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**Intrahousehold Resource Allocation and
Women's Power.
The Effect of FAMILIAS EN ACCIÓN on
Colombian Households.**

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Abstract: *Familias en Acción*, during more than a decade, has encouraged investments in human capital and children's health in poor households in Colombia. The program has been able to benefit a wide range of population to such a great extent, that now the program has become a national public policy. While the positive effects on health and education have been widely studied, there are some other important issues that this program is trying to affect that have not been analyzed enough. That is why this study seeks to test the unitary model of household behaviour and to measure changes in women's bargaining power inside households. We performed a diff in diff model to see the change of the share of the household budget spent on certain assignable and non-assignable goods in the short and long run. The main results provide evidence of a change of the consumption pattern of the household, which leads us to the rejection of the unitary model. Also, results give certain evidence indicating that women's bargaining power within the household might have been improved.

Key words: Bargaining power, resource allocation, conditional cash transfer programs.

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Table of Contents

I. Introduction	3
II. Resource Allocation Household Models: theory and Evidence	7
III. CCT's, Intrahousehold Resource Allocation and The Role of Women	13
IV. Familias en Acción Program	15
V. Data Analysis	18
VI. Methodology and Results	23
VII. Concluding Remarks	30
References	33
Appendix	36

I. Introduction

In Colombia, since 2001 a conditional cash transfer program (CCT) started in order to mitigate the negative effects of the 1999 national crisis. The *Familias en Acción* (FA) focalization program's main target is to increase the nutrition and health levels of children between 0 and 6 years of age, and education level children of 7 to 17 years of age (Attanasio and Gómez, 2004). In order to accomplish this goal, money in cash was provided to the family. However, the money is delivered specifically to the mother of the household in order to make sure that schooling assistance and children's health would increase. Besides that, an education/information program for mothers is applied, in order to make sure that the money is spend on what it is supposed to.

In order to measure the impact of the program, *Familias en Acción* has been widely evaluated and studied. Most analyses investigate the effects of the program on health and education, since this was its main objective (Attanasio, et al. 2004). Also, different positive externalities derived from the program have been studied, for example child labor and school participation. Thanks to the program, they have been reduced and increased respectively, especially in urban areas (Attanasio, et al., 2010). Several investigations of the effect of the program have been made. All of them were trying to evaluate its impact on all the variables it is trying to affect. However, specific studies of certain topics have not been made. That is why the main purpose of this study is to measure the effect of the CCT *Familias en Acción* on intrahousehold resource allocation and women's bargaining power. It is important to analyze how Colombian poor allocate and pool their resources, since their behavior can have significant effects on public policy. These analyses give a better understanding of household behavior and habits when it comes to designing public policy. Also, they can give a light on the importance of transferring resources directly to women. These analyses show the impact women have on resource reallocation inside the household and their bargaining power. We

believe that Colombian households do not behave as a single unit and that there are understanding and conflict inside of them. Often, gender roles may influence the allocation of the resources. Besides that, we believe that transferring resources directly to women is a good first step to their empowerment and increase of their bargaining opportunities inside the household.

Originally a set of models explaining household behavior were the unitary models. They assume that the household behaves as a single individual unit that pool its members' resources and maximizes a unique utility function, increasing individuals' welfare. The allocation of resources inside the household depends on one unique member which assigns them depending on the marginal productivity of individuals. This means, resources assigned to any individual of the household (mother, children, etc.) would not be altered in case of an exogenous income received by any member as marginal productivities remain unchanged. Several studies have rejected the unitary model and the pooling hypothesis. Different authors find that when there is an exogenous increase of income, resources are allocated differently to different individuals inside the household, depending on who receives that income. The spending pattern or share of expenditures on certain goods over the total household expenditures is a proxy which is used in order to measure the allocation of the resources. Two main types of goods can be differentiated inside the household, the public goods, such as food, and the assignable goods, such as clothing. The expenditures on assignable goods indicate an expense directed specifically to one member. Using the changes of expenditures on assignable goods, authors were able to verify changes of spending patterns of households. This assumption is the key, since usually data do not provide information on which member is consuming more of public goods than the others.

There is evidence showing that transferring money directly to women will assure that it will be spent on children's health and education (Gitter, and Barham, 2008). That is why CCTs make direct transfer to women, since it is

more probable that they will invest in children and human capital than their husbands. Besides that, FA (and CCT's in general) has the underlying objective to increase women empowerment by transferring resources directly to women inside the household. Some studies have been made that investigate if the increase of women's non-wage income due to CCT's programs can increase their negotiation power inside the household. The increase of women's bargaining power is a necessary, but not sufficient condition to increase women empowerment (Molyneux. 2009). Finding evidence showing the increase of women's bargaining power inside the household is a sign, which shows that efforts to empower women in Colombian poor households has paid off. However, it is important to take into consideration that a bigger set of aspects have to change in order to assure a true women empowerment. That is why the FA program provides also seminars for women. During the seminars, the women are informed about health and social issues. They try to encourage political participation of women as well.

Quisumbing and Maluccio (2000) define the four determinants of bargaining power inside a household. They are: control over resources, influences that can impact the bargaining process, interpersonal networks, and basic attitudinal attributes. The authors mention that when it comes to economic analysis, the bargaining power is measured on economic resources that are exogenous to the labor supply. These resources can be assets, unearned income, transfer payment or welfare receipts. The last one is the interest of this investigation. We are interested in the control over resources as a determinant of bargaining power. The resources are identified as an exogenous transfer payment that is given to the mothers by the FA program. It is important to highlight that finding the proper bargaining power measurement can be difficult due to data limitations. The reason why, is that this measurement should be very time and space specific. Recent qualitative information has been used from sociology and anthropology to determine the proper measurements of bargaining power. Culture has to be analyzed in order to determine which measurements of bargaining power may be relevant

depending on the case. However, exogenous income gives significant results and is the most commonly used.

Quisumbing and Maluccio (2000), explain also factors that can influence the bargaining process, such as legal rights, skills and knowledge, education, etc. While some of these factors are exogenous to the individuals, some of them are highly correlated with their education. The bargaining power can also be improved if individuals have the right social networks, memberships in organization, etc. Finally, self-esteem, self-confidence and emotional satisfaction are attributed to affect bargaining power. These topics are not widely addressed in the economic literature, however there are also other attempts to increase empowerment, such as, legal awareness, political participation, and the use of contraception (Quisumbing and Maluccio 2000).

