displaced household heads have higher education level than non-displaced.[20]

If we combine this information with the fact that displaced households have systematically lower consumption level, we can conclude that displacement involves the loss of income generating capacity, either through the loss or the depreciation of income generating asset, including, possibly, human capital.

We also compare the activities and occupations that household heads had before displacement with the ones in non-displaced households (surveyed at around the same time as the FA baseline survey) and report the results in the table below.

HEAD	Displaced	Non-displaced
Work	79.6	82.2
Farmer	58.4	46.0
Family worker	2.7	1.1
Employer	1.1	2.7
Self employed	41.3	39.7

[20]However the spouse education levels is not significantly different across the two samples.

Domestic	2.1	2.3
Employed	32.3	35.7

On the one hand, the household heads of the displaced households were working before displacement on average slightly less (79.6%) than the non-displaced households (82.2%) but the difference is small (less than 3 percent points).[21] On the other hand, we observe that spouses in displaced households were working before displacement significantly more frequently (35.3%) than non-displaced spouses worked during the week before the baseline survey (23.1%), as reported below.

SPOUSE	Displaced	Non-displaced
Work	35.3	23.2
Farmer	18.7	4.4
Family worker	8.3	2.1
Employer	0.2	0.3
Self employed	13.2	9.7
Domestic	3.3	3.4
Employed	10.5	7.4

Another explanation for these findings could be that displaced and non-displaced households do not have the same activities on average. The higher proportions of self-employed and family-type occupations among displaced households, as well as the higher employment rate of spouses could be simply explained by the fact that displaced household's heads and their spouses were working significantly more frequently in agriculture before displacement than non displaced households, as reported in the table above.

24 How do displaced households cope with poverty?

The table below shows that, most frequently, the households have relied on informal helps from friends, neighbours or relatives to survive after displacement.

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[21] Note that the two proxies of activity are slightly different for the two groups since displaced individuals are asked whether they were working during the month before displacement, whereas the non diplaced individuals are asked if they were mainly working during the week before the baseline survey. This could also explain part of the difference we found in activity rates.

ACTION	% of HH
Received help from fiends, neighbours or relatives	35.0
Sold something of the HH	16.9
Received NGO aid	13.0
Use of savings	7.9
Other HH members had to work	7.2
Beg for money	6.1
Received government aid	5.3
Diminish expenses	4.1
Increase debt	3.7
Took children out of school	0.8
Total	**100.0**

Moreover, when households are questioned on whether they have received special helps after displacement, the big majority (91.7%) of them answer yes. Indeed, when displaced households arrive in the new destination, a few governmental and non-governmental organisations are providing them with special helps. For example, if they go to register to the office in charge of displaced populations, they receive a survival kit for three months that includes food and medicines as well as some towels, blankets, cloths…

% of HH who have received help	91.7
Type of help	
Food	90.3
House and cleaning elements	61.1
Education	24.9
Health	60.3
Money	29.7
Other	23.1

However, we observe that 8 % of the displaced households did not use these helps. This figure is surely underestimated since the surveyors do not reach a large number of

displaced households who have migrated individually and are not in touch with these organisations. But it is very difficult to estimate their number since they are not registered.

We can also estimate the part of the transfers received by displaced households that come from institutions, relatives or friends and how much of these transfers are in cash and in kind, which are distributed as follows:

Table: Transfers by source	From institutions	From relatives	From friends
1%	0	0	0
25%	0	0	0
50%	0	0	0
75%	45,000	15,000	0
99%	1,100,000	680,000	300,000
Mean	77,304	50,159	14,081
Std. Dev.	233,211	215,131	65,076

Transfers by type	In money	In kind
1%	0	0
25%	0	0
50%	0	0
75%	20,000	70,000
99%	900,000	1,030,000
Mean	57,099	84,445
Std. Dev.	197,285	229,890

The tables above show that more than the majority of transfers received come from institutions, and then a large part comes from relatives. More than half of these transfers are in kind, which probably reflects the importance of the survival kit mentioned above.

However, the special helps from government or from non governmental institutions decrease as time of displacement prolongs. 50% of the households in the sample receive

these helps for the first three months after displacement, but only 28% of the households still receive them after the second year. So an important question is whether this reflects the fact that their poverty level decreases after a while or not.

	Distribution of total expenditures by duration since displacement			
	t<=6	6<t<=12	12<t<=20	more than 20
1%	32,800.0	8,000.0	29,000.0	50,200.0
25%	181,350.0	192,000.0	196,600.0	207,300.0
50%	280,380.0	307,300.0	321,350.0	330,600.0
75%	431,925.0	466,400.0	479,996.0	484,600.0
90%	606,850.0	688,042.0	675,683.0	715,700.0
99%	1,380,803.0	1,497,182.0	1,586,700.0	1,341,200.0
Mean	341,638.0	374,885.8	380,312.3	382,446.3
Std. Dev.	255,393.2	295,934.0	278,660.1	255,467.1

The table above shows that total expenditures of displaced households are increasing with the duration since first displacement. This suggests that some mechanisms to cope with poverty are taking place. This is true at almost all percentiles of the distribution of total expenditures, except for the bottom and the top of the distribution. For the very poor, we have to take into count that many displaced households have no income at all when they arrive and rely exclusively on helps that are mostly in kind and on their savings. The latter might be used to buy goods for the first months but then are not sufficient to sustain household standards of living afterwards. This is probably because most of the helps received after displacement is very temporary. But this table suggests that, after one year, these poor households manage to find other sources of income for their expenditures.

Does it mean that displaced households go out of poverty as displacement prolongs? To answer this question, we compared the distribution of expenses of non displaced households to displaced households. The table below shows that displaced households are worse off in the period just after displacement but then catch up as compared to the poor households interviewed for FA. Moreover, displaced households are more heterogeneous in income levels than the non displaced households, as shown by the top and bottom percentiles of their total expenses distributions. This surely reflects that they are from

more heterogeneous social backgrounds than the very poor households surveyed for FA, a question we address in section III3. However, they are still as poor on average as the very poor households that are eligible for the welfare programme *Familias en Accion.*[22]

Distribution of total expenditures	Non-displaced households (interviewed for FA)	Displaced households by duration since displacement		
		t<=6	6<t<=12	12<t<=20	more than 20 months after displacement
1%	45,483	32,800.0	8,000.0	29,000.0	50,200.0
25%	225,723	181,350.0	192,000.0	196,600.0	207,300.0
50%	338,342	280,380.0	307,300.0	321,350.0	330,600.0
75%	490,402	431,925.0	466,400.0	479,996.0	484,600.0
99%	1,174,228	1,380,803.0	1,497,182.0	1,586,700.0	1,341,200.0
Mean	385,286	341,638.0	374,885.8	380,312.3	382,446.3
Std. Dev.	237,109	255,393.2	295,934.0	278,660.1	255,467.1

An important indicator of long run poverty is schooling enrolment of children. In the table below we present enrolment rates in school for displaced and non-displaced children of different age groups who are interviewed around the same date (before the baseline survey of FA).[23] Because dropouts are very frequent around 14 years old, we study in the first two rows children below 14 and above. We observe that enrolment rates are significantly lower for children in displaced households, whatever the age group considered. The difference is larger for older children.

Age groups	Displaced households (WFP)	Non migrant households (FA) at baseline
7-13 years old children	82 %	91 %
14-17 years old children	46 %	59 %
7-11 years old children	83 %	94 %
12-17 years old children	59 %	68 %

[22] Eligible households are SISBEN 1 level according to a national poverty index, which means that they are amongst the 20% poorest households.
[23]In the sample of households surveyed for FA, we dropped the minority of migrant households out of the sample, since they may be different from non migrant households.

We also present in the last two rows the enrolment rates of displaced/non displaced children aged 7-11 and 12-17 that correspond broadly to age groups at which children go to primary and secondary school. We find once again that enrolment rates are significantly lower among displaced children than other children. These results are striking since displaced children live in urban areas where overall enrolment rates in school are higher than in the rural municipalities of residence of non displaced households.

III 3 Which characteristics distinguish displaced and non-displaced households?

31 How do displaced households differ from the poor households in the FA sample?

One shortcoming of the tables above is that they do not make clear which characteristics are most important in distinguishing displaced households from non displaced households. For this purpose we run a Logit model of being in the sample of displaced households versus non displaced. To interpret the results we must keep in mind that the estimated coefficients are compounded by the combination of choice based selection of the two groups together with the exogenous probabilities of being sampled into either group.[24]

The results are presented in column (1) of the Table 1 in Appendix D for the large sample including all poor households surveyed for the FA programme versus displaced households surveyed for the WFP. However, we may argue that the characteristics of the two samples are different because the two surveys target households living in different geographic areas. Therefore we compare displaced with non-displaced households using a restricted sample of households that come from the same areas in column (2). The results in columns (1) and (2) are remarkably similar. We did an additional check by comparing displaced and non-displaced households by area of origin. The results

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[24]On choice based sampling see Lehrman and Manski (1981).

presented in Table 2 of Appendix D are quite similar, although less significant given the smaller sizes of the samples.

Regarding the household composition, we find very few differences that are significantly different across these two samples: displaced households have more often two nuclear families and have more adults than non displaced households once we control for other variables. This is what we expected since these households have been often recomposed after displacement with one household joining relatives or friends in a distant area. We also find that age and gender compositions of the households are otherwise not significantly different across the two samples, which suggest that the displaced households have migrated as a whole household.

The characteristics of the houses owned by displaced households are different from those of non displaced households. The floor and the walls of their houses are significantly of worse quality -the missing category-, but their roofs are of better quality than those of non-displaced households. Also their houses are more frequently connected to gas or sewage systems and their rubbish is more often collected, which might also reflect the fact they live in urban areas that are better connected to such systems than in rural areas where non displaced households live. However the water drunk by displaced households is more often neither from a well nor from a pipe and their toilet is less often connected to either sewage or dwell, which reflects their lower level of living standard.

It is also noticeable that property rights on houses differentiate displaced and non-displaced households. Once controlled by other variables, displaced households rent or occupy their houses without owning them more frequently, since they were forced to leave and to abandon their houses like most of their assets. Displaced households have also less frequently animals, which partly reflect the urban type of areas where they live.

Education level variables play also a significant role in distinguishing the two groups, and turn out to be negatively correlated to being displaced. However we cannot over-interpret

these correlations in a causal way since many of the other control characteristics used in our regression framework measured after displacement are endogenous.

To have a better idea of which characteristics differentiate *ex ante* non-displaced and displaced households, we kept in a separate regression the variables that are predetermined to displacement such as activities and occupations before moving, education levels of household heads and spouses, or likely to be more permanent characteristics of the household like the structure per age of children. The results presented in Table 3 of Appendix D show that displaced households have significantly more educated heads and spouses, and work more often in agriculture than non-displaced households. However, the fact that these variables are predetermined to mobility decisions does not, of course, guarantee exogeneity. As a check for robustness, we drop the controls for activities and occupations before moving that are likely to be endogenous to mobility decisions. The table below shows that the result that displaced households are headed by individuals with higher education achievement is a robust one:

logit displaced/non displaced	(1)	(2)
	whole sample	Common sample
Primary level not completed by head	-0.01	-0.03
	(0.09)	(0.09)
Primary level completed by head	0.25	0.33
	(0.11)*	(0.12)**
Secondary level not completed by head and more	0.09	0.10
	(0.12)	(0.13)
Primary level not completed by spouse	0.02	0.03
	(0.09)	(0.10)
Primary level completed by spouse	-0.03	0.15
	(0.11)	(0.12)
Secondary level not completed by	-0.02	0.05

spouse and more		
	(0.12)	(0.13)
kids 0-6	0.19	0.20
	(0.03)**	(0.03)**
kids 7-11	-0.09	-0.11
	(0.03)**	(0.04)**
kids 12-17	-0.09	-0.09
	(0.03)**	(0.04)*
Observations	9540	6820

* significant at less than 5 % level

** significant at less than 1% level

At least three possible stories may explain that displaced households have more educated heads and spouses and work more often in agriculture. First, education levels of heads or spouses may be considered as proxies for household wealth and it is likely that rich farmers have been particularly targeted by violence and forced to leave their municipalities of origin. Secondly, education levels capture another important dimension, which is the level of human capital of household heads and spouses. Economic models have different predictions as to whether we should expect high/low educated households to be more likely to migrate that mainly depend on the differential in returns to human capital between origin and destination areas. Accordingly, if these households migrate to big cities and education has higher returns in big cities, then this selection could also be driven by economic reasons. A third explanation is that the FA survey selects very poor households (in SISBEN 1) whereas the displaced households represent all displaced households whatever their poverty level is before displacement. In these conditions, it is not too surprising that heads and spouses of displaced households are on average better educated than in the poorest of the poor households surveyed for the FA programme.

32 How do displaced households differ from the households interviewed for FA and migrated out of their municipalities of origin?

Very similarly, we studied also the characteristics that differentiate migrant households from displaced households. This is important to understand if the very poor households who chose to migrate are comparable to displaced households.

Column (1) in Table 4 of Appendix D shows that a couple of variables are significant in explaining differences across these samples. These are the characteristics of the house in which the households are living, like the quality of walls that are worse in displaced households or the type of roof (better), as well as their property rights: displaced households rent or occupy their houses more frequently, and have houses in usufruct less frequently than migrant households. However, we have to bear in mind once again that these characteristics are observed before migration for the FA sample, whereas they describe houses after displacement for the other sample. We also find that displaced households have fewer animals than migrant households have before migration. Once again, we cannot infer much from these results since this partly reflects that living conditions after displacement into urban areas are very different from rural areas where the FA survey was implemented.

To overcome these problems we compare the characteristics of displaced and migrant households that are predetermined to migration. The results presented in columns (2) of Table 4 show that education levels of the heads become significantly positive in distinguishing displaced households from migrants, together with a few variables characterising the occupation of household heads and spouses and household composition. According to these results, displaced household heads are significantly more educated than migrants and displaced household heads and spouses were more frequently self-employed and farmers in their origin municipality. Once again, however, we cannot exclude that these results may also reflect the selection bias of the two samples.

Since we are particularly interested in permanent characteristics of households that are clearly exogenous to the mobility process, we finally kept in our regression only the education levels of household heads and spouses, as presented in column (3) of Table (4). The fact that displaced households have more frequently educated heads than migrant households is also confirmed by simple descriptive statistics on education levels of household heads. The proportion of household heads that have completed at least a primary level is higher among displaced households (33.5%) than among migrants (28.3%) , as shown in the table below.

	displaced households		migrant households	
	head	Spouse	head	spouse
None	24.08	19.75	24.56	19.14
Incomplete primary	42.5	46.85	47.15	46.86
Primary completed	17.96	17.07	13.65	16.5
Incomplete secondary and more	15.46	16.33	14.64	17.5
TOTAL	100	100	100	100

A further concern we already mentioned is that migrant households interviewed for FA are a selected group of migrants since a few households that disappeared between baseline and follow up are not included in the sample. We cannot, however, exclude that they migrated out of their municipality of residence. To check for the robustness of our results, we added them to the FA sample of "migrants" and compared this larger sample to the sample of displaced households. The results presented in Appendix E are very similar to the results discussed above: displaced households are more educated and are more often self-employed and farmers than this group of households that left their municipality of origin or disappeared between the baseline and follow-up surveys.

IV conclusion and policy implications

In this report we have assessed the determinants and consequences of mobility and displacement of poor households living in rural municipalities in Colombia and

characterised the profile of these poor households versus those living in displaced communities in urban areas where specific surveys have been implemented.

We have shown that household decisions to leave rural municipalities of residence respond strongly and positively to the level of violence in municipalities. We found that receiving the programme decreases migration if the level of violence is not unduly high. We have also measured that the negative effect of violence on migration more than offsets the positive effect played by violence incidence for the big majority of villages of our sample. This suggests interesting policy implications if a government's aim were to slow down the migration flows out of the municipalities that are destabilised by high levels of violence. Our results show, however, that welfare programmes such as FA are not effective at curbing migration in municipalities with very high level of violence. This confirms that migration decisions and displacement are of different nature, and warns us to be careful when extrapolating our results to advocate policy interventions in emergency situations that push populations to migrate massively. We also find that migration decisions are strongly determined by household property rights, type of insurance held by households, type of jobs of household heads and spouses and wage levels in municipalities of origin. This also suggests that policy measures oriented towards rural development, access to housing market and health insurance would be effective at encouraging economic migration between rural municipalities of Colombia.

We have also described the consequences of migration on the 113 households that are tracked by the surveyors at follow-up, as well as the consequences of displacement using a special survey made in relocation areas of displaced households. We found a contrasted picture for migrant households. On one hand, households are looking for better jobs in urban areas and are pulled by the presence of friends or relative in destination areas. On the other hand, migration entails severe costs for these very poor households. Many of them sold goods below their market value or lost goods and land that they could not carry with them. Most impressive is the fact that even though displaced households have higher human capital, they have a considerably lower level of consumption, probably reflecting a loss in productive assets, including specific human capital. And these losses can have

important intergenerational consequences: we observed that enrolment rates among the children of displaced and migrant households are considerably lower than among other households.

One has to be cautious, however, while assessing overall costs and benefits of migration based on data gathered within the year following migration. If one wants to study the impact of migration on well being of these households, we would need more follow-up surveys or longer term outcomes since conditions at the time they arrive are likely to change very fast, depending on the labour market and economic prospects in destination areas. However, given the costs entailed by displacement and migration, it is maybe not too surprising if very few households have migrated out of the rural municipalities interviewed for the evaluation of *Familias en Accion* as observed between the baseline and follow-up surveys.

Using a survey on displaced households we have compared their living standards to those of poor households interviewed for the FA programme. We have assessed their relative poverty levels by looking at several aspects of poverty. We find that displaced households are worse-off in the period just after displacement and then catch up as compared to the very poor households eligible for the FA welfare programme. But they are still as poor as the poorest households living in rural municipalities of Colombia, even though they are from more heterogeneous backgrounds with more educated parents and live in very big cities after displacement. Accordingly, we would expect their children to be more enrolled in school. However, comparing school enrolment rates of displaced children with those of very poor households, we found strikingly lower rates among displaced children.