Since, we are trying to measure the effect of the FA program on spending patterns of Colombian households, we are going to take into consideration assignable and not assignable goods, such as food, restaurant meals, clothing, toys and household toiletries. We will analyze the change of the share of each one of them from the total spending of beneficiary households. Theory suggests that when women have impact on the decision-making process in the household, they spend more money on children and food than their husbands. This is why we are going to measure if the shares of spending on these goods vary due to an increase of the women's non-wage income. If evidence suggests that the share of spending on these goods changed because of the program, we can reject the pooling hypothesis and assure that Colombian poor households do not behave under the unitary model. As well, if there is an increase of that share of expenditures on goods preferred by women, this could be a signal of an increase of women's bargaining power.

In order to empirically test our hypothesis, we are going to use data from the Colombian household surveys that evaluated the program for households in municipalities with population under 100,000 habitants in the years, 2002, 2003 and 2006. With this data designed as a quasi-natural experiment we

conduct a difference in differences estimation in order to see the impact of the program in the consumption pattern in the short and long term. The main results provide evidence of a change of the consumption pattern of the household, which leads us to the rejection of the unitary model. It indicates that we should investigate the bargaining or collective models more. Also, there is a significant increase in non-assignable goods, in contrary to assignable goods. Because of this fact, we are more cautious concluding that women's bargaining power is being increased. Nevertheless, food and restaurant meals increased due to the program, and in theory, these goods are assumed to be preferred by women. Consequently, the results can give certain evidence indicating that women's bargaining power within the household might have been improved. Thus, the effort dedicated to empower women may have been working.

The document divides as follows. Section two reviews the theory on different intrahousehold resource allocation models, the different empirical evidence found by other authors, their relevance to this investigation and its relation to women bargaining power. Section three examines more deeply women's bargaining power and intrahousehold resource allocation under the CCT's framework. Section four presents more in depth the *Familias en Acción* program and its specifications. Section five jumps to the empirical part of this study and talks about the data that is going to be used in the econometric analysis. Also characterization of treatment and control groups main features is performed. Section six explains used methodology, shows estimations of the econometric model and the results found. Finally, in the last section, the concluding remarks are presented, as well as limitations and reflections of this study.

II. Resource Allocation Household Models: theory and Evidence

Models of household behavior have been widely studied in the past in order to explain the way households behave and to see how resources are allocated. The basic and most popular model in economic theory is the unitary or

unified model of household behavior, which has been the predominant for a long time. It proposes that in a household of mainly two adults (where there may be children or not) one of them makes all the decisions (Basu, 2006). Since the majority of the data collected in surveys is at household level, this model is useful in the way that it assumes common preferences of members, so the household can be treated as a single unit of analysis. In that way, individuals' preferences are added to obtain household preferences. It is assumed that all members have identical utility functions and one unified budget constraint (Doss, 1996). Another assumption under this framework is that households pool their resources and under one utility function welfare is maximized for all members. A unique budget constraint exists, where one dictator or altruist member marks a consumption pattern and the share of public goods on the total budget (Doss, 1996).

Under the unitary model, differences in resource allocation within the household are explained by different individual productivities that lead to different shares of income of household members (Quisumbing and Maluccio, 2000). This means, that endogenous variations of income such as labor wage that change marginal productivity or income of individuals would lead to a relocation of resources. (Doss, 1996). In that way, the unified household model predicts that exogenous income increase should not alter the spending pattern regardless which member receives it. This is explained by the theory, since exogenous income does not alter marginal productivity of individuals within the household and should not lead to a reallocation of resources (Doss, 1996). However, the unified household model can be rejected. It happens when an exogenous income given to any member of the household does not affect marginal productivity of the members of the household, but it changes the expenditure patterns.

There are a lot of studies which present evidence for rejecting the unitary model and the income-pooling hypothesis. In order to test for unitary models, authors use exogenous changes in income of household members and use them as regressors.

Lundberg, Pollak and Wales (1997) conduct one of the most important studies testing the income-pooling hypothesis in English households in the 1970s. An exogenous variation of income was introduced. It happened due to the change of the beneficiary of the program from the father of the household to the mother. With this redistribution of resources inside the household, it could be tested if the household pooled the resources or if the wife would spend resources in a different way. The authors use the children and women clothing relative to the men's clothing to see changes in the consumption patterns. The main results showed that after the policy change, there was a substantial increase in expenditures on women and children's clothing in relation to men's clothing. They argue that children are better off when the mothers hold resources, thus they reject the income-pooling hypothesis.

Ward-Batts, J. (2000) expands the research made by Lundberg, Pollak and Wales (1997). She uses the same English policy as an exogenous variation of income, but a larger set of goods was analyzed. A tobit model is used in the study with a larger set of goods including clothing, Tabaco, children's toys, cosmetics, hairdresser, books, among others. Price indexes are used in order to account for price changes. Similarly to the previous study, the author rejects the pooling income hypothesis. She concludes that a shift of power in the decision-making process inside the household was existent and there is a significant difference between husband and wife's allocation of income preferences. According to Ward-Batts (2000), women benefited the change in the policy, since they were able to spend resources according to their own preferences.

The study made by Duflo and Udry (2004) is an example of the rejection of the income-pooling hypothesis in developing economies. The authors study the resource allocation within households in Ivory Coast. Specialization in crops cultivation by gender makes it possible to differentiate incomes obtained by husband and wife. The authors use rainfall as an exogenous variation since different crops are sensitive to specific types of rainfall

shocks. In this way, authors find that income generated by females is spent differently than income generated by males. The female crop income shifts spending more towards food compared to men crop income. These facts violate the main assumptions of the collective household models. According to the authors these households behave similarly to the model of informal insurance with limited commitment. In this model, the income is allocated differently depending on the identity of the income earner and the origin of the income.

Finally, Quisumbing and Maluccio (2000) evaluate the unitary model in four different countries: Bangladesh, Indonesia, Ethiopia, and South Africa. Individual variables such as human capital and controlled assets at the time of marriage are used as a measurement of bargaining power. They reject the unitary model and find that women tend to spend more on children's education and clothing in all the cases.