These results give some scope for further policy interventions that should at least target more specifically children of displaced households and children of migrant households, if the government wants to mitigate long run poverty problems linked to displacement and mobility.

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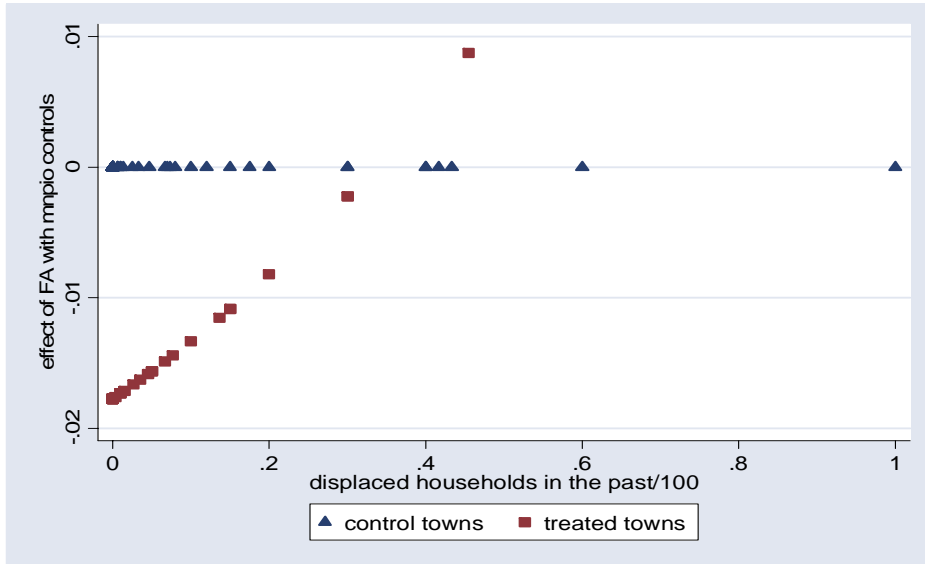
Figure1a

Figure2a
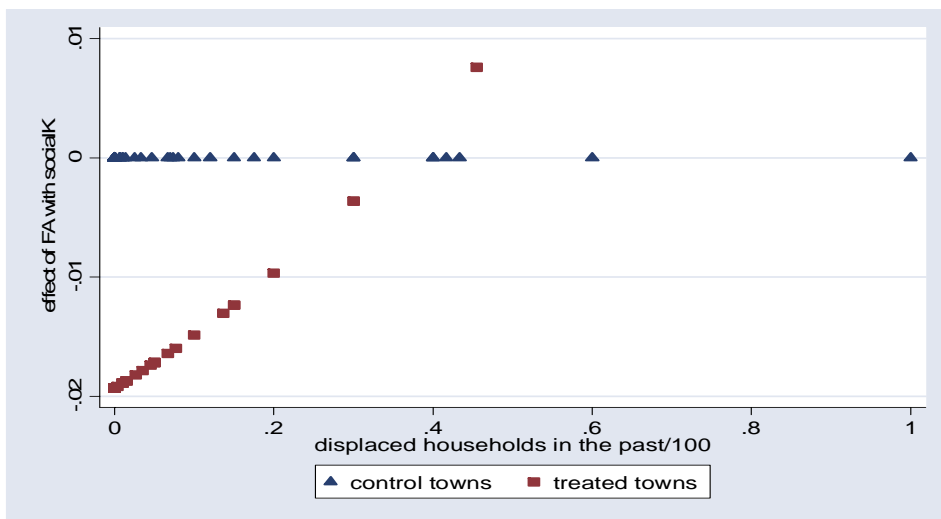
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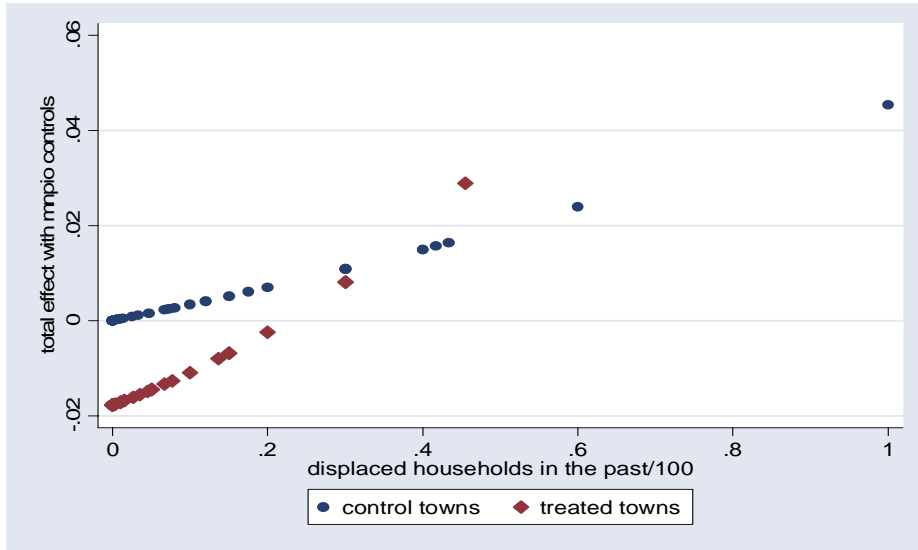
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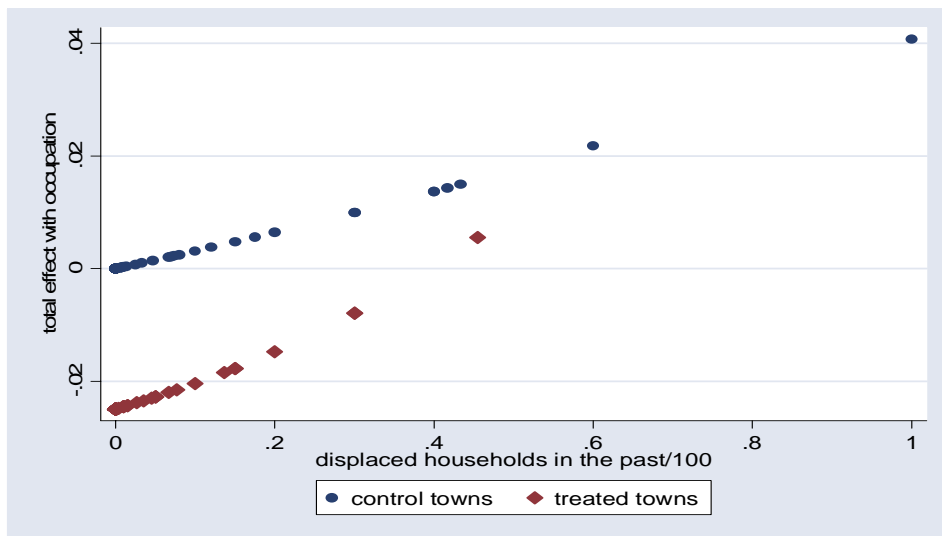
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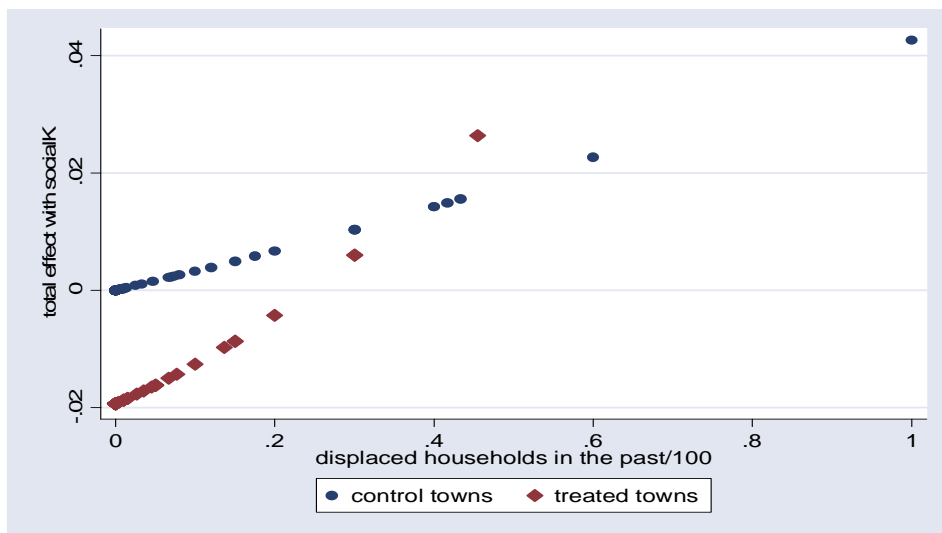
Figure3b

Appendix A

Table 0 Logit of having moved out of the municipality of origin / having disappeared between baseline and follow up.

	Selection migrated out/unknown
treat	-0.406
	(0.376)
number of groups	0.232
	(0.103)**
dum_game	1.810
	(1.201)
group	1.450
	(0.889)
n_dispop	0.042
	(0.017)**
n_dispinp	-0.008
	(0.002)***
curfew	1.683
	(0.783)**
presence of eln_farc_pm	0.199
	(0.360)
people in HH	-0.507
	(0.378)
pershogsq	0.029
	(0.021)
kids 0-6	-0.011
	(0.552)
kid 0-6sq	0.056
	(0.121)
kids 7-17	0.516
	(0.403)

kid 7-17sq	-0.032
	(0.061)
1 if EPS	-2.683
	(1.348)**
1 if ARS	-0.460
	(0.521)
1 if Vinculado	0.722
	(0.467)
age_head	0.046
	(0.018)**
age_spouse	-0.013
	(0.021)
head of household primary not completed	0.454
	(0.393)
head of household primary completed	0.918
	(0.522)*
head of household secondary incompleted	1.030
	(0.663)
head of household secondary completed or more	-0.230
	(1.852)
spouse primary not completed	0.679
	(0.365)*
spouse primary completed	0.916
	(0.486)*
spouse secondary incompleted	1.138
	(0.662)*
spouse secondary completed or more	1.413
	(0.874)
work_h	18.491
	(0.759)***

work_s	0.503
	(0.920)
farm_h	-0.572
	(0.425)
farm_s	1.053
	(1.006)
familywork_h	-19.496
	(1.352)***
familywork_s	-1.714
	(1.533)
employer_h	-20.267
	(0.000)
self_employed_h	-18.444
	(0.673)***
self_employed_s	-1.835
	(1.173)
employed_h	-18.110
	(0.634)***
employed_s	-0.773
	(1.075)
1 if lives in a house, O oth	0.391
	(1.093)
1 if walls made of Tapia, Abobe or Bahareque.	-0.501
	(0.416)
1 if walls made of wood	-1.066
	(0.585)*
1 if walls made of bad quality wood.	-0.334
	(0.787)
1 if no phone,0 oth	0.102
	(0.662)

1 if communal or radiotelephone, 0 oth	0.621
	(1.301)
1 if house is rented or anticresis, o oth	0.361
	(0.587)
1 if house is ocupada de hecho	-1.601
	(0.893)*
1 if house is in usufruct	0.308
	(0.339)
dum_death	1.406
	(0.627)**
dum_ill01	0.516
	(0.601)
region==Oriental	-3.472
	(0.638)***
region==Central	-2.176
	(0.518)***
region==Pacifico	-2.196
	(0.699)***
altitud to the sea level in metres	-0.000
	(0.000)
cab2002	-0.000
	(0.000)
res2002	-0.000
	(0.000)***
number of urban public schools	0.018
	(0.043)
number of rural public schools	0.019
	(0.010)*
number of public hospitals	-0.189
	(0.387)
number of public centros	0.333

	(0.173)*
number of public puestos	0.073
	(0.032)**
number of pharmacies	-0.065
	(0.047)
acue01	2.942
	(1.404)**
alca01	2.751
	(0.738)***
1 if taskforce desertion in IPS	-0.490
	(0.620)
1 if taskforce strike in IPS, 0	0.554
	(0.345)
1 if lives in a rural but disperse part, 0 oth	-0.699
	(0.387)*
1 if lives in a rural but populated part, 0 oth	0.040
	(0.547)
Observations	400

Table 1: Dictionary of variables of the FA survey and description of the sample

Variable	Non migrants Mean (sd)	Households who migrated out of their municipality of residence Mean (sd)	Variable description
treat	0.58 (0.49)	0.60 (0.49)	1 if treatment municipality, 0 oth.
expo	3.58 (3.47)	3.56 (3.35)	number of payments received at follow-up in municipality
wagem_r	1236.03 (710.22)	1248.15 (569.8)	Average hourly wage in rural part of municipality
wagem_u	1174.53 (323.94)	1200.6* (287.72)	Average hourly wage in urban part of municipality
urbr_1	0.49 (0.50)	0.49 (0.50)	1 if lives in urban, 0 oth.
urbr_2	0.41	0.40	1 if lives in a rural but disperse part

	(0.49)	(0.49)	of the municipality, O oth.
urbr_3	0.10	0.11	1 if lives in a rural but populated part of the municipality, O oth.
	(0.29)	(0.31)	
pershog	6.10	5.55*	Number of people in the household
	(2.44)	(2.55)	
kid 0-6	1.13	1.10	Number of children aged between 0 and 6 years old
	(1.15)	(1.11)	
Kid 7-17	2.13	1.93*	Number of children aged between 7 and 17 years old
	(1.39)	(1.48)	
age_head	45.95	43.10*	Age of the head of household
	(13.13)	(13.27)	
age_spouse	41.94	38.86*	Age of spouse
	(12.75)	(12.66)	
single	0.20	0.26*	1 if the household head is single, O oth.
	(0.40)	(0.44)	
ss_h1	0.04	0.02*	1 if head of household has unsubsidized health insurance, O oth.
	(0.21)	(0.15)	
ss_h2	0.69	0.63*	1 if head of household has subsidized health insurance, O oth.
	(0.46)	(0.48)	
ss_h3	0.17	0.24*	if head of household has a letter from the municipality that is similar to subsidized health insurance, O oth.
	(0.38)	(0.43)	
eduh	0.25	0.26	1 if head of household has at least completed the primary school, O oth.
	(0.43)	(0.44)	
edus	0.24	0.24	1 if the spouse has at least completed the primary school, O oth.
	(0.43)	(0.43)	
edu_h1	0.27	0.24	1 if head of household has not education, 0 oth.
	(0.44)	(0.43)	
edu_h2	0.46	0.47	1 if the head of household has primary not completed, O oth.
	(0.50)	(0.50)	
edu_h3	0.14	0.14	1 if head of household has completed primary school, O oth.
	(0.35)	(0.34)	
edu_h4	0.09	0.11	1 if head of household secondary not completed, 0 oth.
	(0.29)	(0.31)	
edu_h5	0.04	0.04	1 if head of household secondary completed or more, 0 oth.
	(0.19)	(0.19)	
edu_s1	0.23	0.19*	1 if spouse of household has not education, 0 oth.
	(0.42)	(0.40)	
edu_s2	0.46	0.50	spouse primary not completed
	(0.50)	(0.50)	
edu_s3	0.16	0.15	spouse primary completed
	(0.37)	(0.35)	
edu_s4	0.10	0.12	spouse secondary not completed
	(0.29)	(0.32)	
edu_s5	0.04	0.05	spouse secondary completed or more
	(0.21)	(0.21)	

house	0.97 (0.16)	0.94* (0.24)	0 if family does not live in a house, 1 if it does.
houseown_1	0.69 (0.46)	0.53* (0.50)	1 if house is owned, 0 oth.
houseown_2	0.06 (0.24)	0.18* (0.38)	1 if house is rented or in mortgage, o oth
houseown_3	0.05 (0.21)	0.02* (0.13)	1 if house is occupied without legal agreement O oth.
houseown_4	0.20 (0.40)	0.26* (0.44)	1 if house is in usufruct O oth.
walls_mate~1	0.44 (0.50)	0.43 (0.50)	1 if walls made of brick O oth.
walls_mate~2	0.37 (0.48)	0.36 (0.48)	1 if walls made of Tapia, Abobe or Bahareque.
walls_mate~3	0.14 (0.35)	0.15 (0.36)	1 if walls made of wood
walls_mate~4	0.03 (0.18)	0.03 (0.18)	1 if walls made of bad quality wood.
walls_mate~5	0.01 (0.11)	0.02 (0.13)	1 if walls made of cardboard or no walls.
phone_3	0.90 (0.30)	0.89 (0.31)	1 if no phone,0 oth
phone_2	0.02 (0.13)	0.01 (0.12)	1 if communal or radiotelephone, 0 oth
phone_1	0.08 (0.28)	0.09 (0.29)	1 if traditional phone, 0 oth.
dum_death	0.05 (0.21)	0.06 (0.23)	1 if someone from the household died in 2000, 2001 or 2002, O oth.
dum_ill01	0.05 (0.23)	0.05 (0.22)	1 if someone from the household was very ill in 2001, O oth.
region2	0.21 (0.41)	0.23 (0.42)	1 if lives in region==Oriental, O oth.
region3	0.24 (0.43)	0.33 (0.47)	region==Central
region4	0.13 (0.34)	0.09 (0.28)	region==Pacifico
altitud	595.86 (735.94)	642.15 (717.26)	altitud to the sea level in metres
cab2002	15382.85 (17921.23)	13677.12 (15285.00)	population in the urban part in 2002
res2002	14034.35 (11151.83)	13695.38 (9754.95)	population in the rural part in 2002
acue01	0.87 (0.13)	0.88* (0.13)	proportion of households with piped water in municipality
alca01	0.50 (0.37)	0.58* (0.34)	Proportion of households with sewage system
no_colurb_~c	8.41	7.89	number of urban public schools in