Important political implications can be derived from the rejection of unitary model. Under the unitary model framework, as said before, it is irrelevant which member of the household increases their non-wage income, since decision in resource allocation should not vary. However, when the unitary model is rejected, it implies that resources given to a certain individual can increase certain individual's welfare more than the others (Basu, 2006). These implications must be present when it comes to designing public policies, especially if their aim is to benefit some members of the household more than the others.

On the other hand, the role of the women in the household can vary depending on a different set of factors, such as culture, income, education, how much she contributes to the total income, etc. Now, it is widely accepted, that women participate in decision-making process inside the household. Their preferences may be different from husbands' preferences. This situation may also contradict the unitary model.

Given the multiple rejection of the unitary model in different studies around the world, a new variety of models accepting the preference heterogeneity inside the household have risen. Since evidence show that depending on the identity of the member that experiences a non-wage income increase, different household decisions are made. The models accept that household individuals have different preferences and decisions depending on a power balance between husband and wives (Basu, 2006). The idea that households are not units that represents a common preference has become more popular. Now, it is believed that there are conflicts and cooperation inside households, which lead to power struggle and bargaining situations.

Basu (2006) talks about the collective approach for modeling the household. It is based on the idea that husband and wife have different utility functions. The household maximizes a weighted average of both functions, where the weights represent the power each part has in the household. The weight of the wife may vary due to different factors, such as wage, more specifically how much she earns, or even cultural factors. In this case, when individuals face a budget constraint, income is not being fully pooled in the household. Individuals have to bargain over how much they contribute to the household and over expenditures patterns for the household more than for themselves (Basu, 2006).

With the collective model approach, it is possible to describe intrahousehold resource allocation under certain assumptions. Therefore, it is possible to see changes in the expenditure share when there are exogenous changes in the economic environment. Main assumptions state that goods are private, and individuals include other members' utility functions in their own utility functions. Also, it is assumed that the sub utility function of each member is separable from private consumption. Moreover, at least one private good can be assigned to one member of the household, so it is known who consumes it (Doss, 1996). The author explains also how the collective model is very general and that the unified model and the cooperative bargaining model are its restricted cases.

Thomas (1990) tests the collective model in another way. He investigates effects of unearned income of husband and wives on the nutrient intakes, fertility and child survival. In that same direction Schultz (1990) analyze the unearned income of each spouse and its effect on labor supply and fertility.

Lundberg and Pollack (1993) also develop a model called the separate spheres model, inside the category of the bargaining models. In this model, wife and husband cooperatively bargain over production of household goods or children. This model can lead to a consensus by part of both spouses or the consensus cannot be achieved, which means gender roles define the equilibrium. In general, the cooperative bargaining models predict that changes in earnings of an individual will affect the distribution within the household (Doss, 1996).

Under the bargaining model, when we investigate if women increase their bargaining power in the household, we have to look at her decisions on food related expenditures. They may reflect that as wife's earnings increase, she has greater influence on the household's spending pattern. Increases of expenditures on certain goods may reflect women preferences, for example expenditures on restaurant meals (Phipps and Burton, 1998). This behavior may also can be explained under the pooling hypothesis, where consumption of food outside home depends on the costs of substitutes, and where the "wife's wage is an important component of the cost of home prepared meals" (Lundberg, Pollak and Wales, 1997. p.465). This reflects the importance of looking at variations of income that are exogenous instead of variation of women's wages. The changes of women's wages do not reflect increases of women's power inside the household, especially under unitary models.

Finally, another set of models of resource allocation within the household are the non-cooperative models. These models assume that income is not pooled, therefore individuals have their own preferences, consumption, production, and independent decisions. In these models the bargaining process determines

the level of public goods in the household. Which means, the level reached is endogenous (unlike the non-cooperative situations of the cooperative models, where gender roles define the level), and determines how much each member has to spend in public goods.

In summary, non-unitary models assume that decisions made by men and women are different. They can be cooperative or not when it comes to expenditures. An imbalance in the bargaining power affects the decisions on consumption inside the household. The models assume that women are more interested in investing in health and education of their offspring. That is why these models predict that an increase of non-wage income of the women would increase consumption of these goods. This causes that cash transfer programs transfer resources directly to women in order to increase the share of expenditures of shared goods of household (Gitter and Barham, 2008).

III. CCT's, Intrahousehold Resource Allocation and The Role of Women

Conditional Cash Transfers may help to empower women in the household, since in theory women are more interested in children welfare. In that case, giving more resources to women, in theory, will increase her bargaining power inside the household. Since the increase of women's income may lead to increase of conflict inside the household, the conditionality of the program should solve this problem. Conflicts over investment in child human capital would be resolved (De Janvry and Sadoulet, 2006).

As said before, the CCT program FA gives resources strictly to the mother in the household, so they will be allocated towards children. There is also an underlying objective of increasing her bargaining power. Women empowerment is assumed to be the change in the family and social conditions, and power that women face. The family and social conditions of the mother can be measured through her income, resource administration and spending decisions, choices about health education and nutrition within the household, domestic labor, social participation, participation in educative

seminars, among others (Attanasio, et al.. 2006).

Attanasio and Lechene (2002) analyze data on Mexico's CCT program *Pogresa* (currently *Oportunidades*). They test for global pooling of resources within households. They use the government's transfer as an exogenous variable. The dependent variable is the wife's income share in food, clothing, tobacco and alcohol. It is found that the share of income of the wife affects the expenditure structure. In the share of women's income, the share of food decreases, while the share of children's clothing increases. The authors conclude that in the majority of households the patterns of consumption varies when women are receiving the grant. It leads them to reject the unitary model.

Gitter and Barham (2008), use the Nicaraguan CCT program Social Safety Net (RPS) to examine its impact on women spending on school enrollment of their children, and food. They use the ratio of years of schooling of female to male household heads as a measure of bargaining power. The authors find evidence that the program improved the allocation of resources to women and children, increasing school enrolment by about 20%. However, they find that this increase is due to an income effect. The fact that the transfers are directed to women plays a secondary role. The authors highlight the importance of obtaining a better measurement of women power besides the spending pattern in the data. Those measures cannot directly estimate the effects of targeting transfers to women. They remind us of the importance of obtaining better variables, which can be collected in the surveys. It would improve the knowledge about the efficacy of transferring resources to women in their empowerment.

De la Brière and Quisumbing (2000) try to examine the impact of *Progresa* on women status and intrahousehold relations. They use a set of eight questions asked in surveys. These surveys gather information on who takes decisions inside the household respect to several issues, such as: medical attention, authority over children, decisions on extra-income, expenditures,

among others. They use a multinomial logit model in order to find increases in the probability of women making important decisions in the household. They find that in the poorest households there is an increase of the probability of women deciding by themselves upon the use of extra income. On the other hand, these authors relate how *Progresa* affects women's empowerment by increasing their resources, creating a network of cobeneficiaries, periodical meetings, among others. They highlight the difficulty of finding the pathways by which a CCT program can affect the women's status and intrahousehold relations. This status is difficult to quantify, thus household surveys can lead to misleading interpretations if they are not taken with precaution, and if the socio cultural context is not properly assessed.

IV. *Familias en Acción* Program

CCTs are born under the social safety nets policies; their main objectives are decreasing poverty and minimizing the economic risks in the presence of shocks. These programs started being implemented in Latin America during the 90's decade in response to the different crises faced by the region. They were considered necessary since the traditional economic growth model wasn't able to reduce the permanent high poverty and inequality levels in the region (Attanasio & Pellerano, 2012).

Under this framework, program *Familias en Acción* was created as a response to the economic crisis in Colombia at the end of the 90s decade. The program was adopted from the Mexican CCT program *Progresa* (currently *Oportunidades*). Under this scenario FA aimed to reduce poverty by fostering human capital accumulation, mitigating the effects of the crisis, minimizing risk in presence of economic shocks, and making sure that the most vulnerable households could keep their income. The program's main objective is to contribute to the formation of human capital in families in extreme poverty situation, complementing the income of households in which there are children under 18 years of age. In that way, more food would be consumed, better nutritional habits would be adopted, and health and nutrition

of children under seven years of age would be improved. Besides that, it is priority to foster and increase school attendance in primary and secondary school (Attanasio and Pellerano, 2012).

The main idea of the program is to invest in human capital through the demand side. Three main channels of achieving this goal are education, health, and nutrition. The idea is to provide money to families conditioned to several requisites they must accomplish in order to receive it. Attanasio and Pellerano (2002), assure that a proper strategy to alleviate poverty has to have two main components. First, an income transfer that would increase consumption in the short term and would act as an insurance against economic shocks faced by the most vulnerable population. Second, medium term policies that generate a sustained increase in households' assets. Increase in human capital is accomplished if the money transferred to families is invested specifically in children's education and health. One of the main assumptions of the program is that there is not enough investment in human capital by parents in poor households. Main reasons for that are market failures and undervaluation of the positive externalities human capital accumulation brings. With the implementation of the program those difficulties can be overcome, so human capital accumulation in the society can be achieved. Therefore, intergenerational reproduction of poverty can be alleviated in the long run.

As mentioned before, the FA program has three main components: education, health and nutrition. The largest component is education, which consists of a cash transfer to households in which there are children between 7 and 17 years of age. Families receive a subsidy of 15.000 (approximately \$7.95 USD) pesos monthly for each child in primary school and 30.000 pesos (approximately \$15.90 USD) for each child in secondary school. Money is transferred only if children attend to at least at 80% of the classes in one year (Attanasio and Pellerano, 2012). Attanasio and others (2010) mention that in families, which were already sending children to school before the grant, the transfer is not conditional and would only represent an exogenous increase of

the income. This situation can affect changes in resource allocation and decision-making process inside the households. In the nutrition component, families receive 50.000 pesos (approximately \$26.50 USD) monthly if there are children between 0 and 6 years of age. This quantity is fixed regardless the number of children in the household. This money is given on the condition that children assist regularly to growth and development check-ups.

Originally the program was targeted to rural population in extreme poverty, and to the displaced population. Later, in 2006, a second phase started, the program was extended in order to cover a wider range of municipalities, including urban areas and indigenous communities. In 2002, 320.000 families in 622 municipalities were chosen as beneficiaries of the program. A total of 691 municipalities were granted with the subsidy between 2001 and 2004. Ten years later, the program benefited a total of 2.8 million families in more than one thousand municipalities, of which 62% are rural. *Familias en Acción* has become the biggest program ever implemented by the government in order to help poor people. Thanks to its success in 2012 it was adopted as a national law (Attanasio and Pellerano, 2012).

In order for a municipality to be eligible to qualify for the program a set of requirements must be fulfilled. First, the municipality's population must be lower than 100.000 habitants and the municipality cannot be a capital of a department. What is more, a municipality has to have a significant health and education infrastructure. Moreover, there has to be at least one bank in the municipality. Finally, the municipality's administration should show interest in the program by applying and gathering all the required documents (Attanasio and Pellerano, 2012). From the selected municipalities, households that are eligible to qualify for the program should fulfill two requirements. First, there have to be children between 0 and 17 years of age in a household. Second, a household has to be registered as Sisben level 1 by the 31st of December of 1999. Sisben is an indicator widely used in Colombia and is composed by a number of variables related to poverty (Attanasio and Pellerano, 2012).

Finally, to assure that resources are going to be spent on children's education and nutrition, the subsidy is given to mothers inside the beneficiary households. The program also develops other activities, such as, comities for leader mothers, and talks that cover a variety of topics (prenatal care, prevention of accidents in the house, children's nutrition, among others). However, these activities are not mandatory. Also, another reason why the subsidy is given only to the mother is to empower women in the decision making inside the household. Also, with the additional education given to the mother, it is expected that bargaining power and the allocations of resources will increase.

V. Data Analysis

The main objective of this investigation is to test if the spending patterns of Colombian households changed after receiving the *Familias en Acción* transfer. The main interest are the changes in the share of expenses on food and clothing after the implementation of the program. In this way, we try do address some conclusions on household behavior and women's bargaining power. In the formal test, we use the databases of the program evaluation available in the Colombian DNP (Departamento Nacional de Planeación) website. This evaluation was made by the research institute (Econometria), and SEI a firm which was in charge of the data collection. The evaluation started in December of 2001.

Originally FA, modeling *Oportunidades*, was designed to be randomly assigned. However, due to political issues and the severity of the crises, the allocation of resources of the program started sooner than it was planned. The resources were given to the largest possible number of municipalities (Attanasio et al., 2010). In this situation, a control group was carefully designed to ensure that control municipalities were as similar as possible to the treated ones in terms of population and quality life index. As Attanasio and others (2010) explain, a representative stratified sample of treatment municipalities was constructed. Municipalities that belonged to the same

strata but were excluded from the program were chosen as control. There two main reasons why certain municipalities were chosen to be a control group that differentiated from the treatment group; lack of banking institutions, and the fact that some of the municipalities had not finished all the application procedures at that time.