	(8.72)	(7.49)	the municipality as declared by the Alcade
no_colrur_~c	35.97	41.94*	number of rural public schools in the municipality as declared by the Alcade
	(27.15)	(30.77)	
no_hos_alc	0.74	0.80*	number of public hospitals in the municip as declared by the Alcade
	(0.44)	(0.40)	
no_cen_alc	0.89	0.82	number of public centros
	(1.20)	(1.06)	
no_pue_alc	4.88	5.51*	number of public puestos
	(4.61)	(5.46)	
no_far_alc	8.64	8.79	number of pharmacies
	(6.70)	(7.09)	
d_desertion	0.09	0.17*	1 if in any IPS of our sample in the municipality suffered taskforce desertion, due to violence, O oth.
	(0.29)	(0.38)	
d_strike	0.25	0.30*	1 if in any IPS of our sample in the municipality suffered taskforce strike, O oth.
	(0.43)	(0.46)	
curfew	0.12	0.15*	presence of curfew in municipality
	(0.32)	(0.35)	
eln_farc_pm	0.61	0.73*	presence of ELN, FARC or paramilitary groups in municipality
	(0.49)	(0.44)	
probl_op	0.65	0.78*	problems in municipality
	(0.48)	(0.42)	
n_dispop	5.42	10.19*	Number of displaced households from the municipality during the year before baseline
	(13.51)	(20.52)	
n_dispinp	49.44	49.33	Number of displaced households joining the municipality during the year before baseline
	(100.45)	(89.91)	
group	0.28	0.31	% of women participating in collective activity in the village
	(0.17)	(0.18)	
ngroup	0.93	1.38	Number of game groups in villages**
	(3.32)	(3.86)	
work_h	0.82	0.77*	1 if head works, O otherwise
	(0.38)	(0.42)	
work_s	0.23	0.19*	1 if spouse works, O otherwise
	(0.42)	(0.39)	
farm_h	0.46	0.38*	1 if head works in agriculture, O otherwise
	(0.49)	(0.48)	
farm_s	0.04	0.03	1 if spouse works in agriculture, O oth
	(0.20)	(0.17)	
familywork_h	0.01	0.01	1 if head works in family enterprise, O oth
	(0.10)	(0.09)	
familywork_s	0.02	0.01	1 if spouse works in family enterprise, O oth
	(0.14)	(0.12)	
employer_h	0.03	0.02	1 if head is an employer, 0 oth.
	(0.16)	(0.14)	
	0.003	0.003	1 if spouse is an employer, 0 oth

employer_s	0.003	0.003	1 if spouse is an employer, 0 oth
	(0.06)	(0.05)	
self_employed_h	0.40	0.29*	1 if head is self-employed, 0 oth.
	(0.49)	(0.46)	
self_employed_s	0.10	0.06*	1 if spouse is self-employed, 0 oth.
	(0.30)	(0.24)	
employed_h	0.35	0.39*	1 if head is employed, 0 oth.
	(0.48)	(0.49)	
employed_s	0.07	0.06	1 if spouse is employed, 0 oth
	(0.26)	(0.24)	
N			Total number of observations
	11177	433	

* Significantly different as compared to the group of non migrants
** This variable is available for 12 pilot areas only

Table 2 Determinants of household migration

Marginal effect (dP/dX)	(1)	(2)	(3)	(4)	(5)
		Dropping some controls for municipality	More education levels	with control for occupations	with controls for social capital
treat	-0.648	-0.628	-0.836	-1.124	-1.029
	(0.499)	(0.495)	(0.505)*	(0.402)***	(0.539)*
n_dispop	0.034	0.039	0.032	0.024	0.031
	(0.012)***	(0.012)***	(0.012)***	(0.010)**	(0.011)***
n_dispinp	-0.003	-0.001	-0.001	-0.000	-0.002
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
curfew	1.110	0.208	0.939	1.143	0.902
	(0.550)**	(0.603)	(0.567)*	(0.527)**	(0.565)
presence of eln_farc_pm	0.821	1.282	0.969	1.364	0.774
	(0.512)	(0.526)**	(0.530)*	(0.437)***	(0.514)
hourly wage in urban part of	0.007	0.010	0.007	0.006	0.008

municipality*1000					
	(0.010)	(0.008)	(0.010)	(0.008)	(0.010)
hourly wage in rural part of municipality*1000	-0.005	-0.004	-0.004	-0.003	-0.005
	(0.002)**	(0.002)	(0.002)**	(0.002)	(0.002)**
people in HH	-0.518	-0.708	-0.701	-0.840	-0.708
	(0.278)*	(0.335)**	(0.326)**	(0.343)**	(0.324)**
pershogsq	0.023	0.029	0.028	0.035	0.029
	(0.015)	(0.017)*	(0.016)*	(0.018)**	(0.016)*
kids 0-6	-0.221	-0.150	-0.138	0.394	-0.142
	(0.428)	(0.498)	(0.486)	(0.509)	(0.486)
kid 0-6sq	-0.000	0.028	0.025	-0.105	0.024
	(0.095)	(0.117)	(0.114)	(0.121)	(0.113)
kids 7-17	-0.407	-0.290	-0.290	-0.107	-0.285
	(0.393)	(0.483)	(0.471)	(0.513)	(0.470)
kid 7-17sq	0.088	0.086	0.087	0.050	0.085
	(0.067)	(0.080)	(0.078)	(0.089)	(0.078)
1 if EPS	-3.553	-3.497	-3.533	-2.844	-3.546
	(1.090)***	(1.235)***	(1.200)***	(1.153)**	(1.202)***
1 if ARS	-1.282	-1.056	-1.148	-1.049	-1.178
	(0.575)**	(0.661)	(0.639)*	(0.627)*	(0.630)*
1 if Vinculado	-0.696	-0.424	-0.565	-0.365	-0.611
	(0.648)	(0.728)	(0.708)	(0.677)	(0.700)
age_head	0.034	0.045	0.044	0.050	0.043
	(0.019)*	(0.022)**	(0.022)**	(0.020)**	(0.022)**
age_spouse	-0.076	-0.085	-0.082	-0.052	-0.082
	(0.027)***	(0.030)***	(0.030)***	(0.027)*	(0.030)***
single	0.929	1.074	0.974		0.972
	(0.457)**	(0.516)**	(0.507)*		(0.508)*
edus	-0.915				

(0.608)				
eduh	-0.028			
	(0.662)			
0 if family does not live in a house(room...), 1 if it does.	1.187	1.274	1.227	1.762	1.241
	(0.893)	(0.910)	(0.868)	(1.185)	(0.869)
1 if walls made of Tapia, Abobe or Bahareque	0.317	0.386	0.308	0.234	0.285
	(0.435)	(0.484)	(0.473)	(0.476)	(0.468)
1 if walls made of wood	0.365	0.367	0.349	0.428	0.424
	(0.610)	(0.594)	(0.612)	(0.598)	(0.601)
1 if walls made of bad quality wood.	0.585	0.296	0.258	0.381	0.221
	(0.944)	(0.922)	(0.909)	(0.858)	(0.908)
1 if walls made of cardboard or no walls.	1.072	1.245	1.241	0.296	1.342
	(1.544)	(1.540)	(1.544)	(1.614)	(1.545)
1 if no phone,0 oth	0.275	0.180	0.290	1.350	0.267
	(0.717)	(0.817)	(0.781)	(0.843)	(0.782)
1 if communal or radiotelephone, 0 oth	-0.574	-0.440	-0.356	0.841	-0.409
	(1.528)	(1.608)	(1.585)	(1.644)	(1.600)
1 if house is rented or anticresis, o oth	1.970	2.183	2.012	1.254	2.021
	(0.554)***	(0.614)***	(0.599)***	(0.673)*	(0.600)***
1 if house is ocupada de hecho	-2.998	-3.378	-3.374	-3.364	-3.363

	(1.681)*	(1.598)**	(1.592)**	(1.363)**	(1.591)**
1 if house is in usufruct	0.865	1.054	1.020	1.092	1.016
	(0.374)**	(0.390)***	(0.383)***	(0.370)***	(0.385)***
dum_death	0.884	0.904	1.003	1.345	1.016
	(0.751)	(0.795)	(0.778)	(0.872)	(0.779)
dum_ill01	0.149	0.506	0.538	0.366	0.496
	(0.674)	(0.703)	(0.689)	(0.690)	(0.691)
region==Oriental	-1.761	-1.361	-2.003	-2.351	-2.301
	(0.805)**	(0.852)	(0.817)**	(0.717)***	(0.827)***
region==Central	-0.017	0.390	-0.390	-0.396	-0.762
	(0.608)	(0.609)	(0.610)	(0.556)	(0.663)
region==Pacifico	-3.305	-2.513	-3.739	-3.642	-3.814
	(0.921)***	(1.020)**	(0.963)***	(0.902)***	(0.933)***
altitud to the sea level in metres	0.001	0.001	0.001	0.001	0.001
	(0.000)	(0.000)*	(0.000)*	(0.000)	(0.000)*
cab2002	0.000	-0.000	0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
res2002	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.000)**	(0.000)	(0.000)*	(0.000)	(0.000)**
number of urban public schools	-0.089		-0.094	-0.083	-0.071
	(0.052)*		(0.054)*	(0.059)	(0.057)
number of rural public schools	0.012		0.012	0.019	0.014
	(0.010)		(0.010)	(0.009)**	(0.010)
number of public hospitals	0.441		0.509	-0.337	0.470
	(0.774)		(0.814)	(0.645)	(0.801)
number of public	0.005		-0.027	-0.086	-0.027

centros					
	(0.231)		(0.238)	(0.199)	(0.234)
number of public puestos	0.099		0.120	0.090	0.114
	(0.054)*		(0.057)**	(0.051)*	(0.056)**
number of pharmacies	0.046		0.046	0.041	0.043
	(0.063)		(0.067)	(0.056)	(0.068)
acue01	-0.460		-0.577	0.744	-1.065
	(1.527)		(1.522)	(1.333)	(1.569)
alca01	1.355		1.325	1.468	1.466
	(0.924)		(0.953)	(0.883)*	(0.930)
1 if taskforce desertion in IPS	0.732	1.107	0.512	0.013	0.675
	(0.582)	(0.626)*	(0.597)	(0.551)	(0.616)
1 if taskforce strike in IPS, 0	0.168	0.534	0.246	0.304	0.328
	(0.497)	(0.493)	(0.516)	(0.453)	(0.504)
1 if lives in a rural but disperse part, 0 oth	-0.104	0.029	-0.037	0.467	-0.036
	(0.552)	(0.579)	(0.579)	(0.636)	(0.579)
1 if lives in a rural but populated part, 0 oth	0.738	1.043	0.935	1.374	1.016
	(0.606)	(0.640)	(0.637)	(0.639)**	(0.643)
head of household primary not completed		0.129	0.137	0.156	0.129
		(0.488)	(0.485)	(0.481)	(0.481)
head of household primary completed		-0.750	-0.708	-0.340	-0.736
		(0.645)	(0.641)	(0.570)	(0.639)
head of household		-0.088	-0.075	0.138	-0.070

	(1)	(2)	(3)	(4)
secondary incompleted				
	(0.896)	(0.890)	(0.776)	(0.883)
head of household secondary completed or more	-0.688	-0.568	-1.019	-0.546
	(1.239)	(1.224)	(1.244)	(1.218)
spouse primary not completed	0.435	0.485	0.442	0.494
	(0.519)	(0.509)	(0.530)	(0.509)
spouse primary completed	0.197	0.208	0.554	0.207
	(0.624)	(0.615)	(0.598)	(0.614)
spouse secondary incompleted	0.369	0.408	0.745	0.394
	(0.748)	(0.743)	(0.673)	(0.740)
spouse secondary completed or more	-0.060	0.002	0.084	-0.038
	(0.954)	(0.935)	(0.972)	(0.941)
group				0.018
				(0.012)
dumwork_h			0.020	
			(0.030)	
dumwork_s			-0.005	
			(0.004)	
farm_h			-0.890	
			(0.456)*	
farm_s			0.131	
			(1.281)	
work_h			3.669	
			(1.292)***	

work_s				1.666	
				(3.588)	
familywork_s				-0.841	
				(3.875)	
employer_h				-5.266	
				(1.481)***	
employer_s				-0.955	
				(4.656)	
self_employed_h				-4.542	
				(1.209)***	
self_employed_s				-2.987	
				(3.696)	
domestic_h				-1.134	
				(1.787)	
domestic_s				-0.789	
				(3.839)	
employed_h				-3.475	
				(1.237)***	
employed_s				-2.926	
				(3.749)	
Observations	9630	8837	8837	7078	8837

Notes : Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
All parameters and standard errors(in brackets) have been multiplied by 100.

Table 3 : migration determinants with intensity effects of the programme

Marginal effects (dP/dX)	(1)	(2)	(3)
	All control	Dropping some munici.level	Adding more controls for education levels

	variables		
number of payments	-0.095	-0.085	-0.118
	(0.058)*	(0.061)	(0.068)*
n_dispop	0.027	0.030	0.030
	(0.012)**	(0.013)**	(0.012)**
n_dispinp	-0.003	-0.001	-0.000
	(0.002)	(0.002)	(0.002)
curfew	0.528	0.028	-0.126
	(0.497)	(0.557)	(0.554)
presence of eln_farc_pm	0.333	1.055	1.182
	(0.600)	(0.394)***	(0.437)***
problems in mpio	0.588		
	(0.704)		
people in HH	-0.617	-0.614	-0.819
	(0.307)**	(0.317)*	(0.347)**
pershogsq	0.030	0.030	0.037
	(0.018)*	(0.019)	(0.020)*
kids 0-6	-0.163	-0.167	-0.076
	(0.430)	(0.441)	(0.485)
kid 0-6sq	-0.019	-0.017	0.006
	(0.095)	(0.098)	(0.121)
kids 7-17	-0.343	-0.362	-0.244
	(0.504)	(0.522)	(0.597)
kid 7-17sq	0.081	0.084	0.083
	(0.084)	(0.087)	(0.102)
1 if EPS	-3.587	-3.558	-3.541
	(0.916)***	(0.918)***	(1.022)***
1 if ARS	-1.118	-1.048	-0.954
	(0.597)*	(0.606)*	(0.716)
1 if Vinculado	-0.504	-0.384	-0.241
	(0.631)	(0.643)	(0.729)

age_head	0.030	0.032	0.041
	(0.021)	(0.022)	(0.024)*
age_spouse	-0.072	-0.073	-0.080
	(0.028)**	(0.029)**	(0.032)**
single	0.770	0.843	0.890
	(0.420)*	(0.419)**	(0.497)*
edus	-0.834	-0.846	
	(0.504)*	(0.517)	
eduh	0.021	0.020	
	(0.519)	(0.518)	
1 if lives in a house, O oth	0.644	0.702	0.789
	(0.840)	(0.870)	(0.845)
1 if walls made of Tapia, Abobe or Bahareque.	0.231	0.310	0.293
	(0.418)	(0.426)	(0.451)
1 if walls made of wood	0.398	0.360	0.298
	(0.654)	(0.651)	(0.621)
1 if walls made of bad quality wood.	0.432	0.487	0.129
	(0.944)	(0.908)	(0.838)
1 if walls made of cardboard or no walls.	0.932	0.874	1.045
	(1.724)	(1.708)	(1.693)
1 if no phone,0 oth	0.014	-0.067	-0.113
	(0.515)	(0.517)	(0.663)
1 if communal or radiotelephone, 0 oth	-0.939	-1.046	-0.852
	(1.414)	(1.420)	(1.492)
1 if house is rented or mortgage, o oth	2.123	2.259	2.336
	(0.422)***	(0.430)***	(0.469)***

1 if house is squatted	-2.924	-2.973	-3.377
	(1.303)**	(1.298)**	(1.107)***
1 if house is in usufruct	0.903	0.929	1.098
	(0.326)***	(0.328)***	(0.324)***
Dum_death	0.765	0.702	0.784
	(0.953)	(0.972)	(0.935)
Dum_ill01	0.046	0.051	0.430
	(0.534)	(0.526)	(0.551)
region==Oriental	-1.715	-1.180	-1.466
	(0.766)**	(0.600)**	(0.612)**
region==Central	-0.011	0.720	0.294
	(0.594)	(0.536)	(0.510)
region==Pacifico	-3.212	-2.498	-2.801
	(0.650)***	(0.758)***	(0.837)***
altitud to the sea level in metres	0.001	0.001	0.001
	(0.000)	(0.000)**	(0.000)***
Cab2002	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)
Res2002	-0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)
number of urban public schools	-0.032		
	(0.044)		
number of rural public schools	0.008		
	(0.010)		
number of public hospitals	0.320		
	(0.778)		
number of public centros	0.041		
	(0.207)		

number of public puestos	0.075		
	(0.048)		
number of pharmacies	0.023		
	(0.051)		
acue01	-0.580		
	(1.184)		
alca01	1.428		
	(0.854)*		
1 if in any IPS of our sample in the municipality suffered taskforce desertion,	1.044	1.670	1.458
	(0.595)*	(0.640)***	(0.680)**
1 if in any IPS of our sample in the municipality suffered taskforce strike, 0	0.250	0.354	0.507
	(0.510)	(0.467)	(0.509)
1 if lives in a rural but disperse part, 0 oth	0.062	0.135	0.157
	(0.574)	(0.574)	(0.598)
1 if lives in a rural but populated part, 0 oth	0.894	0.997	1.148
	(0.457)*	(0.468)**	(0.490)**
head of household primary not completed			0.099
			(0.502)
head of household primary completed			-0.544
			(0.603)
head of household secondary incompleted			-0.109
			(0.647)

head of household secondary completed or more			-0.583
			(0.992)
spouse primary not completed			0.513
			(0.589)
spouse primary completed			0.187
			(0.681)
spouse secondary incompleted			0.381
			(0.688)
spouse secondary completed or more			0.010
			(0.751)
Observations	10123	10123	9288

Notes : Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
All parameters and standard errors(in brackets) have been multiplied by 100.

Table 4 : effects of programme in high/low incidence of violence as defined by number of displaced households in the past.

	High level	of violence		Low level	of violence	
	(1)	(2) more mun.controls	(3) with occupation	(4)	(5) more mun.controls	(6) with occupat
treat	0.678	-2.979	-0.310	-0.392	-0.785	-1.433
	(1.553)	(1.871)	(1.734)	(0.495)	(0.525)	(0.467)
Observations	1959	1959	1496	7467	7467	5969

* marginal effect in percent points measuring the change in the probability to migrate if one more household has been displaced out of the municipality in the past.