With this information, a baseline survey, a first, and a second follow surveys up for municipalities under 100.000 habitants was carried out. The Baseline survey took place during June and October of 2002 for a total of 11.500 households. These households belonged to 122 different municipalities from which 57 were treatment and 65 control. The first follow up was carried out between July and November of 2003. 10.742 households were surveyed again, which represents 94% of the original sample. Finally, a second follow up was carried out between November of 2005 and April of 2006, with a total of 9.566 households surveyed in the 122 municipalities.

As mentioned before, the program started earlier than the evaluation, thus the baseline survey could not be carried out before the start of the program. As a result, in the baseline survey a portion of treatment households was already receiving the cash transfers. In the treatment group a total of 3,558 households were receiving resources when the evaluation started, while 3,215 were not receiving it yet. In this way, the baseline survey differentiates between two treatment groups: Treatment with payment and treatment without payment. Under these circumstances, two control groups were created. The first one, named control with payment, was intended to be similar to the treatment with payment. The second one, named control without payment, was intended to be similar to the treatment group which wasn't receiving the payment yet (or treatment without payment). During the first follow up, both treatment groups were receiving the transfer. Hence, only two groups were differentiated: the control and the treatment group. During the second follow up, 13 municipalities from the control started receiving the program as well. Consequently, they changed status and became treatment

municipalities. To sum up, in 2006, there were 70 municipalities in the treatment group and 52 were in the control group.

As stated previously, in the baseline survey there is a group of households which was already receiving the treatment. Since they did not contain any preprogram information, those 3,558 households had to be eliminated from the base year sample. However, the information on these households gathered in the other two surveys is used in this evaluation. Also, it is important to highlight that in the group “treatment without payment”, households had been aware that they would be receiving the transfer in the future. In that case, it is probable that households had been anticipating the money, consequently they had started changing their consumption patterns before they received the grant. It is important to take into consideration, that this effect may bias the econometric results. Evidence of an anticipation effect is found in the results. We address this topic in the final section.

Since the program was not assigned randomly, the accurate evaluation depends on a definition of the proper treatment and control groups. Taking into consideration significant differences between control and treatment group in observable characteristics before the program was implemented is the key to our analysis. We can control for characteristics that were different before the program started, which would make the comparison between the two groups more accurate. If we control for those observable characteristics differences, the outcome after the program can be attributed to the program itself and not to original differences between groups.

In the empirical testing we are going to use a quasi-experimental approach to evaluate the program. In that case, there is a need to take into consideration a big number of household characteristics in order to observe as much information as possible. The survey present different household characteristics and has information about a big set of features. Balancing the groups would guarantee that we would compare similar groups, consequently the estimations can be more accurate.

Table 1 presents regional and physical characteristics of households. These characteristics are assumed to stay constant in time regardless of whether households receive the program later on. The table presents the baseline year comparisons between the treatment without payment group and the control group. The third column presents the difference between the groups (obtained by the subtraction between both groups). The fourth column shows the p-values from a t-test performed in order to measure significant differences between the groups. If the p-value is 0.05 or lower we can reject the hypothesis that differences between treatment and control are not statistically significant under a 95% level of confidence.

Table 1. Regional and Physical Household Characteristics. Treatment and Control Group

Proportion of HH (%)	Treatment	Control	Difference	P-value
Region of Residence				
Atlantic	36.92	41.68	-4.76	0.000
Central	28.13	21.91	6.22	0.000
Oriental	20.53	21.84	-1.31	0.160
Pacific	14.42	13.72	0.70	0.378
House Walls				
Brick	44.18	46.25	-2.07	0.070
Clay	9.23	13.15	-3.92	0.000
Tree Bark	30.53	18.99	11.54	0.000
Wood	11.77	16.72	-4.95	0.000
Residuals	1	1.44	-0.44	0.088
No walls	0	0.11	-0.11	0.066
Type of Residency				
House	96.5	95.52	0.98	0.031
Apartment	0.69	0.76	-0.07	0.709
Room	2.65	2.62	0.03	0.919
Own House	66.93	62.85	4.08	0.000
Rented House	10.48	8.88	1.60	0.017
Occupied house	3.72	6.36	-2.64	0.000
House in Usufruct	18.84	20.98	-2.14	0.020
Piped Water	72.37	72.17	0.20	0.845
Fridge	26.81	32.59	-5.78	0.000
Electricity	83.51	87.52	-4.01	0.000
Gas	5.76	7.78	-2.02	0.001
Sewage	64.49	63.92	0.57	0.609

Note: Approximately 5600 observations

As we can see, there are some statistically significant differences between treatment and control household characteristics. There are differences in the proportion of households living in the Atlantic and Central region. We can also find significant differences in the proportion of households that have walls made out of clay, tree bark, and wood. There are also some statistically significant differences in characteristics describing the wealth of a household. They can be found in the characteristics such as possession of a fridge, access to electricity, and access to gas. This physical characteristics of the household that are statistically different in treatment and control groups can be observed and can be controlled in the econometric analysis. These characteristics cannot be changed due to receiving the transfer, so they can be assumed constant in time. In this situation, they can be used as controls.

Table 2. Socio-Demographic Household Characteristics. Treatment and Control Group

Proportion of HH (%)	Treatment	Control	Difference	P-value
Head of the Household				
Age	44.19	45.31	-1.12	0.000
Gender	79.88	81.03	-1.15	0.204
Incomplete Primary School	44.62	43.12	1.50	0.186
Complete Primary School	15.33	13.93	1.40	0.083
Incomplete Secondary School	8.83	9.73	-0.90	0.176
Complete Secondary School	3.47	3.38	0.09	0.829
Affiliated Health Insurance	35.67	53.96	-18.29	0.000
Affiliated Pension System	67.33	68.86	-1.53	0.152
Age Mother of the Household	38.05	39.07	-1.02	0.000
Single Parent	19.96	19.07	0.89	0.323
Total Number people in the HH	6.08	6.02	0.06	0.313
Number of Children	3.21	3.65	-0.44	0.000
Pregnant woman in the HH	3.42	1.63	1.79	0.000
Total Income HH (Pesos 2002)	438652.9	444917.7	-6264.80	0.601

Note: Approximately 5600 observations

Similarly, Table 2 presents some sociodemographic indicators of households divided by treatment and control group in the base year. It can be seen, that there are statistically significant differences between groups in age of the head of the household, and age of the women in the household. Also, there is statistically significant difference in the variable describing affiliation to the

health system (EPS). The number of children in the household, which is a variable that is directly correlated with the dependent variables of our model, present statistically significant difference among groups. In this table, there are some observables that can be controlled in our formal analysis in order to capture the true effect of the program.