Table 5 Effects of the programme interacted with violence as defined by the number of displaced households in the village

	(1)	(2)	(3)	(4)	(5)
	Dropping some municipality level var	With more controls for municipality Level var.	With controls for occupations	With controls for social capital	With more controls for social capital
treat	-1.240	-1.725	-2.326	-1.869	-1.712
	(0.666)*	(0.751)**	(0.601)***	(0.758)**	(0.780)**
pgm_eln_farc_pm	0.538	0.731	1.306	0.643	0.582
	(0.864)	(0.852)	(0.674)*	(0.826)	(0.847)
pgm_ n_dispop	0.041	0.052	0.039	0.053	0.063
	(0.019)**	(0.018)***	(0.017)**	(0.017)***	(0.021)***
n_dispop	0.033	0.025	0.020	0.024	0.026
	(0.011)***	(0.010)**	(0.008)**	(0.010)**	(0.011)**
n_dispinp	-0.000	-0.000	0.001	-0.001	-0.000
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
curfew	0.126	0.868	1.100	0.834	1.187
	(0.559)	(0.526)*	(0.491)**	(0.523)	(0.585)**
presence of eln_farc_pm	0.888	0.455	0.546	0.309	0.112
	(0.719)	(0.750)	(0.583)	(0.728)	(0.727)
hourly wage in rural part of municipality*1000	-0.307	-0.422	-0.325	-0.433	-0.399
	(0.217)	(0.196)**	(0.192)*	(0.201)**	(0.184)**
hourly wage in urban part of municipality*1000	0.859	0.763	0.740	0.840	1.316
	(0.797)	(1.002)	(0.815)	(1.000)	(0.942)
people in HH	-0.704	-0.686	-0.820	-0.693	-0.686

	(0.333)**	(0.322)**	(0.338)**	(0.321)**	(0.320)**
pershogsq	0.029	0.028	0.035	0.029	0.028
	(0.016)*	(0.016)*	(0.018)**	(0.016)*	(0.016)*
kids 0-6	-0.150	-0.144	0.389	-0.149	-0.135
	(0.497)	(0.484)	(0.506)	(0.485)	(0.480)
kid 0-6sq	0.029	0.027	-0.103	0.026	0.025
	(0.117)	(0.113)	(0.121)	(0.113)	(0.112)
kids 7-17	-0.278	-0.283	-0.092	-0.279	-0.278
	(0.481)	(0.468)	(0.507)	(0.468)	(0.463)
kid 7-17sq	0.083	0.084	0.046	0.083	0.083
	(0.079)	(0.077)	(0.089)	(0.077)	(0.076)
1 if EPS	-3.592	-3.615	-2.940	-3.624	-3.562
	(1.230)***	(1.202)***	(1.163)**	(1.201)***	(1.196)***
1 if ARS	-1.117	-1.212	-1.148	-1.237	-1.280
	(0.656)*	(0.636)*	(0.627)*	(0.626)**	(0.626)**
1 if Vinculado	-0.434	-0.576	-0.434	-0.619	-0.612
	(0.719)	(0.701)	(0.670)	(0.692)	(0.688)
age_head	0.046	0.044	0.049	0.043	0.043
	(0.022)**	(0.022)**	(0.020)**	(0.022)**	(0.022)**
age_spouse	-0.085	-0.082	-0.052	-0.081	-0.083
	(0.030)***	(0.030)***	(0.026)*	(0.030)***	(0.030)***
single	1.082	0.978		0.976	0.977
	(0.516)**	(0.506)*		(0.506)*	(0.501)*
head of household primary not completed	0.144	0.154	0.186	0.145	0.126
	(0.490)	(0.485)	(0.478)	(0.482)	(0.478)
head of household primary completed	-0.717	-0.679	-0.313	-0.708	-0.680
	(0.643)	(0.637)	(0.563)	(0.634)	(0.625)
head of household	-0.078	-0.072	0.134	-0.065	-0.078

secondary incompleted					
	(0.892)	(0.887)	(0.771)	(0.880)	(0.875)
head of household secondary completed or more	-0.641	-0.499	-0.928	-0.476	-0.466
	(1.240)	(1.221)	(1.246)	(1.213)	(1.204)
spouse primary not completed	0.412	0.451	0.402	0.463	0.428
	(0.516)	(0.508)	(0.527)	(0.508)	(0.505)
spouse primary completed	0.206	0.208	0.536	0.210	0.182
	(0.619)	(0.610)	(0.593)	(0.608)	(0.606)
spouse secondary incompleted	0.349	0.361	0.689	0.349	0.323
	(0.745)	(0.740)	(0.669)	(0.737)	(0.734)
spouse secondary completed or more	-0.100	-0.079	-0.008	-0.119	-0.130
	(0.953)	(0.933)	(0.962)	(0.937)	(0.930)
1 if lives in a house, O oth	1.285	1.229	1.760	1.244	1.192
	(0.901)	(0.861)	(1.178)	(0.862)	(0.865)
1 if walls made of Tapia, Abobe or Bahareque.	0.391	0.312	0.213	0.294	0.248
	(0.478)	(0.461)	(0.463)	(0.456)	(0.452)
1 if walls made of wood	0.402	0.376	0.441	0.448	0.555
	(0.590)	(0.608)	(0.591)	(0.597)	(0.598)
1 if walls made of bad quality wood.	0.335	0.267	0.373	0.233	0.333

	(0.921)	(0.898)	(0.838)	(0.897)	(0.893)
1 if no phone,0 oth	0.169	0.277	1.329	0.255	0.248
	(0.820)	(0.784)	(0.836)	(0.784)	(0.774)
1 if communal or radiotelephone, 0 oth	-0.484	-0.440	0.719	-0.491	-0.345
	(1.607)	(1.599)	(1.650)	(1.612)	(1.578)
1 if house is rented or anticresis, o oth	2.201	2.035	1.249	2.045	1.967
	(0.615)***	(0.598)***	(0.661)*	(0.598)***	(0.590)***
1 if house is ocupada de hecho	-3.368	-3.346	-3.352	-3.331	-3.323
	(1.591)**	(1.581)**	(1.341)**	(1.580)**	(1.564)**
1 if house is in usufruct	1.046	1.016	1.076	1.014	0.954
	(0.388)***	(0.381)***	(0.364)***	(0.382)***	(0.374)**
dum_death	0.874	0.996	1.306	1.008	0.972
	(0.789)	(0.771)	(0.862)	(0.773)	(0.766)
dum_ill01	0.501	0.539	0.376	0.500	0.497
	(0.700)	(0.687)	(0.686)	(0.687)	(0.681)
region==Oriental	-1.298	-1.918	-2.288	-2.219	-2.789
	(0.828)	(0.790)**	(0.681)***	(0.799)***	(0.668)***
region==Central	0.485	-0.231	-0.252	-0.596	-0.667
	(0.605)	(0.576)	(0.505)	(0.625)	(0.645)
region==Pacifico	-2.419	-3.701	-3.617	-3.777	-3.711
	(1.009)**	(0.962)***	(0.882)***	(0.935)***	(1.025)***
altitud to the sea level in metres	0.001	0.001	0.001	0.001	0.001
	(0.000)*	(0.000)**	(0.000)*	(0.000)**	(0.000)
cab2002	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

res2002	0.000	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)**	(0.000)*	(0.000)**	(0.000)**
1 if taskforce desertion in IPS	1.102	0.345	-0.113	0.521	0.801
	(0.566)*	(0.544)	(0.572)	(0.564)	(0.597)
1 if taskforce strike in IPS, 0	0.473	0.138	0.201	0.217	0.429
	(0.476)	(0.511)	(0.429)	(0.497)	(0.477)
1 if lives in a rural but disperse part, 0 oth	0.089	0.020	0.521	0.021	-0.044
	(0.585)	(0.584)	(0.637)	(0.583)	(0.580)
1 if lives in a rural but populated part, 0 oth	1.101	0.985	1.412	1.066	1.112
	(0.646)*	(0.644)	(0.639)**	(0.650)	(0.640)*
number of urban public schools		-0.056	-0.040	-0.035	-0.038
		(0.057)	(0.058)	(0.059)	(0.054)
number of rural public schools		0.017	0.024	0.019	0.021
		(0.010)	(0.009)**	(0.010)*	(0.011)*
number of public hospitals		0.392	-0.443	0.357	-0.094
		(0.790)	(0.605)	(0.782)	(0.683)
number of public centros		-0.063	-0.136	-0.064	-0.136
		(0.241)	(0.201)	(0.236)	(0.227)
number of public puestos		0.118	0.091	0.111	0.063
		(0.053)**	(0.049)*	(0.052)**	(0.047)

number of pharmacies	0.062	0.052	0.059	0.076
	(0.065)	(0.053)	(0.067)	(0.064)
acue01	-0.075	0.971	-0.543	-0.820
	(1.497)	(1.260)	(1.539)	(1.596)
alca01	1.134	1.260	1.283	2.157
	(0.903)	(0.836)	(0.874)	(0.892)**
group			1.824	1.138
			(1.078)*	(1.129)
number of groups				0.254
				(0.085)***
dum_game				1.721
				(1.273)
dumwork_h		1.545		
		(1.835)		
dumwork_s		-0.522		
		(0.395)		
farm_h		-0.899		
		(0.456)**		
farm_s		0.170		
		(1.273)		
work_h		3.736		
		(1.253)***		
work_s		1.496		
		(3.554)		
familywork_s		-0.720		
		(3.852)		
employer_h		-5.332		
		(1.437)***		
employer_s		-0.947		
		(4.630)		

self_employed_h			-4.551		
			(1.170)***		
self_employed_s			-2.879		
			(3.662)		
domestic_h			-1.317		
			(1.754)		
domestic_s			-0.677		
			(3.811)		
employed_h			-3.545		
			(1.206)***		
employed_s			-2.786		
			(3.711)		
Observations	8837	8837	7078	8837	8837

Notes : Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
All parameters and standard errors(in brackets) have been multiplied by 100.

Table 6 Effects of violence interacted with household characteristics

	(1)	(2)	(3)	(4)
	Without occupations	…..and more education variables	With occupations	…..and more education variables
treat	-1.872	-2.057	-1.767	-1.942
	(0.564)***	(0.571)***	(0.469)***	(0.485)***
Violtreat	0.075	0.079	0.076	0.082
	(0.037)**	(0.037)**	(0.025)***	(0.026)***
1 if lives in a rural but disperse part, 0 oth	-0.244	-0.012	0.050	0.165
	(0.489)	(0.500)	(0.598)	(0.632)
1 if lives in a rural but populated part, 0 oth	1.086	1.428	1.195	1.455

	(0.654)*	(0.663)**	(0.702)*	(0.676)**
group	0.031	0.025	0.024	0.018
	(0.014)**	(0.015)*	(0.010)**	(0.011)*
curfew	1.313	1.145	1.566	1.432
	(0.738)*	(0.761)	(0.433)***	(0.479)***
n_dispop	-0.003	-0.027	-0.022	-0.041
	(0.063)	(0.074)	(0.055)	(0.065)
n_dispinp	-0.002	-0.001	-0.001	0.000
	(0.003)	(0.003)	(0.002)	(0.002)
presence of eln_farc_pm	0.825	1.122	0.779	1.097
	(0.493)*	(0.501)**	(0.425)*	(0.411)***
hourly wage in urban part of municipality*1000	1.048	0.972	0.806	0.788
	(0.785)	(0.798)	(0.807)	(0.780)
hourly wage in rural part of municipality*1000	-0.397	-0.296	-0.293	-0.204
	(0.319)	(0.317)	(0.209)	(0.213)
edus	-0.810		-0.708	
	(0.609)		(0.592)	
eduh	0.186		-0.002	
	(0.598)		(0.623)	
people in HH	-0.783	-1.150	-0.845	-1.107
	(0.367)**	(0.388)***	(0.315)***	(0.359)***
pershogsq	0.037	0.047	0.037	0.045
	(0.019)**	(0.019)**	(0.016)**	(0.019)**
kids 0-6	0.551	0.934	0.570	0.887
	(0.532)	(0.560)*	(0.494)	(0.537)*
kid 0-6sq	-0.138	-0.168	-0.130	-0.163

	(0.122)	(0.131)	(0.115)	(0.128)
kids 7-17	0.016	0.359	0.130	0.349
	(0.485)	(0.524)	(0.484)	(0.576)
kid 7-17sq	0.002	-0.017	-0.003	-0.013
	(0.079)	(0.086)	(0.083)	(0.102)
1 if EPS	-3.185	-2.799	-3.256	-2.848
	(1.265)**	(1.252)**	(1.073)***	(1.095)***
1 if ARS	-1.084	-1.012	-1.108	-1.036
	(0.582)*	(0.589)*	(0.576)*	(0.592)*
1 if Vinculado	-0.336	-0.288	-0.469	-0.437
	(0.671)	(0.678)	(0.612)	(0.638)
age_head	0.021	0.032	0.022	0.034
	(0.025)	(0.026)	(0.018)	(0.022)
age_spouse	-0.027	-0.030	-0.040	-0.039
	(0.029)	(0.031)	(0.027)	(0.028)
1 if lives in a house, O oth	1.694	1.668	1.639	1.557
	(1.248)	(1.213)	(1.152)	(1.112)
1 if walls made of Tapia, Abobe or Bahareque.	0.199	0.116	0.319	0.216
	(0.421)	(0.424)	(0.420)	(0.438)
1 if walls made of wood	0.584	0.464	0.574	0.475
	(0.603)	(0.610)	(0.595)	(0.569)
1 if walls made of bad quality wood.	0.722	0.291	0.741	0.242
	(0.968)	(1.030)	(0.792)	(0.801)
1 if walls made of cardboard or no walls.	0.409	0.615	0.348	0.499
	(1.584)	(1.542)	(1.606)	(1.549)
1 if no phone,0 oth	1.310	1.255	1.448	1.371

	(0.848)	(0.869)	(0.780)*	(0.789)*
1 if communal or radiotelephone, 0 oth	0.521	0.625	0.623	0.669
	(1.632)	(1.609)	(1.548)	(1.554)
1 if house is rented or anticresis, o oth	1.582	1.540	1.273	1.248
	(0.609)***	(0.607)**	(0.610)**	(0.646)*
1 if house is ocupada de hecho	-2.760	-3.385	-2.860	-3.425
	(1.271)**	(1.420)**	(1.382)**	(1.358)**
1 if house is in usufruct	1.156	1.188	0.986	1.060
	(0.426)***	(0.422)***	(0.363)***	(0.356)***
dum_death	1.168	1.475	1.176	1.358
	(0.912)	(0.899)	(0.829)	(0.819)*
dum_ill01	-0.009	0.339	0.045	0.341
	(0.767)	(0.757)	(0.675)	(0.667)
region==Oriental	-2.552	-2.798	-2.227	-2.493
	(0.812)***	(0.825)***	(0.677)***	(0.748)***
region==Central	-0.715	-0.815	-0.290	-0.408
	(0.730)	(0.739)	(0.543)	(0.565)
region==Pacifico	-3.413	-3.502	-3.221	-3.330
	(1.040)***	(1.047)***	(0.849)***	(0.901)***
altitud to the sea level in metres	0.001	0.001	0.001	0.001
	(0.000)	(0.000)**	(0.000)	(0.000)*
cab2002	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
res2002	-0.000	-0.000	-0.000	-0.000
	(0.000)*	(0.000)	(0.000)*	(0.000)
number of urban public schools	-0.003	-0.002	0.003	-0.004

	(0.087)	(0.088)	(0.063)	(0.062)
number of rural public schools	0.027	0.026	0.023	0.023
	(0.013)**	(0.013)*	(0.009)**	(0.010)**
number of public hospitals	-0.327	-0.571	-0.412	-0.638
	(0.616)	(0.619)	(0.576)	(0.596)
number of public centros	-0.005	-0.073	-0.110	-0.181
	(0.299)	(0.302)	(0.198)	(0.179)
number of public puestos	0.019	0.042	0.011	0.035
	(0.067)	(0.067)	(0.047)	(0.050)
number of pharmacies	0.082	0.089	0.086	0.090
	(0.071)	(0.072)	(0.059)	(0.059)
acue01	0.457	0.637	-0.030	0.339
	(1.745)	(1.765)	(1.290)	(1.228)
alca01	1.672	1.606	1.419	1.415
	(0.901)*	(0.907)*	(0.754)*	(0.790)*
1 if taskforce desertion in IPS	0.345	-0.099	0.410	-0.033
	(0.857)	(0.880)	(0.654)	(0.671)
1 if taskforce strike in IPS, 0	0.319	0.332	0.359	0.377
	(0.466)	(0.472)	(0.420)	(0.421)
domestic_h	2.440	3.021	-2.020	-1.762
	(1.710)	(1.675)*	(2.398)	(2.306)
domestic_s	1.018	1.263	-3.796	-3.231
	(0.891)	(0.869)	(3.420)	(3.341)
employed_h	0.422	0.512	-2.613	-2.822
	(0.376)	(0.378)	(1.567)*	(1.584)*

employed_s	-1.217	-1.016	-6.565	-5.957
	(0.802)	(0.789)	(3.387)*	(3.333)*
Violpershog	0.028	0.034	0.029	0.036
	(0.018)	(0.018)*	(0.011)***	(0.011)***
Violpershogsq	-0.001	-0.002	-0.001	-0.002
	(0.001)	(0.001)*	(0.001)	(0.001)**
Violkid 0-6	-0.055	-0.063	-0.056	-0.064
	(0.028)**	(0.028)**	(0.021)***	(0.021)***
Violkid 0-6sq	0.008	0.011	0.008	0.010
	(0.007)	(0.007)	(0.007)	(0.006)*
Violkid 7-17	-0.036	-0.044	-0.039	-0.049
	(0.025)	(0.025)*	(0.020)**	(0.019)***
Violkid 7-17sq	0.006	0.006	0.005	0.006
	(0.004)	(0.004)	(0.003)*	(0.003)**
Violage_head	0.002	0.002	0.001	0.001
	(0.001)	(0.001)	(0.001)*	(0.001)*
Violage_spou	-0.002	-0.002	-0.002	-0.001
	(0.001)	(0.001)	(0.001)*	(0.001)
Violedus	0.010		0.010	
	(0.029)		(0.027)	
Violeduh	0.002		0.010	
	(0.028)		(0.030)	
Violgroup	-0.001	-0.001	-0.000	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)
Violurbr_2	0.030	0.030	0.037	0.039
	(0.022)	(0.023)	(0.024)	(0.026)
Violurbr_3	0.004	-0.023	-0.006	-0.028
	(0.046)	(0.051)	(0.032)	(0.034)
head of household primary not completed		0.475		0.380
		(0.519)		(0.542)

head of household primary completed	-0.229	-0.394
	(0.716)	(0.561)
head of household secondary incompleted	0.499	0.286
	(0.787)	(0.888)
head of household secondary completed or more	-0.028	-0.315
	(1.267)	(1.382)
spouse primary not completed	0.248	0.280
	(0.567)	(0.564)
spouse primary completed	0.489	0.552
	(0.704)	(0.657)
spouse secondary incompleted	0.395	0.375
	(0.814)	(0.695)
spouse secondary completed or more	-0.614	-0.496
	(1.215)	(1.137)
Violedu_h2	-0.031	-0.028
	(0.026)	(0.026)
Violedu_h3	0.006	0.021
	(0.034)	(0.030)
Violedu_h4	-0.017	-0.014
	(0.035)	(0.045)
Violedu_h5	-0.045	-0.032
	(0.053)	(0.058)
Violedu_s2	0.018	0.016

	(0.028)		(0.025)
Violedu_s3	-0.004		-0.010
	(0.035)		(0.019)
Violedu_s4	0.028		0.022
	(0.040)		(0.030)
Violedu_s5	0.060		0.045
	(0.056)		(0.047)
dumwork_h		0.040	0.020
		(0.022)*	(0.030)
dumwork_s		-0.003	-0.005
		(0.004)	(0.003)
farm_h		-0.650	-0.540
		(0.459)	(0.458)
farm_s		0.298	0.677
		(1.239)	(1.240)
work_h		2.779	2.890
		(1.615)*	(1.655)*
work_s		5.511	4.992
		(3.229)*	(3.176)
familywork_s		-4.454	-4.058
		(3.519)	(3.483)
employer_h		-3.514	-4.093
		(1.725)**	(1.735)**
employer_s		-2.688	-2.068
		(4.354)	(4.254)
self_employed_h		-3.172	-3.329
		(1.521)**	(1.536)**
self_employed_s		-6.748	-6.515
		(3.242)**	(3.217)**
Violfarm_h		-0.042	-0.042
		(0.027)	(0.029)

Violfarm_s			-0.170	-0.158
			(0.123)	(0.116)
Violwork_h			0.037	0.030
			(0.032)	(0.032)
Violwork_s			-0.184	-0.180
			(0.056)***	(0.050)***
Violfamilywork_s			0.036	0.039
			(0.136)	(0.134)
Violself_employed_h			-0.071	-0.069
			(0.039)*	(0.037)*
Violself_employed_s			0.213	0.220
			(0.079)***	(0.074)***
Violdomestic_h			0.088	0.089
			(0.128)	(0.126)
Violemployed_h			-0.016	-0.012
			(0.036)	(0.034)
Violemployed_s				
			(0.036)	(0.034)
Violemployed_s			0.156	0.145
			(0.080)*	(0.075)*
familywork_h			-1.580	
0			(2.207)	
Observations	7623	7078	7614	7069

Notes : Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
All parameters and standard errors(in brackets) have been multiplied by 100.

Appendix B:

distribution of rates of displacement out of the municipalities surveyed for FA (the rates are computed per 1000 inhabitants)

	Percentiles		Smallest	
1%	0		0	
5%	0		Largest	
10%	.1092805		89.31	
25%	.7615318			
50%	3.396269		Mean	10.77968
			Std. Dev.	17.44099
75%	12.63627		Variance	304.1881
95%	53.09463		Skewness	2.607703
99%	77.79785		Kurtosis	9.928567

distribution of rates of migration out of municipalities in the FA sample (the rates are computed per 1000 inhabitants)

	Percentiles		Smallest	
1%	0		0	
5%	0		Largest	
10%	0		333.3333	
25%	11.62791			
50%	28.67146		Mean	39.26624
75%	51.80534		Std. Dev.	46.17786
90%	71.77033		Variance	2132.394
95%	126.3318		Skewness	3.121521
99%	196.4286		Kurtosis	16.93274

Armed conflict in Colombia
1997–2002

Summary map of military actions,
IHL violations and socio-political violence

Centro de Investigación y Educación Popular

cinep

**Dinámica del Conflicto
en Colombia**

Sistema de Información Georreferenciada,
SIG, Cinep

Fuente: Banco de Datos de Derechos Humanos
y Violencia Política - Cinep-Justicia y Paz

N
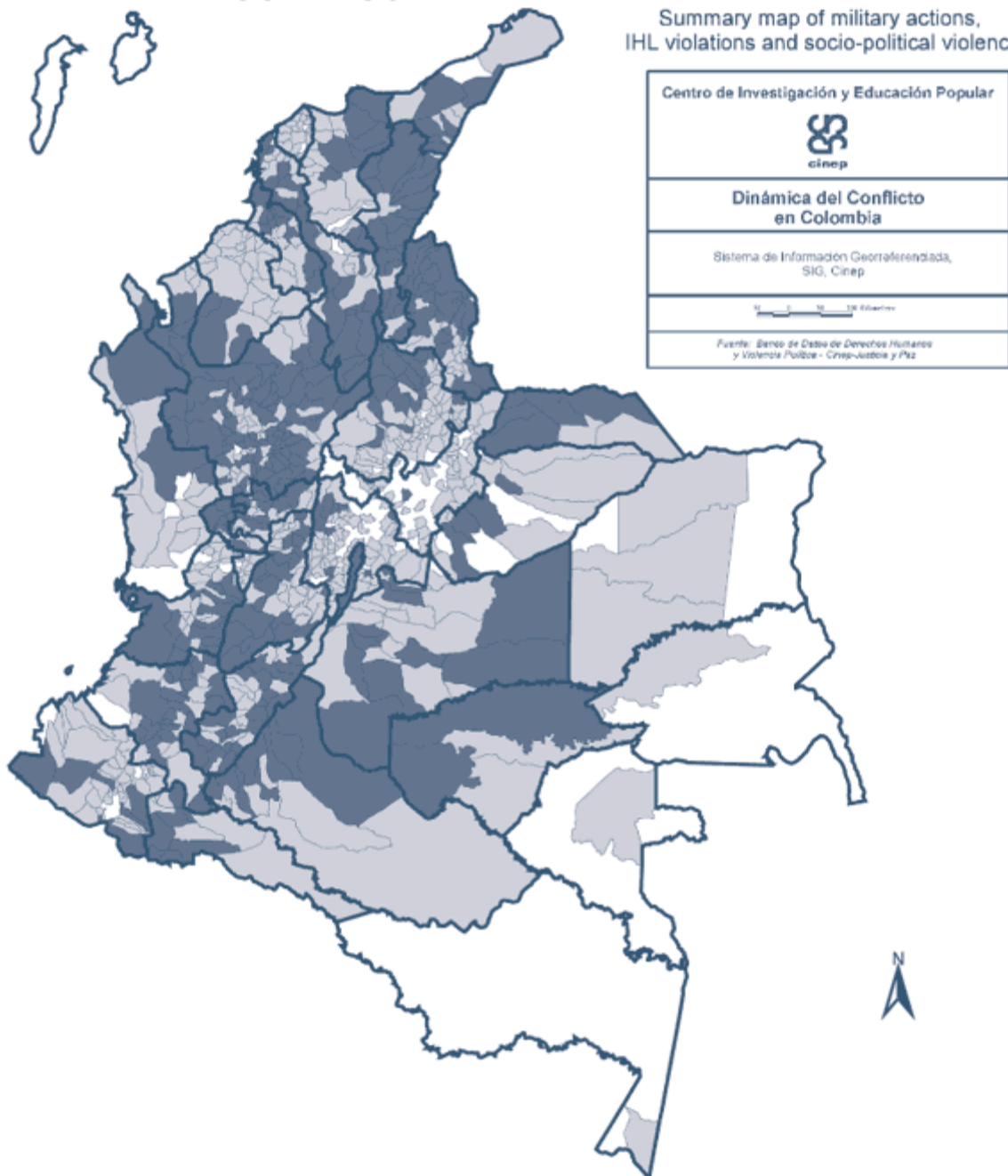
Level of conflict

Municipalities with at least one incident of violence

Municipalities with different types of violence

(military actions, International Humanitarian Law violations and socio-political violence)

Appendix C : other sources of income of displaced households and value of debts

	Patrimony	Interests they receive	Animal Production*	Savings	Value of debt
1%	0	10,000	0	0	0
25%	0	30,000	0	0	0
50%	100,000	50,000	0	0	50,000
75%	600,000	300,000	0	0	250,000
99%	16,500,000	1,000,000	100,000	100,000	5,000,000
Mean	1,015,838	178,105	3,439	13,837	412,665
Std. Dev.	5,777,623	253,099	15,793	220,882	2,437,121

* Only 337 HH took part of this question (HH with animals)

Appendix D

Table 1

Logit of being displaced / non displaced

	(1) whole sample	(2) Common sample
Primary level not completed by head	0.05	0.02
	(0.11)	(0.12)
Primary level completed by head	-0.06	0.18
	(0.14)	(0.16)
Secondary level not completed by head and more	-0.35	-0.33
	(0.15)*	(0.18)
Primary level not completed by spouse	0.10	0.14
	(0.12)	(0.13)
Primary level completed by spouse	-0.11	0.06
	(0.14)	(0.17)
Secondary level not completed by spouse and more	-0.38	-0.32
	(0.15)*	(0.18)
kids 0-6	0.10	0.09
	(0.06)	(0.07)
adults	0.18	0.22
	(0.06)**	(0.07)**
kids 12-17	0.01	-0.01
	(0.06)	(0.07)
Number of female older than 18 in the household	0.09	0.02
	(0.10)	(0.11)
people in HH	-0.04	-0.03
	(0.04)	(0.05)
1 if house is rented or in mortgage	1.89	1.85
	(0.11)**	(0.13)**
1 if house is occupied or borrowed	2.35	2.81

	(0.12)**	(0.14)**
1 if house is in usufruct	-0.04	-0.00
	(0.14)	(0.15)
1 if house floor is of tiles	-0.77	-0.81
	(0.20)**	(0.24)**
1 if house floor is of wood	-0.70	-1.16
	(0.20)**	(0.24)**
1 if house floor is of conglo	-1.03	-1.07
	(0.12)**	(0.13)**
1 if walls made of brick	-2.73	-2.96
	(0.19)**	(0.22)**
1 if walls made of Tapia, Abobe or Bahareque	-2.87	-3.02
	(0.19)**	(0.22)**
1 if walls made of wood	-1.67	-1.67
	(0.18)**	(0.21)**
1 if walls made of bad quality wood	-1.30	-1.59
	(0.23)**	(0.28)**
1=roof with cielo raso (best)	0.51	0.83
	(0.19)**	(0.22)**
1=roof sin cielo raso (nice)	0.65	0.98
	(0.13)**	(0.15)**
1 if house has gas by pipe	0.28	0.40
	(0.15)	(0.17)*
1 if house has water by pipe	-0.29	-0.23
	(0.25)	(0.28)
1 if house has sewage	0.51	0.32
	(0.13)**	(0.15)*
1 if house has rubbish collection	-0.08	0.26
	(0.24)	(0.26)
1 if house has phone	0.19	0.02
	(0.14)	(0.17)

1 if 2 nuclear families live in the household	0.57	0.64
	(0.16)**	(0.19)**
1 if 3 or more nuclear families live in the household	0.09	0.12
	(0.26)	(0.37)
water to prepare food is from pipe	-0.30	-0.38
	(0.25)	(0.28)
water to prepare food is from well	-0.02	-0.70
	(0.15)	(0.19)**
1 if toilet is connected to either sewage or dwell	-0.24	-0.44
	(0.12)*	(0.13)**
1 if rubbish collected	1.26	1.33
	(0.24)**	(0.26)**
1 if HH has animals	-1.47	-1.48
	(0.10)**	(0.11)**
Observations	9453	6747

* significant at less than 5 % level
** significant at less than 1% level

Table 2

Logit of being displaced / non displaced by

region of origin

	(1)	(2)	(3)	(4)
	Central	Atlantico	Pacifico	Oriental
Primary level not completed by head	-0.46	0.35	0.92	-0.16
	(0.26)	(0.18)	(0.48)	(0.52)
Primary level completed by head	-0.10	0.55	0.36	-0.30
	(0.34)	(0.24)*	(0.60)	(0.64)
Secondary level not completed by head and more	-0.49	-0.27	0.89	-1.29
	(0.39)	(0.26)	(0.59)	(0.83)
Primary level not completed by spouse	0.60	0.23	-0.46	-0.62
	(0.28)*	(0.19)	(0.42)	(0.55)

Primary level completed by spouse	0.73	-0.02	-0.10	-1.31
	(0.34)*	(0.25)	(0.53)	(0.78)
Secondary level not completed by spouse and more	0.01	-0.42	-0.26	-1.46
	(0.39)	(0.26)	(0.54)	(0.80)
kids 0-6	0.05	0.17	-0.06	0.41
	(0.15)	(0.10)	(0.21)	(0.29)
adult	0.30	0.20	0.19	0.95
	(0.16)	(0.11)	(0.23)	(0.34)**
kids 12-17	0.10	0.01	-0.06	-0.02
	(0.16)	(0.11)	(0.23)	(0.29)
Number of female older than 18 in the household	0.33	-0.00	0.44	-1.41
	(0.24)	(0.18)	(0.34)	(0.50)**
people in HH	-0.09	-0.07	0.12	-0.12
	(0.11)	(0.08)	(0.15)	(0.20)
1 if house is rented or in mortgage	1.22	2.21	2.53	2.66
	(0.27)**	(0.22)**	(0.41)**	(0.56)**
1 if house is occupied or borrowed	2.73	2.59	2.08	5.09
	(0.31)**	(0.21)**	(0.72)**	(0.77)**
1 if house is in usufruct	-0.16	0.18	0.15	-0.98
	(0.32)	(0.22)	(0.43)	(1.18)
1 if house floor is of tiles	-0.73	-0.31	-1.90	-2.29
	(0.54)	(0.51)	(0.65)**	(0.83)**
1 if house floor is of wood	-0.18	0.10	-2.23	-7.00
	(0.46)	(1.52)	(0.51)**	(2.05)**
1 if house floor is of conglo	-1.19	-0.88	-1.82	-1.76
	(0.32)**	(0.19)**	(0.50)**	(0.59)**
1 if walls made of brick	-1.63	-3.77	-3.07	-5.08
	(0.49)**	(0.31)**	(0.77)**	(1.73)**
1 if walls made of Tapia, Abobe or	-4.60	-2.79	-4.08	-5.28

Bahareque				
	(0.75)**	(0.28)**	(0.84)**	(1.76)**
1 if walls made of wood	-1.48	-1.72	-1.13	-2.95
	(0.45)**	(0.29)**	(0.72)	(1.69)
1 if walls made of bad quality wood	-1.96	-1.92	-0.12	-0.68
	(0.65)**	(0.37)**	(0.83)	(2.54)
1=roof with cielo raso (best)	0.43	0.19	0.42	3.12
	(0.40)	(0.56)	(0.67)	(1.67)
1=roof sin cielo raso (nice)	0.44	1.41	0.98	3.08
	(0.32)	(0.19)**	(0.53)	(1.27)*
1 if house has gas by pipe	1.21	0.51	0.44	3.04
	(0.90)	(0.24)*	(0.67)	(0.84)**
1 if house has water by pipe	-0.56	0.04	-3.02	0.72
	(0.62)	(0.36)	(1.00)**	(6.62)
1 if house has sewage	1.41	-0.32	0.44	0.47
	(0.36)**	(0.23)	(0.58)	(0.92)
1 if house has rubbish collection	1.19	0.32	-3.03	6.46
	(0.65)	(0.35)	(0.93)**	(2.37)**
1 if house has phone	-1.14	-0.73	1.82	0.95
	(0.28)**	(0.57)	(0.45)**	(0.63)
1 if 2 nuclear families live in the household	0.94	0.75	-0.03	0.50
	(0.37)*	(0.33)*	(0.53)	(0.75)
1 if 3 or more nuclear families live in the household	0.22	-1.33	1.27	
	(0.68)	(1.14)	(0.78)	
water to prepare food is from pipe	-0.61	-0.74	1.12	0.35
	(0.64)	(0.37)*	(0.91)	(6.60)
water to prepare food is from well	-1.29	-0.68	1.02	-3.71
	(0.39)**	(0.25)**	(0.64)	(2.76)
1 if toilet is connected to either sewage or dwell	-0.40	-0.33	0.37	-2.15

	(0.35)	(0.18)	(0.47)	(0.80)**
1 if rubbish collected	0.59	1.03	4.93	-2.70
	(0.64)	(0.35)**	(0.91)**	(2.28)
1 if HH has animals	-1.57	-1.32	-2.53	-1.14
	(0.24)**	(0.16)**	(0.38)**	(0.51)*
Observations	1606	3160	1236	736

* significant at less than 5 % level
** significant at less than 1% level

Table 3

logit displaced/non displaced		
	(1)	(2)
	whole sample	small sample
edu_h2	-0.04	-0.06
	(0.09)	(0.10)
edu_h3	0.30	0.45
	(0.11)**	(0.12)**
edu_h4	0.33	0.38
	(0.12)**	(0.14)**
edu_s2	0.02	0.05
	(0.09)	(0.10)
edu_s3	0.09	0.26
	(0.12)	(0.13)*
edu_s4	0.15	0.21
	(0.12)	(0.14)
kids 0-6	0.19	0.20
	(0.03)**	(0.03)**
kids 7-11	-0.11	-0.13
	(0.04)**	(0.04)**
kids 12-17	-0.11	-0.10
	(0.04)**	(0.04)*

work_h	-0.56	-0.87
	(0.33)	(0.36)*
work_s	0.03	0.02
	(0.19)	(0.21)
farm_h	0.95	1.06
	(0.09)**	(0.10)**
farm_s	1.37	1.44
	(0.14)**	(0.17)**
familywork_h	0.41	0.74
	(0.39)	(0.43)
familywork_s	0.25	-0.01
	(0.26)	(0.29)
employer_h	-0.85	-0.54
	(0.41)*	(0.45)
employer_s	-0.72	-0.62
	(0.79)	(0.84)
self_employed_h	-0.02	0.25
	(0.32)	(0.35)
self_employed_s	0.32	0.17
	(0.21)	(0.23)
employed_h	-0.29	-0.20
	(0.32)	(0.35)
employed_s	-0.01	-0.03
	(0.22)	(0.25)
Observations	9540	6820