VI. Methodology and Results

Given the way the data is constructed (no randomization), a quasi-experimental model can be constructed in order to see the effect of the program on food and clothing consumption. In the baseline survey, the data on household's consumption pattern before the program is available. Subsequently, the two other surveys report post-program household consumption pattern. With this information, the data from the baseline and the first follow up can be used in order to perform a short-term analysis. Correspondingly, it is also possible to execute a long-term analysis using the baseline and both follow up surveys. Based on the data, a difference in differences model is going to be performed in order to see the program impact on consumption. As already stated, the statistically significant differences in observable characteristics of control and treatment group are going to be use as controls in the model to avoid bias. Including controls not only removes systematic differences between groups, but it also reduces error variance (Wooldridge, 2012). The difference in differences estimation can correct for the unobservable characteristics if we assume that they are constant in time.

The difference in differences model allows to evaluate the effect of a policy or event that affect only a group of individuals. This method is commonly known as quasi-experimental. Because of the fact that the data is not randomized, the application of a treatment differentiates the treated and the control group by itself. The basic definition of the diff in diff model is that in a two period framework with two groups, one of them is exposed to the policy or treatment in the second period. This means, that in the first time

period both treatment and control groups are not exposed to the policy or treatment. Nevertheless, in the second period only one group is exposed to the treatment. That is why this group receives the name of treatment group. The estimation of the effect of the treatment is made by differentiating between groups and time, a double difference estimation.

$$(\bar{Y}_{T,before} - \bar{Y}_{T,after}) - (\bar{Y}_{C,before} - \bar{Y}_{C,after})$$

The equation above illustrates how the method works. The outcome Y from the treatment group from the period one is compared to the outcome Y from the treatment group from the period two. Similarly, the outcome Y from the control group from the period one is compared to the outcome Y from the control group from the period two. Now, both differences are subtracted, which gives us the effect of the program on the outcome of interest Y. The intuition behind this method is that since treatment and control groups are similar, they should behave in the same way during time. Any difference presented between these two groups after the intervention can be attributed to the program.

Note that the notation is \bar{Y} since this represents the average outcome of each group. The effect of the program is measured by the difference of average outcomes. That is why there is no need to use panel data for this estimation, and a pooling cross section is enough. As stated before, we eliminated the treatment group with payment from our base year sample, because preprogram information was not available. However, this data still can be taken into consideration in the first and second follow up. It can be done, because our outcome is going to represent changes in the average share of expenditures on clothes and food in each group in specific period.

In the database we calculated several ratios. All of them were constructed in a similar way: expenditures on one specific good over total expenditures. To obtain these ratios we used data on expenditures on following goods: men's clothing, women's clothing, male children's clothing, female children's

clothing, baby clothing, food, and restaurant meals. There are three time periods: the baseline survey of 2002, labeled as year 0; the first follow in year 2003, denominated as year 1; and the second follow up in 2006, named year 2. We created a dummy variable for the short term analysis. It takes the value of 1 for households in municipalities that were in the treatment group without payment in the base year and remained in the treatment group in year 1. The dummy takes value of 0 for households in municipalities that were control with and without payment in base year and in the first year remained in the control group. For the long term evaluation, we created a dummy variable that takes the value of 1 for households in municipalities that were treatment without payment in the base year, treatment in the year 1 and treatment in the year 2. The households from the municipalities that were control in the base and first year, but became treatment in the second year are not taken into consideration. The reason why, is because we are interested in a long-term effect. If we used that data, we would also observe the effect of the program from one period to another. The dummy for treatment in the long term takes the value of 0 for households in municipalities that were control during the three periods of time.

The following difference in differences model was performed:

$$Y_{it} = \beta_0 + \delta_0 year_{it} + \beta_1 treatment_t + \delta_1 year_{it} treatment_t + \delta_2 X_{it} + \mu_{it}$$

Two set of regressions were run separately for the different outcome variables. One for the short term (years 0 and 1) and one for the long term (years 0, 1 and 2). Y_{it} represents the outcome variable separately for each household for long and short term. Variable $year_{it}$ is a dummy variable that takes the value of one the year the program takes place, $t=1$ or $t=2$. As described above, the variable $treatment_t$ acts as follows. In the short-term, it equals 1 for treatment without payment in year zero and treatment with payment in year 1, zero otherwise. In the long term, it equals 1 for the treatment without payment in year zero, treatment with payment in the year 1 and treatment in the year 2, zero otherwise. Parameter δ_1 is the parameter of

interest. It accompanies the interaction term between the year dummy after policy intervention and the treatment groups. The parameter captures the difference in differences estimation and shows the effect of the program on our variables of interest. Finally \mathbb{X}_{it} is a vector containing all the observable characteristics that presented significant difference between treatment and control groups. Using this model, unobservables constant in time are eliminated, which reduces the bias.

Table 3 shows the estimation of the diff in diff model in the short term. Each column displays each outcome variable: expenditure on one specific good over the total household expenditure. We reported coefficients as follows. δ_0 the coefficient of the dummy variable year1, which indicates the average change of the dependent variable from the year 0 to 1. The coefficient β_1 of the dummy variable treatment in the short term. It represents how the shares of total spending would have changed in the absence of the policy. The coefficient of interest δ_1 of the interaction term between the two dummies. It shows the impact of the transfer in the post program period. We control for a wide set of variables that are presented in Table 1 of the Appendix. This vector of control variables includes the variables that were significantly different between control and treatment group, plus some transformations, and other important variables that may affect our outcome.