* significant at less than 5 % level

** significant at less than 1% level

Table 4

Displaced / migrants FA			
	(1)	(2)	(3)
	all variables	clean	clean
edu_h2	0.13	0.20	0.12
	(0.23)	(0.18)	(0.18)
edu_h3	0.42	0.49	0.43
	(0.29)	(0.23)*	(0.23)
edu_h4	-0.29	0.64	0.53
	(0.32)	(0.26)*	(0.26)*
edu_s2	-0.15	-0.08	-0.08
	(0.25)	(0.20)	(0.20)
edu_s3	-0.41	-0.06	-0.04
	(0.32)	(0.25)	(0.24)
edu_s4	-0.51	-0.10	-0.10
	(0.33)	(0.26)	(0.25)
kids 0-6	0.06	-0.01	
	(0.14)	(0.10)	
kids 7-11	-0.12	-0.33	
	(0.14)	(0.10)**	
kids 12-17	0.02	-0.18	
	(0.15)	(0.11)	
Number of female older than 18 in the household	0.34		
	(0.23)		
people in HH	0.04	0.20	
	(0.11)	(0.07)**	
1 if house is rented or in mortgage	1.36		
	(0.24)**		
1 if house is occupied or borrowed	3.84		

	(0.49)**
1 if house is in usufruct	-0.55
	(0.24)*
1 if house floor is of tiles	0.44
	(0.55)
1 if house floor is of wood	0.40
	(0.50)
1 if house floor is of conglo	-1.11
	(0.24)**
1 if walls made of brick	-2.65
	(0.53)**
1 if walls made of Tapia, Abobe or Bahareque	-3.02
	(0.52)**
1 if walls made of wood	-1.70
	(0.52)**
1 if walls made of bad quality wood	-1.28
	(0.63)*
roof with cielo raso (best)	0.11
	(0.41)
roof sin cielo raso (nice)	0.80
	(0.28)**
1 if house has gas by pipe	0.44
	(0.33)
1 if house has water by pipe	-0.34
	(0.57)
1 if house has sewage system	0.37
	(0.27)
1 if rubbish collection	0.82
	(0.42)
phone	-0.03

	(0.32)		
1 if 2 nuclear families live in the household	0.50		
	(0.35)		
1 if 3 or more nuclear families live in the household	-0.05		
	(0.61)		
water to prepare food is from pipe	0.01		
	(0.58)		
water to prepare food is from well	-0.12		
	(0.31)		
1 if toilet is connected to either sewage or dwell	-0.19		
	(0.23)		
rubish collected	0.72		
	(0.42)		
1 if HH has animals	-1.20		
	(0.19)**		
work_h		-1.28	-1.54
		(0.53)*	(0.52)**
work_s		-0.03	0.01
		(0.34)	(0.33)
farm_h		1.39	1.37
		(0.17)**	(0.17)**
farm_s		1.32	1.37
		(0.43)**	(0.43)**
familywork_h		1.32	1.48
		(0.81)	(0.80)
familywork_s		0.86	0.80
		(0.66)	(0.65)
employer_h		-0.17	0.29

	(0.70)	(0.68)
employer_s	-0.02	-0.15
	(1.44)	(1.37)
self_employed_h	1.16	1.32
	(0.52)*	(0.51)**
self_employed_s	1.10	0.95
	(0.43)*	(0.42)*
employed_h	0.54	0.68
	(0.52)	(0.51)
employed_s	0.74	0.64
	(0.44)	(0.43)

Observations	1364	1370	1370

* significant at less than 5 % level
** significant at less than 1% level

Appendix E: Displaced/FA households who migrated or disappeared.

LOGIT

	(1)	(2)	(3)	(4)
	all variables	Clean	clean	clean
edu_h2	0.16	0.12	0.06	0.08
	(0.20)	(0.15)	(0.15)	(0.14)
edu_h3	0.47	0.56	0.51	0.44
	(0.26)	(0.20)**	(0.20)**	(0.18)*
edu_h4	-0.08	0.60	0.50	0.21
	(0.28)	(0.22)**	(0.22)*	(0.20)
edu_s2	-0.20	0.02	-0.00	-0.01
	(0.21)	(0.16)	(0.16)	(0.15)
edu_s3	-0.42	0.05	0.07	0.06
	(0.27)	(0.20)	(0.20)	(0.19)
edu_s4	-0.47	0.10	0.09	0.05
	(0.29)	(0.22)	(0.21)	(0.20)

kids 0-6	0.06	-0.01
	(0.12)	(0.08)
kids 7-11	-0.06	-0.24
	(0.12)	(0.08)**
kids 12-17	-0.05	-0.19
	(0.13)	(0.09)*
Number of female older than 18 in the household	0.33	
	(0.19)	
people in HH	0.04	0.19
	(0.09)	(0.05)**
1 if house is rented or in mortgage	1.22	
	(0.21)**	
1 if house is occupied or borrowed	3.46	
	(0.35)**	
1 if house is in usufruct	-0.60	
	(0.21)**	
1 if house floor is of tiles	0.07	
	(0.45)	
1 if house floor is of wood	-0.39	
	(0.35)	
1 if house floor is of conglo	-1.02	
	(0.21)**	
1 if walls made of brick	-2.14	
	(0.39)**	
1 if walls made of Tapia, Abobe or Bahareque	-2.44	
	(0.38)**	
1 if walls made of wood	-1.40	
	(0.37)**	
1 if walls made of bad quality wood	-0.87	

	(0.47)
roof with cielo raso (best)	0.28
	(0.36)
roof sin cielo raso (nice)	0.94
	(0.24)**
1 if house has gas by pipe	0.36
	(0.30)
1 if house has water by pipe	-0.25
	(0.51)
1 if house has sewage system	0.37
	(0.24)
1 if rubbish collection	0.80
	(0.38)*
phone	-0.03
	(0.29)
1 if 2 nuclear families live in the household	0.65
	(0.32)*
1 if 3 or more nuclear families live in the household	-0.20
	(0.52)
water to prepare food is from pipe	0.14
	(0.52)
water to prepare food is from well	0.17
	(0.25)
1 if toilet is connected to either sewage or dwell	-0.28
	(0.20)
rubish collected	0.78
	(0.38)*
1 if HH has animals	-1.49

	(0.17)**			
work_h		-1.10	-1.28	
		(0.49)*	(0.49)**	
work_s		-0.05	-0.04	
		(0.29)	(0.29)	
farm_h		1.10	1.09	
		(0.15)**	(0.15)**	
farm_s		1.20	1.23	
		(0.33)**	(0.33)**	
familywork_h		0.40	0.49	
		(0.61)	(0.60)	
familywork_s		0.56	0.52	
		(0.50)	(0.49)	
employer_h		-0.86	-0.61	
		(0.59)	(0.58)	
employer_s		0.40	0.44	
		(1.35)	(1.30)	
self_employed_h		0.85	0.94	
		(0.48)	(0.48)*	
self_employed_s		0.84	0.75	
		(0.36)*	(0.35)*	
employed_h		0.41	0.46	
		(0.48)	(0.48)	
employed_s		0.68	0.61	
		(0.38)	(0.37)	
Observations	1548	1555	1555	1555

* significant at less than 5 % level
** significant at less than 1% level

Appendix F : Using economic experiments to measure social capital and attitudes towards risk within the context of the *Familias en Acción* evaluation survey

By Abigail Barr and Juan-Camilo Cardenas.

1.   Introduction

In late 2003 the Familias en Accion (FA) evaluation team piloted a behavioural experiment designed to generate measures of attitudes towards risk and social capital that could be analysed in conjunction with the survey data. Here, we report the findings from that pilot study.

In behavioural experiments human subjects are invited to play games under controlled conditions. The games are designed to simulate decision-making environments that people face in everyday life. The games always involve real incentives, i.e., they are played for money, and the decisions that each subject makes within the game, combined with the role of a die, toss of a coin, or the decisions made by others in the game determine how much money they take away at the end. As long as the amounts of money at stake are sufficiently high, we can expect the subjects to take their decisions seriously and reveal their preferences and underlying motivations through the way that they play.

Behavioural experiments are most often conducted in university laboratories with students as subjects. This affords the experimenters a great deal of control, but has led many to question the relevance of experiments to our understanding of how people in general behave outside of campus. Recently, a growing number of researchers have started running behavioural experiments in the field. These experiments have involved farmers, fishermen, urban workers, truck drivers, school children, hunter-gatherers, and many other subject types. They have been conducted on doorsteps, in sitting rooms, in village meeting places, under the shade of large trees, in worker common rooms, on beaches, in truckers' cafes, in club houses, and in school classrooms. And they have addressed many topics including peoples' willingness to cooperate, whether cooperation

is crowded out by formal interventions designed to move economic systems closer to social optima, whether and how people in isolated communities encourage cooperation through social sanctioning, whether norms of sharing and reciprocity are similar or distinct across different societies and different communities within a given society, and whether levels of trust vary accordingly.

Our specific objective in this pilot project was different. Our aim was to try and run a behavioural experiment in parallel with a large sample survey in order to generate measures of particular behavioural tendencies that could be combined with the survey data at the analysis stage. The primary methodological challenge in this endeavour related to scaling-up, while working with research subjects of variable and often very low levels of education. Experimentalists have been successfully working with less educated subjects for some time; they give instructions verbally rather than in written form, keep games simple or intuitive and more salient to the subjects' real lives, and sometimes lightly frame the games to make the decision-making problems appear more concrete. However, in general, they have kept their endeavours sufficiently small-scale that they themselves can continue to be present in or exert considerable on-going control over all sessions.

Ideally, within the context of the FA evaluation survey, experiments would be conducted in all 122 municipalities. This scale of operation is too much for a single experimenter to handle. Inevitably, the experimenter has to delegate the running of the experiments to professional enumerators and relinquish a significant degree of control as a result. Can this be done without rendering the data resulting from the experiments unusable? Previous studies including Binswanger ($$$) and Barr and Packard (2002, 2004) suggest that it can when the experiment is designed to elicit data on attitudes towards risk. The experimental data may become noisier as a result, but in each of these studies it still yielded informative results in combined analysis with survey data. However, risk attitude experiments involve presenting individual subjects with exogenously defined choice sets and, as a result, can be conducted with one subject at a time. To elicit experimental data relating to social capital, i.e., how trusting, reciprocating, or cooperative, they are, we

need to either bring subjects together so that they can really interact or cause them to believe that they are interacting even when those with whom they are interacting are not present. A few experimentalists have taken the latter approach, while conducting trust experiments. Ruffle (?) working in Kibbutz in Israel, Burns (?) working with school children in South Africa, and Cardenas (?) working with students in Bogota, each used mobile phones to transmit information in trust games and thereby concretized playing partners. In contrast, Fehr et al. (2003), working with adult respondents to a nationally representative survey in Germany, took the former approach. In their study, professional enumerators simply asserted the existence of the playing partners to the respondents during one-on-one interviews. Fehr et al.'s data suggests that they were successful. However, many field experimentalists believe that this approach would not work in most contexts, especially in countries where there is less trust in formal institutions. Ruffle, Burns, and Cardenas' approach also appeared to work but is restricted to places where mobile phones are effective and familiar to the subjects involved. At the piloting stage, we did not think it appropriate to assume that mobile phones could be used effectively for interactive experimentation in the Colombian municipalities in which the FA evaluation is being conducted. Thus, when eliciting experimentally derived social capital measures we restricted ourselves to only one option, to bring people together to play the interactive games, and see if our professional enumerators could cope with the added problems of control that would inevitably result.

During the pilot (in the last quarter of 2003) we trained 2 teams of professional enumerators to conduct an experiment involving a single game designed to elicit measures relating to both attitudes towards risk and social capital. Each team conducted this experiment in six municipalities. One experimental session involving between 26 and 47 subjects was run in a central location in each municipality. This exercise yielded experimental data relating to 12 out of the 122 municipalities covered by the FA evaluation survey. Six of these municipalities were receiving the FA transfers and related interventions and six were control municipalities.

Were we to return to run the experiment in all 122 municipalities, i.e., to move from pilot to full study, we would aim to conduct the experiment in exactly the same way in all municipalities. However, during the pilot we conducted three slightly different versions, each version in four municipalities (two FA recipient municipalities and two control municipalities). We did this for two reasons. First, it allowed us to look at which treatment might work best when scaled up to all 122 municipalities. And second, it provided us with an opportunity to compare patterns in the data with our priors about how behaviour might vary across treatments and thereby assess whether delegating to professional enumerators in order to scale up had compromised the quality of the resulting data.

The results of this exercise suggest that the experiment provided potentially useful data on both the subject's attitudes towards risk and their social capital, or more specifically their willingness and ability to mobilize into groups to address a collective problem.

The report is organized into six sections. Following this introduction (section 1), section 2 provides more detail on the experimental design and lists our priors relating to how behaviour might vary across treatments. Then, in section 3 we present a graphical and first statistical analysis of the experimental data. In section 4, we present a relational analysis of group formation which endeavours to explain the patterns in the group formation data with reference to the strong ties (family and friends) and weak ties (acquaintances) between the experimental subjects that existed prior to the running of the experiment. In section 5, we conduct a series of regression analyses on the game data, introducing some variables derived from the SNA and some from the survey in order to explore the effects of the FA interventions and of the ongoing violence experienced in many municipalities in Colombia. In section 6, we draw out the lessons from this pilot exercise and make our recommendations relating to future experimental work within the context of the FA evaluation survey.

2.   Experimental Design

The experiment involved a game with two stages. In the first stage each subject met with an enumerator one-on-one. During this meeting, they had to choose either a relatively low sure payoff or one of five gambles that varied in terms of both riskiness and expected payoff; those who were prepared to accept more risk could choose a gamble with a higher payoff. To overcome potential problems relating to illiteracy, the choice set was presented to each subject verbally and pictorially. They were shown the decision card in Figure 1. Here, each gamble is depicted as a square with a blue half and a yellow half. In each half there is a pile of money, one (the high payoff) is on the blue side of the square and the other (the low payoff) is on the yellow side. The subject had to choose between square A (the certain payoff), B, C, D, E, and F, having already been told that once they had chosen they would play which-hand-is-it-in with the enumerator using a yellow and blue counter. If, after the enumerator had shuffled the counters in his hands behind his back, the subject picked the hand with the blue counter in they would get the payoff on the blue side of the square, the high payoff. If they found the yellow counter they would get the payoff on the yellow side of the square, the low payoff. Table 1 shows the high and low payoffs, the expected payoffs, the risk aversion classes, and the partial relative risk aversion coefficients associated with each gamble. All payoffs are presented in Colombian Pesos.

Table 1. Gamble choice set

Gamble	Blue	Yellow	EV	RA class	RA coeff.
A	3000	3000	3000	Extreme	Infinity to 7.51
B	5700	2700	4200	Severe	7.51 to 1.74
C	7200	2400	4800	Intermediate	1.74 to 0.81
D	9000	1800	5400	Moderate	0.81 to 0.32
E	11000	1000	6000	Slight-neutral	0.32 to 0.00
F	12000	0	6000	Neutral-negative	0 to –ve infinity

RA coefficient ranges not quite correct for D, E, and F - need recalculating

This gamble choice exercise allows us to sort people into risk attitude categories and, if we are prepared to accept the underlying assumptions, into ranges of relative risk aversion coefficients.

At the start of the second stage the subjects were told that they were going to face the same choice set once again, but before doing so they could, if they wished, form sharing groups. If they joined a sharing group, the payoff from their second individual choice would be added to a shared fund belonging to their group and distributed equally to all the members of the group. The sharing within the groups reduces the impact of the riskiness of each individual group members' decision, i.e., it provides a form of insurance. Thus, group members can focus more on the expected return associated with each gamble and less on the associated risk.

Figure 1. Decision card for the gamble choice
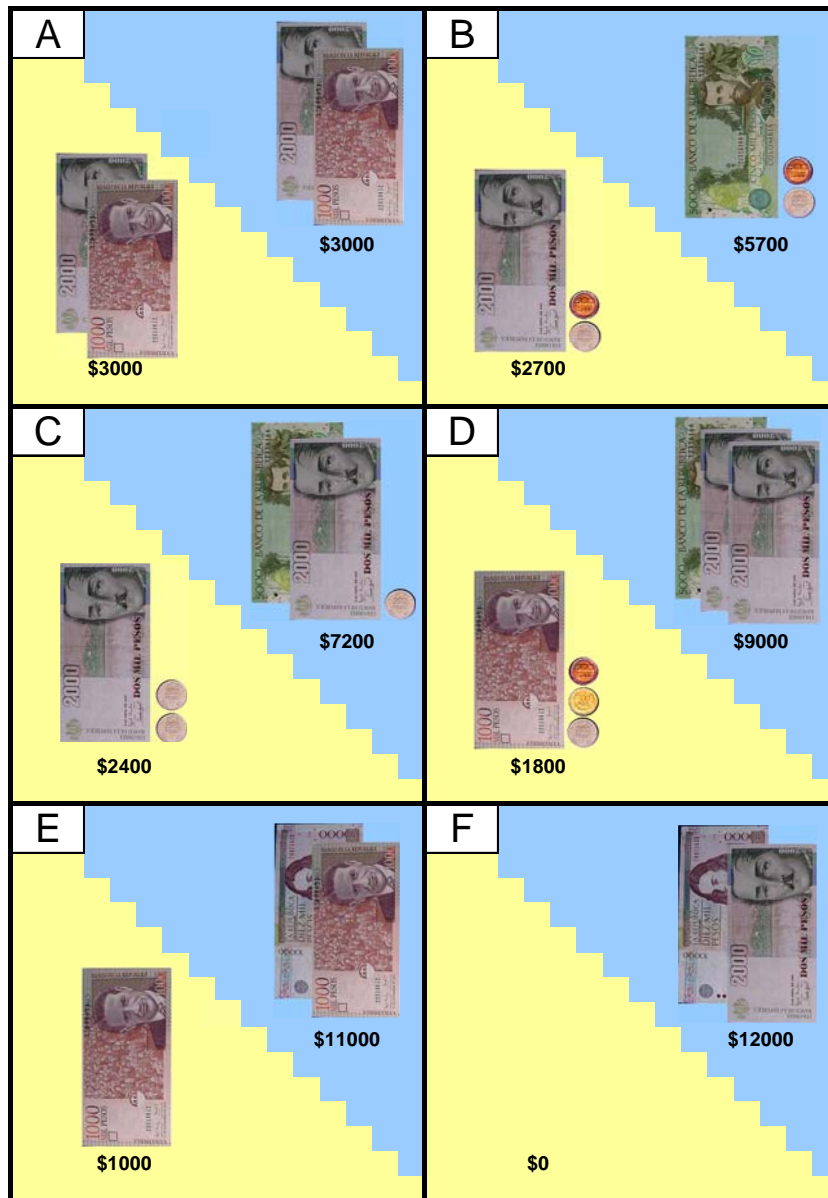
This group forming task yields a measure of social capital or, more specifically, the extent to which the subjects present in each experimental session, in our case, the sample of survey of respondents from each municipality, can mobilize to solve a collective problem and improve their individual welfare as a result. During analysis we look at the amount of group formation that takes place in each municipality and the extent to which each individual subject engages in group formation. The subsequent gamble choice game then enables us to look at the extent to which the subjects, having joined groups, shift

away from relatively safe gambles with low expected returns towards more risky (to the individual) gambles that yield higher expected returns. Put another way, the second measure reveals how much faith the subjects have in their groups as insurance devices.

Within the context of this game, one can increase the reliance of the subjects on the social capital that exists between them, and in particular on the degree to which they trust one another to stick to an agreement, by giving the subjects the chance to opt out of their group in secret once the outcome of their individual gamble is known. An untrustworthy subject will opt out of their group if they reap a high return from their chosen gamble, but will stay in the group if they reap a low return. However, if everyone does this, the group becomes of no value as an insurance device. If subjects think that there are many untrustworthy subjects in their experimental session, or have no knowledge either way because they are a stranger and tend to be untrusting of other strangers, they will have no faith in groups as insurance mechanisms and will not join. Below, we will refer to this version of the game as Treatment 3. We will refer to the version of the game in which there is no chance of opting out as Treatment 2. (The first stage, in which everyone plays as an individual is Treatment 1.)

Further, one can cause the subjects to rely on another aspect of their ability to mobilize, namely their ability to enforce a contract, by allowing subjects to opt out of sharing groups only if they are willing to do so in public, i.e., in front of all those present in the experimental session. If, by threat of social sanction or some form of punishment (in one session in Colombia the subjects agreed that if anyone opted out they would be thrown in the water tank outside the building in which the experimental session was being held), the subjects can ensure that no one opts out of groups, group formation in this version of the game is as functional as group formation under Treatment 2. Below, we refer to this last version of the game as Treatment 4.

Group formation under Treatment 2 provides the best insurance because the group formation contracts are perfectly enforced by the experimenter. However, it will only be viewed in this way by the subjects if they trust the experimenters. Treatment 4 provides

the subjects greatest collective control and requires them to trust the experimenter far less. If this collective control is important to them, they will be more inclined to form groups under Treatment 4 than under Treatment 2.

Despite the apparent complexity of the game, when conducted in Zimbabwe with subjects of similar or lower educational achievement it yielded results that were either in line with theory or departed from theory in explicable ways. We believe that this is because the Zimbabwean subjects saw a similarity between the game and situations that they face in their everyday lives. And, given the silmilarity in livelihoods between the Zimbabwean and Colombian subjects, we considered it reasonable to assume that this would also be true in Colombia.

In every municipality in Colombia the subjects played under Treatment 1, i.e., as individuals, first. Then, in the second stage they faced one of the three different Treatments, described and labelled 2, 3, and 4 above, in the second stage. Table 2 shows how the total sample of 423 Colombian subjects was divided among the three Treatment sequences.

Table 2. Division of sample across Treatment sequences

| Treatment	Description of second stage	Municipalities	Subjects
T1 then T2	Subjects told that they could form sharing groups if they wished before making next gamble choice.	4	136
T1 then T3	Like T2 but subjects also told that once having seen the outcome of their gamble they would be able to opt out of their groups in secret if they wished.	4	127
T1 then T4	Like T3 but subjects must declare their decision to opt out of their group in public.	4	160
Total number of players involved in Round 2		12	423

In each municipality a pre-selected random sample of between 30 and 40 individuals were invited to the experimental session to be held in a central and easily accessible location. The invitations were issued by the enumerators when they went to survey the subjects in their homes as part of the second round of the FA evaluation. Each session started in the morning. After introductions, the first stage of the game was played. Then

the second stage was explained. The lunch break (with lunch provided) gave the subjects a chance to form groups. The groups were registered after lunch and then the subjects went through a second round of one-on-one meetings with the enumerators, during which they made their second gamble choice, played which-hand-is-it-in, stated whether they would opt out (Treatments 3 and 4 only). Then in Treatment 4, all the subjects were brought back together and if people wanted to opt out they hand to announce their decision to all present. Finally the subjects were paid and thanked.

3.   Preliminary Results: Graphical and first regression analyses

In Figure 2 we present a histogram of the gamble choices made by the Colombian experimental subjects alongside those made by Zimbabwean and Indian subjects from similar livelihood contexts. The Colombian distribution is distinct from both of the others, whereas the Zimbabwean and Indian distributions are similar. The apparent uniformity of the Colombian distribution compared to the other two could be cause for concern as it may suggest that the Colombian subjects are picking gambles at random. We do not believe that this is the case. In the pre testing of the gamble choice instrument in Bogota we observed a similar distribution and found that it was those subjects who had been displaced by violence who 'inhabited' the upper end of the distribution. During discussions, it became clear that they were not choosing gambles at random. Rather, their attitudes towards risk were distinct from those of other experimental subjects. They believed that one had to risk everything in order to gain anything. Half hearted decisions were pointless. Whether this was because of their experiences or because only those with such preferences end up in Bogota having had such experiences remains unclear. However, their ability to explain their decisions suggests that the gamble choice is picking up a real behavioural variation.

Figure 2. Choice of Gambles in the first stage
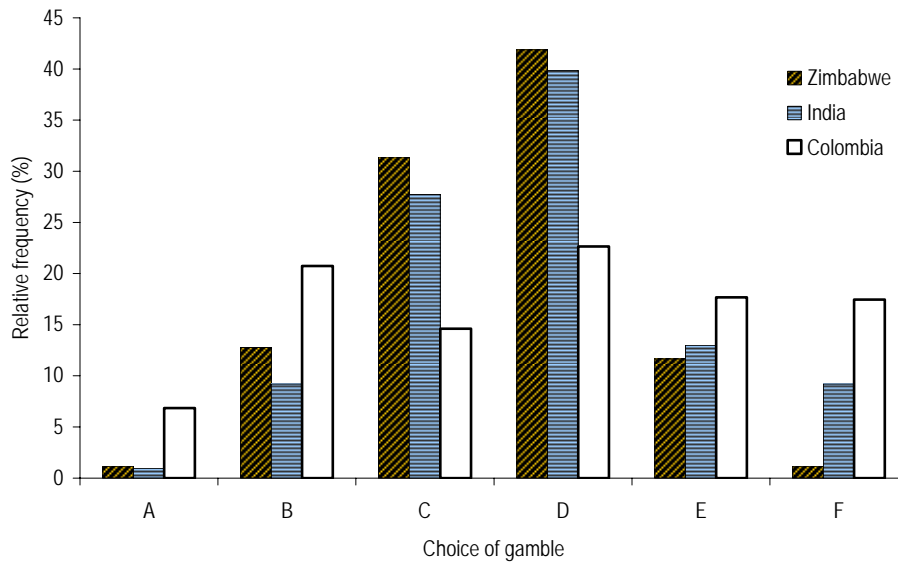
Next, we turn our attention towards group formation behaviour. Recall that we expect to see less group formation under Treatment 3 than under either Treatment 2 or 4, and either more or less group formation under Treatment 4 than under Treatment 2, depending on whether they prefer the group formation contract enforcement to be entrusted to themselves or the experimenter.

In Figure 5 we treat every subject as an observation and then plot a histogram of the sizes of groups to which they chose to belong. We divide the sample according to treatment: the white bars show the relative frequencies of the sizes of group to which those subjects under Treatment 2 belong; the dark bars show the same for Treatment 3; and the stripy bars show the same for Treatment 4. The most striking feature of this graph is the two tall bars on the far right: under Treatment 4, the subjects in each of two municipalities formed single groups. This accords with a strong preference for self-enforcement of group formation contracts. The bars on the far left of the graph tell a similar story. They indicate the proportion of subjects under each treatment who chose not to join groups in the second stage. This proportion is similar under Treatments 2 and 3 (12 to 14 percent), while being less than one percent under Treatment 4.

Figure 3. Group size by treatment
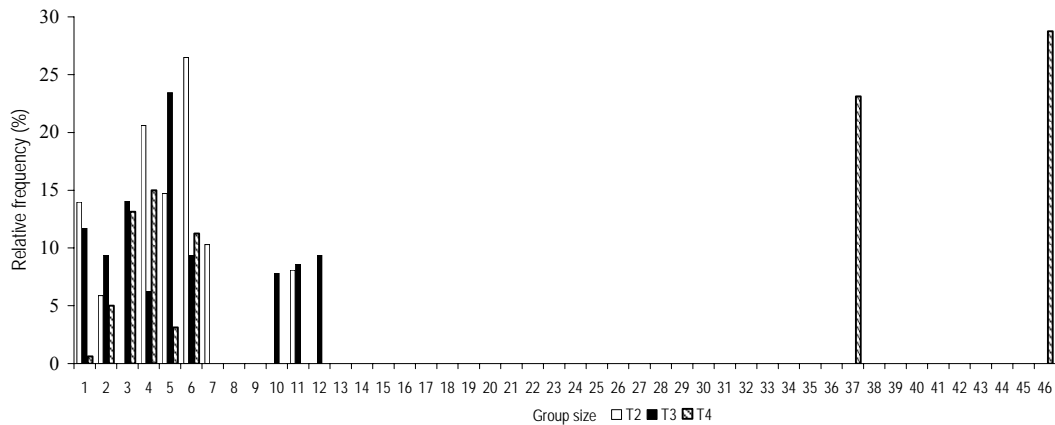
The regressions presented in Table 3 look in greater depth at group formation behaviour. The first regression is a probit in which, for each subject, the value of the dependent variable is one if they joined a group in the second stage and zero if they chose to play alone. The second regression is a Tobit in which, for each subject, the dependent variable is the size of the group to which the subject belongs expressed as a proportion of the total number of subjects present at the session. This proportion is bound by zero and one and these bounds are accounted for in the estimation procedure. The independent variables in both regressions are the same. They include a dummy indicating whether the subject received the high return to his or her gamble in the first stage, the number of subjects in the session, the upper bound of the coefficient of partial relative risk aversion corresponding to the subjects' gamble choices in the first stage, and two dummy variables, one indicating Treatment 3 and the other Treatment 4 (Treatment 2 is the basis for comparison). The positive significant coefficient on the risk aversion measure in the Probit indicates that, in accordance with our priors, more risk averse people are more likely to join groups. The positive and significant coefficient on the Treatment 4 dummy variable in both the Probit and the Tobit, confirms the strong preference for self-enforcement of group formation contracts over trusting the experimenters with the task.

Table 3: Regression analysis of group formation

	1 Group membership	2 Group size
	Probit	Tobit
Got high payoff to gamble in first stage	-0.4113	0.0072
	[0.2632]	[0.0347]
Number of subjects in session	-0.0119	0.0055
	[0.0353]	[0.0023]*
Treatment 3 (dummy)	0.0576	0.0046
	[0.5094]	[0.0422]
Treatment 4 (dummy)	1.5696	0.4936
	[0.5950]**	[0.0424]**
Risk aversion displayed in first stage	0.1677	-0.0059
	[0.0634]**	[0.0050]
Constant	1.4598	-0.0371
	[1.2986]	[0.0893]
Observations	424	424

Robust standard errors in brackets
significant at 10% level; * significant at 5% level; ** significant at 1% level

Finally in this section, we look at how subjects adjusted their choice of gamble between the first and second stage of the game under each treatment. Recall that under Treatment 2 the implicit contract relating to group formation is exogenously enforced, whereas under Treatment 3, it is not enforced at all and the groups are held together by trust and trustworthiness alone, and under Treatment 4 they are held together by the ability of the subjects to arrange their own enforcement mechanism. We would expect subjects to be least inclined to take riskier and higher payoff gambles as they move from Treatment 1 to 3, and to take riskier decisions as they move from Treatment 1 to 2 or Treatment 1 to 4 only to the extent that they trust the experimenter or themselves respectively to enforce the group formation contracts.

Figure 4. Gamble choices in first and second stage under each treatment

Treatment 2 (T2)

Choice in round 2

Choice in round 1	A	B	C	D	E	F	Subjects
A	10	30	20	10	10	20	10
B	15	31	8	23	4	19	26
C	0	32	8	24	16	20	25
D	7	27	13	23	10	20	30
E	13	4	4	29	25	25	24
F	0	19	5	29	19	29	21

Treatment 3 (T3)

Choice in round 2

Choice in round 1	A	B	C	D	E	F	Subjects
A	27	18	18	18	18	0	11
B	4	17	17	38	13	13	24
C	0	11	33	33	17	6	18
D	7	25	14	32	14	7	28
E	21	25	8	13	25	8	24
F	14	5	18	27	9	27	22

Treatment 4 (T4)

Choice in round 2

Choice in round 1	A	B	C	D	E	F	Subjects
A	25	0	13	38	13	13	8
B	5	26	13	24	5	26	38
C	16	26	21	16	11	11	19
D	14	24	14	27	5	16	37
E	8	8	19	8	27	31	26
F	0	23	10	23	19	26	31

Figure 4 contains decision transition matrices relating to the subjects under each treatment sequence. The numbers in the cells of the matrices are the percentages of those subjects choosing gamble i (the row identifier) in the first stage who then chose gamble j (the column identifier) in the second stage. We have shaded the cells of the matrix darker the higher the percentage they contain. Thus, a dark diagonal would suggest that most subjects made the same choice in both stages. A dark column would suggest that subjects converged on a particular choice in the second stage regardless of their choice in the first stage. A dark top right-hand corner would suggest a shift towards riskier, higher return decisions in the second stage. And a dark bottom left-hand corner would suggest a shift towards less risky, lower return decisions in the second stage.

The first of the three matrices suggests that there was a move towards riskier, higher return gambles under Treatment 2, while the second and third matrices suggest no such movement under Treatments 3 and 4.

Figure 5. Gamble choices under Treatment 2 by groupers and loners

Treatment 2 (T2) groupers
Choice in round 2

Choice in round 1	A	B	C	D	E	F	Subjects
A	10	30	20	10	10	20	10
B	15	31	8	23	4	19	26
C	0	32	9	18	18	23	22
D	5	29	10	24	14	19	21
E	16	0	5	32	21	26	19
F	0	21	0	32	21	26	19

Treatment 2 (T2) loners
Choice in round 2

Choice in round 1	A	B	C	D	E	F	Subjects
A	0	0	0	0	0	0	0
B	0	0	0	0	0	0	0
C	0	33	0	67	0	0	3
D	11	22	22	22	0	22	9
E	0	20	0	20	40	20	5
F	0	0	50	0	0	50	2

In Figure 4, we decompose the Treatment 2 matrix into one for those who joined groups and one for those who chose to carry on playing alone. Note first that the top of the loners' matrix is empty. This indicates that, in accordance with our regression analysis of group formation, those with greater aversion to risk were more inclined to join groups. Somewhat disappointing though is the matrix for groupers. We would have expected an even greater concentration of observations in the top right-hand corner of this matrix, but there is very little evidence of this.

Table 4 explores the gamble choices in the second stage further. We present an Ordered Probit regression which takes the subjects' gamble choices in the second stage as the dependent variable. Thus, if an explanatory variable bears a significant positive

coefficient it indicates that an increase in that variable is associated with an increase in the riskiness of the chosen gamble. The independent variables are a set of dummies capturing the subject's gamble choices in the first stage, a dummy capturing the outcome of that first gamble (included to control for subjects perceiving the outcomes of the two gambles as non-independent), and three interaction terms between group size and the three Treatment dummies.

The outcome of the first gamble is significant, while the dummies relating to the gamble choice in the first stage are not. *Ceteris paribus,* members of larger groups under Treatments 3 and 4 choose less risky gambles, while those under Treatment 2 are indistinguishable from those who did not join groups under any treatment. This suggests that the subjects retained some doubts about the functionality of the groups they formed under Treatment 4, despite their revealed preference for self-enforcement of the group formation contracts.

Table 4. Tobit analysis of gamble choices in the second stage

	Gamble chosen in second round Ordered Probit
Chose gamble B in first stage	0.0547
	[0.2554]
Chose gamble C in first stage	0.0037
	[0.2523]
Chose gamble D in first stage	-0.0627
	[0.2555]
Chose gamble E in first stage	0.2062
	[0.2653]
Chose gamble F in first stage	0.3565
	[0.2555]
Got high payoff to gamble in first stage	0.4272
	[0.1081]**
Treatment 2 (dummy) x group size	-0.0213
	[0.0225]
Treatment 3 (dummy) x group size	-0.0404
	[0.0175]*
Treatment 4 (dummy) x group size	-0.0077
	[0.0037]*
Observations	424

Robust standard errors in brackets
significant at 10% level; * significant at 5% level; ** significant at 1% level

4.   Results: Relational analysis of group formation

In this section we investigate the extent to which the group formation observed within the context of the experiments is driven by the pre-existing patterns of relations between the subjects in each municipality. We focus on familial relations, friendships and acquaintances.