From the estimations we find no evidence of an increase in the share of expenditures on any clothing-related good. The coefficient of interest presents a negative sign for men, women, male and female children's clothing. This means that the policy could have had a decreasing effect on the expenses on these items over the total household spending. However, none of these coefficients is statistically significant under any confidence level, which means that the program did not change the pattern of consumption of clothes between the years 2002 and 2003. Regarding to the share of food, we find that all coefficients are statistically significant under 1% confidence level. We can see, that there is an average decrease of 0.02 in the share of food for both treatment and control group. We can also see, that if the policy hadn't been

implemented, the share of expenditures on food would have been higher by 0.008. Finally, it is shown that households beneficiaries of FA program increased the share of consumption on food over total expenses on average by 0.006 between the years 2002 and 2003. We find a similar result for restaurant meals or meals outside the house. The share for both groups decreased by 0.003 from one year to another. Before the subsidy, on average, the treatment group had been spending a bigger share of the total budget on restaurant meals than the control group. Finally, we can see a significant impact of the cash transfer that increased, on average, the share spent on restaurant meals by 0.007.

Table 3. Short Term Difference in Differences Estimates. Program Impact on Spending

Proportion of Good on Total Spending	Men's Clothes	Women's Clothes	Male Children's Clothes	Female Children's Clothes	Baby's Clothes	Food	Restaurant Meals	Toiletries	Toys
Year 1	0.0028189 (.0090846)	-0.0006721 (.0047037)	-0.0019018 (.005956)	0.0042106 (.0060963)	-0.0077259 (.0109664)	-.021049*** (.0033451)	-.002773*** (.0002874)	-.0019072* (.0009889)	-0.005592 (.0063129)
Treatment Short Term	0.0032312 (.0050606)	0.0049901 (.0038665)	0.0020596 (.0037009)	0.0055493 (.0037334)	0.0002485 (.0072237)	.0089364*** (.0020768)	.0008107*** (.0002514)	-.003397*** (.0006316)	-0.006402 (.0043894)
TreatmentY1	-0.0008522 (.0073904)	-0.0080149 (.0056468)	-0.0035474 (.0051335)	-0.0028499 (.0052302)	0.0053843 (.0100886)	.0058054** (.0029129)	.0007155** (.0003516)	.0031429*** (.0008706)	.0091433* (.0053433)
Cons	.0607763*** (.0157763)	.1088152*** (.008512)	.0935229*** (.0117473)	.0645712*** (.0117936)	.1059785*** (.0209364)	.1241594*** (.0050344)	.0039564*** (.0005799)	.0349761*** (.0019254)	0.0011179 (.0101737)
R-square	0.0855108	0.0643885	0.0948227	0.0666039	0.0530393	0.0698628	0.0329723	0.0576369	0.0629556
N	1073	1414	1581	1635	666	10671	13105	9970	179

Note: standard errors in parenthesis. Statistically different from zero at 1%(***), 5% (***) and 10%(*) level.

Another non-assignable good on which the program had a positive and significant effect is household toiletries. The policy increased the share spent on this type of products on average by 0.003. The effect of the policy is positive regardless the fact, that before receiving the subsidy the treatment group had been spending less on this types of products than the control group. Finally, there is a small significant effect on expenses on one assignable variable - children's toys. After the implementation of the program, the

treatment group increased the spending share on toys on average by 0.009. It can be established, that in the short term, the program has a significant effect mostly on non-assignable goods. In households which benefited from the program, the share of expenditures on food, restaurant meals, and toiletries increased due to the subsidy. Regarding non-assignable goods, we find a significant evidence that, before the program, treatment households had been spending a bigger share of their budget on these items, compared to the control group. This information may give evidence about the existence of an anticipation effect in the treatment group due to the implementation of the program. However, we will discuss this issue later on.

In Table 4, we can see the results of the estimations in the long-term effect, i.e. from 2002 to 2006. Again, each column shows the expenditure on each good over total household consumption. Once more, we report the three coefficients of interest and we omit to report the control variables, which are specified in Table 1 of the Appendix. In the long term, we consider that the treatment group consists only of the households from municipalities that have been treatment since 2002. In this way, we can see the impact of the program after 4 years of its implementation. With these results, again we confirm the lack of impact of the program on the shares of expenses on men, women, male and female children's clothes. There is only one difference from the results of previous estimations. It is the change of the sign of the coefficient of the interaction term for children's clothing. The coefficient is now positive. This could suggest, that now a bigger share of the total budget is assigned to children's clothing. However, coefficients do not show statistical significance. In addition, we can see that coefficients of the variable year2 are significant. It means, that during four years, expenditures on clothes in relation to the total expenditures of households increased for both treatment and control group. However, we cannot attribute this increase to the fact that treatment households were receiving an extra income from the program. Only one coefficient gains significance in the long term. It is the coefficient of the share of baby's clothes. We can see, that due to receiving the subsidy, the share of baby's clothes increased, on average, by 0.19.

Table 4. Long Term Difference in Differences Estimates. Program Impact on Spending

Proportion of Good on Total Spending	Men's Clothes	Women's Clothes	Male Children's Clothes	Female Children's Clothes	Baby's Clothes	Food	Restaurant Meals	Toiletries	Toys
Year 2	.013911** (.0056444)	.020422*** (.0046606)	.0212408*** (.0036494)	.025952*** (.0037645)	0.0010882 (.0059648)	-.028794*** (.0020957)	0.0002645 (.0003218)	-.009120*** (.0005918)	.0104924*** (.003906)
Treatment Long term	0.0063283 (.0038907)	0.0047264 (.0032004)	-0.0044211 (.0027193)	-0.0002183 (.0026934)	.0129964*** (.0040557)	.0068755*** (.0013673)	.0005511*** (.0002101)	-.001962*** (.000389)	0.000559 (.0028368)
TreatY	-0.0064434 (.0048826)	-0.0026841 (.0040045)	0.0046534 (.0035859)	0.003199 (.0036271)	.019157*** (.0063705)	.0045006** (.0022445)	.0008476** (.000345)	.0012965** (.0006402)	-0.0021036 (.0033439)
_cons	.0456153*** (.0083036)	.0645853*** (.0066862)	.0785814*** (.0057467)	.0652087*** (.0064526)	.0768023*** (.0101747)	.1169643*** (.0035003)	.0014165*** (.0005379)	.0307864*** (.0009866)	.0133804** (.0053284)
R-square	0.1069019	0.0598832	0.0845628	0.0727733	0.0571391	0.0573901	0.0098906	0.050505	0.1060217
N	3800	4112	5819	4676	1285	24359	24299	22562	978

Note: standard errors in parenthesis. Statistically different from zero at 1%(***), 5% (**) and 10%(*) level.