In relational analyses, instead of subjects, we treat every possible dyad or pair of subjects in each experimental session as an observation. Thus, from a municipality-specific experimental session involving n people we get n*(n-1) observations. Data on the relationships between these pairs of subjects can then be presented in matrix form. So, our group formation data can be presented as a matrix in which the ijth element equals one if agent i and j were in the same group and zero if they were not. (The diagonal elements are left blank as agent i is in the same group as him or herself, trivially.) Similarly, data on who among the subjects is related to, a friend of, or an acquaintance of who can be presented in three separate matrices in which the ijth elements equal one if agents i and j are relatives, friends, or acquaintances respectively and zero if they are not.

The proportion or percentage of cells in one of these matrices that contains a one as opposed to a zero is a measure of the prevalence of the corresponding type of relationship within the set of subjects under analysis. In social network analysis, this proportion or percentage is referred to as a density. Table 5 presents the densities relating to group formation and familial, friendship and acquaintanceship ties for each of the municipality-specific experimental sessions. Here, the single groups formed during the experiments in San Diego and Tipacoque show up as 100% densities in the 'groups in experiments' column; every possible pair of subjects, i and j, in these sessions was joined by the relationship 'i chose to be in the same group as j' Excluding these two, the densities in group formation vary between 6.62 and 20.19 across municipalities. The remaining columns of the table contain the densities associated with familial, friendship, and

acquaintanceship ties. Such pre-existing ties appear no more prevalent in the San Diego and Tipacoque experimental sessions than in the sessions held in other municipalities.

Table 5: Relational densities by municipality-specific experimental session

Municipality	Number of dyads	Groups in experiment	Family ties	Friendship ties	Acquaintancy ties
SAN DIEGO	1332	100.00%	1.12%	7.06%	20.80%
TIPACOQUE	2070	100.00%	0.48%	4.59%	7.78%
CHIRIGUANA	1892	20.19%	0.21%	6.13%	20.62%
SAN LUIS DE GACENO	870	15.86%	1.38%	10.00%	18.28%
LA PAZ	650	13.85%	0.61%	6.31%	14.62%
CURUMANI	1056	12.69%	0.76%	8.05%	8.71%
BELEN	1260	9.37%	0.71%	6.27%	10.64%
CERINZA	1056	8.90%	2.27%	6.16%	13.45%
SAN JOSE DE MIRANDA	2162	8.51%	1.57%	3.47%	18.09%
BARRANCAS	930	7.74%	0.65%	8.60%	23.76%
TAMALAMEQUE	1892	7.29%	0.58%	6.08%	6.92%
PAZ DE RIO	272	6.62%	1.11%	11.76%	12.50%

Next, we conduct a series of regression analyses, one for each municipality, in which the relationship 'i chose to be in the same group as j' is our dependent variable and 'i is a relative of friend of j' and 'i is an acquaintance of j' are our two independent variables. We collapse familial and friendship relationships into a single matrix because, as shown by the densities in Table 5, there very few of the former. The resulting matrix, thus, contains what are commonly referred to in SNA as 'strong' ties.' Correspondingly, the acquaintanceship matrix contains 'weak ties'. As we are explicitly modelling the impact of prior relations between subjects on the 'new' relationships they formed in the experiment, it is inappropriate to assume that our observations are independent. There is a clear dependence between all those dyads involving any one particular agent, but this could be controlled for using fixed effects. The problem is that theories of social networks suggest that such dependencies exist between not only dyads but also triads and even clusters. We overcome this problem by using a particular type of bootstrapping technique known as a quadratic assignment process. We use the programme UCINET to perform these estimations (Borgatti, S.P., Everett, M.G. and Freeman, L.C. 2002). The UCINET procedure has three steps. In the first step, it performs a standard OLS multiple regression across corresponding cells of the dependent and independent matrices. In the

second step, it randomly permutes the rows and columns (together) of the dependent matrix and recomputes the regression, storing resultant values of r-square and all coefficients. In our analysis, step two is repeated 10,000 times in order to estimate standard errors for the statistics of interest.[25] In the third step UCINET counts the proportion of random permutations that yielded a coefficient as extreme as the one computed in step 1 and, thereby provides a significance level for the estimated coefficients.

Table 6: Effect of pre-existing strong and weak ties on group formation (Dependent variable = i chose to be in same group as j)

	LA PAZ	SAN JOSE DE MIRANDA	CURUMANI	SAN LUIS DE GACENO	CHIRIGUANA	PAZ DE RIO	BARRANCAS	BELEN	CERINZA	TAMALAMEQUE	SAN DIEGO	TIPACOQUE
	6	9	5	10	4	7	1	2	3	11	8	12
Exp. treatment	2	2	2	2	3	3	3	3	4	4	4	4
FA intervention		✓		✓			✓	✓			✓	✓
Standardized coefficients from QAP regressions												
Strong ties	0.264	0.178	0.330	0.316	0.197	0.358	0.259	0.321	0.269	0.380	-	-
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	-	-
Weak ties	0.040	0.121	0.176	0.149	0.112	0.130	0.102	0.140	0.036	0.207	-	-
	(0.169)	(0.001)	(0.000)	(0.000)	(0.000)	(0.050)	(0.005)	(0.000)	(0.125)	(0.000)	-	-
Obs (dyads)	650	2162	1056	870	1892	272	930	1260	1056	1892	1332	2070
R squared	0.069	0.042	0.129	0.106	0.046	0.132	0.068	0.114	0.071	0.176	0.000	0.000

P-values in parentheses

The results of the QAP regressions are presented in Table 6. Note first that there are no results for San Diego and Tipacoque; as all of the subjects in these two municipalities formed one group, the dependent variable takes the value one for every dyad and the pattern of pre-existing strong and weak ties has no predictive power. Focusing on the remaining ten regressions, a pre-existing strong tie between two subjects significantly increased the likelihood of them choosing to belong to the same risk sharing group. This result holds across all municipalities. In contrast, the existence of a weak tie between two subjects increased the likelihood of them being in the same risk sharing group in only eight out of the ten municipalities for which regressions could be run. Further, even where weak ties are a significant predictor, the coefficient is considerably lower than the

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[25] The estimated standard errors were not sensitive to either doubling or halving this number of permutations, suggesting that it is sufficient to yield stable estimates.

coefficient on the strong ties. Relatives and friends are more likely to group together than acquaintances. While the often significant coefficients on strong and weak ties suggest that pre-existing relations had some effect on group formation in the experiment, the low R squareds on all of the regressions suggest that they do not tell the full story.

5.   Results: Combined analysis of the experimental and survey data

In this section we introduce a number of variables derived from the FA evaluation survey into the regressions. Of primary interest to us are the effects of the FA intervention and the ongoing violence on social capital within the municipalities. In our proposal we predicted that direct experience of the ongoing violence is likely to increase distrust between people and thereby reduce their willingness or ability to mobilize into groups. The FA intervention could either crowd out social capital, as individuals become less dependent on each other for reciprocal support in times of need and, hence, have less reason to maintain their networks of trust, or crowd in social capital, as the various meeting sand workshops associated with the intervention provide recipients with an opportunity to make new acquaintances and thereby broaden their network of trust.

We identify the effect of the FA intervention by introducing a dummy variable that takes the value one for the subjects in municipalities that are receiving the intervention and zero otherwise. The impact of the ongoing violence is identified by introducing another municipality-level dummy variable which, in this case, takes the value one for subjects in municipalities where civil servants have taken labour action, we assume, because of the threat of violence to themselves in their posting. In order to isolate any effects relating to these variables, we also include a number of control variables in the regressions. These include the age of the subjects, whether they are female, whether they completed primary school, the size (number of inhabitants) of the household in which they live, household total expenditure as a proxy for household income (entered as a natural log).

For completeness, we introduce these variables of interest and controls not only into the regressions relating to group formation, but also the regression relating to choice of gamble in the second round and a new regression relating to choice of gamble in the first round.

Table 7 presents an ordered probit regression for the gamble choices in the first stage. Here, we find that older subjects are more risk averse, while none of the other explanatory variables are significant.

Table 7: Regression analysis of Gamble choices in first stage of the game

	Risk aversion displayed in first stage Ordered pobit
Subject's age in years	-0.0133
	[0.0044]**
Subject is female	-0.0979
	[0.1748]
Subject completed primary education	-0.1274
	[0.1187]
Size of subject's household	-0.0422
	[0.0283]
Natural log of household expenditure	-0.0275
	[0.0756]
In a FA recipient municipality	-0.0693
	[0.1020]
In municipality that suffered taskforce strike	-0.0463
	[0.1357]
Observations	420

Robust standard errors in brackets
significant at 10% level; * significant at 5% level; ** significant at 1% level

Table 8 contains the Probit and Tobit regressions relating to individual subjects' involvement in group formation augmented by both the variables described above as well as two variables relating to the analysis of pre-existing ties of kinship, friendship, and acquaintanceship. The regressions in the first two columns are repeated from Table 3 above. The augmented regressions are in the third and fourth columns. In the third column we see that more educated subjects and subjects from larger and poorer households are more likely to join groups. We also see that subjects from municipalities

that have received the FA interventions are more likely to join groups. However, note that our indicator of exposure to violence is absent from this regression. This is because, when this variable (defined at the municipality-level) take the value zero (no or less violence) all the subjects join groups; a zero in this variable is a perfect predictor of groups formation.

This negative impact of violence on the subject's willingness or ability to form groups also shows up in the Tobit regression (fourth column), where the variable assumes a negative and significant coefficient. Other effects demonstrated by the Tobit are similar to those identified in the Probit with two exceptions. In the Tobit, a subject's pre-existing ties of kinship and friendship tended to suppress the size of the group they ended up joining, presumably because of a tendency to group only with those friends and relations. In contrast, greater numbers of prior acquaintances were associated with membership to larger groups.

Table 8: Augmented regression analysis of group formation

	1 Group membership	2 Group size	3 Group membership	4 Group size
	Probit	Tobit	Probit	Tobit
Got high payoff to gamble in first stage	-0.4113	0.0072	-0.49	0.0024
	[0.2632]	[0.0347]	[0.2123]*	[0.0265]
Number of subjects in session	-0.0119	0.0055	0.002	0.0071
	[0.0353]	[0.0023]*	[0.0139]	[0.0019]**
Treatment 3 (dummy)	0.0576	0.0046	0.0296	-0.0265
	[0.5094]	[0.0422]	[0.2039]	[0.0323]
Treatment 4 (dummy)	1.5696	0.4936	1.3355	0.5518
	[0.5950]**	[0.0424]**	[0.4305]**	[0.0412]**
Risk aversion displayed in first stage	0.1677	-0.0059	0.1702	-0.0048
	[0.0634]**	[0.0050]	[0.0515]**	[0.0038]
Subject's age in years			-0.0081	-0.0016
			[0.0093]	[0.0012]
Subject completed primary school			0.4224	0.0808
			[0.2538]#	[0.0311]**
Subject is female			-0.068	-0.0585
			[0.3244]	[0.0414]
Size of subject's household			0.1138	0.0116
			[0.0568]*	[0.0061]#
Natural log of household income			-0.5128	-0.0277
			[0.1781]**	[0.0211]
Number of friends and relatives in session			0.1108	-0.0225
			[0.0774]	[0.0074]**
Number of acquaintances in session			-0.0352	0.0184
			[0.0391]	[0.0042]**
In an Familias recipient municipality			0.6175	0.4328
			[0.2331]**	[0.0277]**
In municipality that suffered taskforce strike				-0.1404
				[0.0454]**
Constant	1.4598	-0.0371	6.9264	0.035
	[1.2986]	[0.0893]	[2.2511]**	[0.2681]
Observations	424	424	333	409

Robust standard errors in brackets
significant at 10% level; * significant at 5% level; ** significant at 1% level

The impact of the FA intervention can also be observed by simply graphing the data. Figure 6 shows that a smaller fraction (5%) of players chose to play individually in the second stage for the "treatment" municipalities, while more than 13% of players in the "controls" played alone. However, a word of caution is required here. The FA municipality result depends critically on the two municipalities where everyone joined a single group. Remove those from the sample and the result disappears.
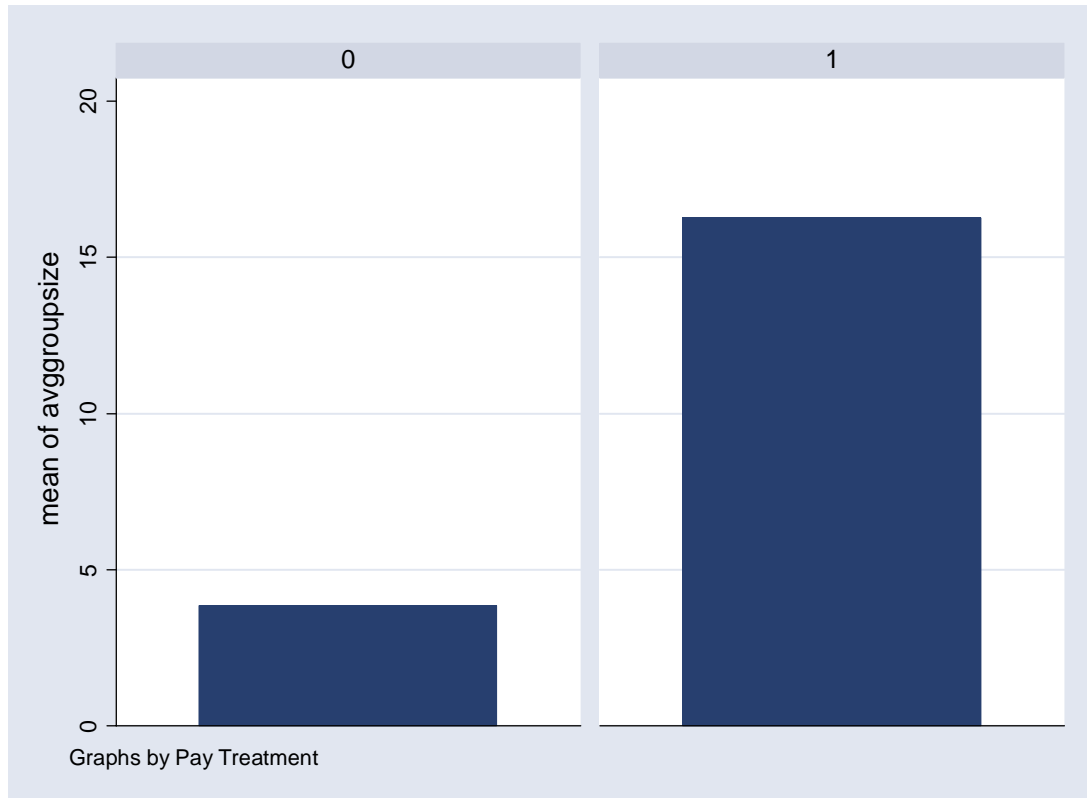
Figure 6: Average group size in FA and control municipalities

In Table 9 we show the augmented ordered Probit regressions relating to the gamble choices in the second stage. Here, the model presented in the frist column is repeated from Table 4 above. Then, in the second column, the dummies relating to the subjects' gamble choices in the first round are replaced by a continuous variable in order to conserve degrees of freedom. Finally, in the third column, the survey variables are added. Only one of these, the size of the subjects' households is singnificant.

Table 9: Augmented regression analysis of gamble choice in second round

	1	2	3
	Gamble chosen in second round		
	Ordered Probit	Ordered Probit	Ordered Probit
Chose gamble B in first stage	0.0547		
	[0.2554]		
Chose gamble C in first stage	0.0037		
	[0.2523]		
Chose gamble D in first stage	-0.0627		
	[0.2555]		
Chose gamble E in first stage	0.2062		
	[0.2653]		
Chose gamble F in first stage	0.3565		
	[0.2555]		
Risk aversion displayed in first stage		-0.0144	-0.0157
		[0.0157]	[0.0165]
Got high payoff to gamble in first stage	0.4272	0.4271	0.4027
	[0.1081]**	[0.1055]**	[0.1085]**
Treatment 2 (dummy) x group size	-0.0213	-0.0222	-0.0236
	[0.0225]	[0.0223]	[0.0246]
Treatment 3 (dummy) x group size	-0.0404	-0.0427	-0.0368
	[0.0175]*	[0.0173]*	[0.0194]#
Treatment 4 (dummy) x group size	-0.0077	-0.0078	-0.0084
	[0.0037]*	[0.0037]*	[0.0040]*
Subject's age in years			-0.001
			[0.0048]
Subject completed primary education			-0.017
			[0.1191]
Subject is female			-0.1658
			[0.1750]
Size of subject's household			0.0374
			[0.0224]#
Natural log of household income			0.0253
			[0.0950]
Number of friends and relatives in session			-0.0373
			[0.0320]
Number of acquaintances in session			-0.0084
			[0.0168]
In an Familias recipient municipality			0.0694
			[0.1176]
In municipality that suffered taskforce strike			-0.0046
			[0.1624]
Observations	424	424	409

Robust standard errors in brackets

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

6. Conclusions and recommendations

The results presented above suggest that the pilot was a success. That the gamble choice in the first stage of the game is associated with the age of the subject in a way that is corroborated with other studies is heartening. That the gamble choice (converted into levels of risk aversion) then predicts who chooses to go into a group is also encouraging. The group formation within the context of the experiment can be explained with considerable success when analysed in conjunction with the survey data. Some caution is required when drawing conclusions relating to the impact of the FA intervention and violence, primarily because both of these variables are defined at the municipality- rather than the individual subject-level. However, the sign, size and apparent robustness of the coefficients on these variables is very encouraging.

Our results suggest that the FA intervention has crowded in social capital, that violence undermines social capital, and that the campesions in our sample have a strong preference for enforcing informal contracts made among themselves by themselves rather than by an experimenter, i.e., an apparently benevolent stranger in their midst.