On the other hand, the program is affecting significantly non-assignable goods, such as food, restaurant meals, and toiletries. In the long term, in the group of the treatment households, there is an increase in the share of these goods caused by FA. On average, in the treatment group, there is an increase of 0.004 in the share of expenditures on food relative to the total spending. The significant increase of restaurant meals is, on average, 0.008, and the increase of toiletries equals, on average, 0.0012. These increases can be attributed to the program. Regarding these goods, we again find a sign of an anticipation effect, since the coefficient of the treatment variable shows statistically significant values. This means that, before money was transferred to the treatment group, treatment households may have been anticipating receiving the money, which had led them to allocate more resources to these goods compared to the control group.

VII. Concluding Remarks

CCT's became an important tool for poverty alleviation in Latin American countries since *Oportunidades* (formerly *Progresa*) started in Mexico in the 90's decade. Positive results, such as reduction of economic risk of the most vulnerable households has been evidenced during last years. *Familias en Acción*, modeling *Oportunidades*, has not been an exception. It has encouraged investments in human capital and children's health in poor households in Colombia. The program has been able to benefit a wide range of poor rural, urban, and displaced population to such a great extent, that now the program has become a national public policy. While the positive effects on health and education have been studied, there are some other important issues that CCT's are trying to affect that haven't been analyzed enough. That is why this study seeks to test the income-pooling hypothesis and to measure changes in women's bargaining power inside households. The section on the pooling hypothesis complements different studies made in the past related to increases of household incomes due to public policy (Attanasio and Lechene, 2002; Lundberg, Pollak and Wales, 1997). The role of women inside the household is more difficult to identify. Although, the results provide some evidence that the program positively affected women's bargaining power inside the household.

We performed a diff in diff model to see the change of the share of the household budget spent on certain assignable and non assignable goods in the short and long run. In the short run, results showed that the program did not affect the spending pattern on most assignable goods, for instance clothing. However the spending pattern was altered when we look at the non-assignable goods, such as food, and restaurant meals. With this information, we can reject the unitary model. Consequently, we assume that Colombian poor households do not pool their resources. In the case of women's power, increases were not reflected in the assignable goods. However, theory suggests that women have more say in deciding how much to spend on food and restaurant meals. Also, usually the wife is in charge of the household

cleaning, thus the toiletries for household cleaning also increased. This results show evidence that women's bargaining power inside the household increased.

In the long run, results lead to similar conclusions. Four years after the program was implemented, households increased the spent share of food, restaurant meals, and toiletries. This evidences that households do not behave as a single unit, therefore increases of non-wage income reallocate household's resources. Subsequently, the program increased the spending shares of baby clothes, an important assignable good that can give evidence of increases in women's bargaining power. In summary, if we take into consideration spending patterns to measure increases of women's bargaining power, the hypothesis that the program increased women's decision making power can be confirmed.

It is important to mention that results show a sign of an anticipation effect in the treatment group. Significant coefficients indicated that before the program the treatment group was spending more on food, restaurant meals, and toiletries than the control group. As mentioned before, due to the early start of the program, some treatment areas received the benefit before the beginning of the evaluation and some treatment households were already aware of receiving it in the future. This awareness of households may have created an anticipation bias that may underestimate the effect of the program. This bias is difficult to correct with the difference in differences model, so it is important to take into consideration its presence in the results. Nevertheless, signs of this bias are visible only in goods, such as food, restaurant meals, and toiletries, the same goods which were significantly affected by the program. The estimators may be biased downwards, which means the effect of the program may had been higher than the reported one, especially on the goods mentioned above. Households may have increased the spending on these goods after the program in a bigger proportion than the one presented in the results. This bias would be eliminated if we had retrospective data on spending patterns of households, however this information is not available. In

order to alleviate some of the bias in our regressions, we control for retrospective income, yearly income of 1999, 2000, and 2001.

Even though, there is evidence rejecting the unitary model, assigning the proper model of resource allocation in households may be challenging. Household's behavior is very case specific. It depends on a different set of factors that vary depending on time and space, for instance culture, gender roles, etc. By looking at changes in consumption pattern only, assigning a specific model to Colombian households' behavior is not possible as it needs to be tested. However, analyzing Colombian households' behavior under the light of the bargaining models for public policy purposes will increase effectiveness of the applications and improvements of welfare indicators.

It is also important to highlight that changes of consumption pattern do not necessarily mean changes of bargaining power. With only household level data, as we had in our analysis, it is difficult to determine the cause of increases of expenditure. The changes of bargaining power may be a reason for that, but it can also be just an increase of the individual's marginal productivity to a price change of certain goods or their substitutes (Doss, 1996). Models may not reflect reality accurately, thus determining the power that woman can gain with the increase of her non-wage income may not be easy to assess. As Basu (2006) explains, "she (wife) could have all the power when it comes to choosing the children's clothing and food, but have no say in other matters". In this case, it is important that results are interpreted carefully. Efforts to increase women's power inside the households are on the right path. Increases of share of expenditures on certain goods considered to be managed only by women, is a proper start of the improvements in women empowerment. It is important to use different measures in order to reiterate increases of women's decision making power.

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APENDIX

Table 1. Report of Control Variables for the Diff in Diff Estimation
Atlantic Region
Central Region
Material Walls: Brick
Material Walls: Mud
Material Walls: Bark Tree
Material Walls: Wood
Material Walls: Vegetables
Material Walls: Residuals
No Walls
Residency Type: House
Own House
Rented House
Occupied House
House in Usufruct
Electricity in the HH
Gas in the HH
Sewerage in the HH
Fridge in the HH
Total Number people in the HH
Total Number people in the HH ²
Age Female Household
Age Head of the Household
Gender Head of the Household
Single Parent Household
Pregnant Woman inside the HH
Number of Children inside the HH
Number of children inside the HH ²
Head of the Household: Incomplete Primary School
Head of the Household: Complete Primary School
Head of the Household: Incomplete Secondary School
Head of the Household: Complete Secondary School
Head of the Household: Affiliated to Health Insurance
Death of a Family Member in the Last year
Natural Disaster in the last year
Household Affected by violent Conflict in the Last year
Total income 1999
Total Income 2000
Total Income 2001
Total Income