The Short-Term Impact of Non-Conditional Cash Transfers in Colombia: First Results

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In this document, I evaluate quantitatively the impact of an utopian Universal Basic Income program (UBI) implemented in Chocó, the most impoverished department of Colombia, on several socio-economic variables: health, food security, education, non-land wealth and monthly income. The nature of a Randomized Control Trial (RCT) and the use of machine learning methods let us estimate first results, using a modified database built from Haushofer and Shapiro (2016)'s online appendix [1]. As preliminary results, I find positive effects on food security, non-land asset values and monthly revenues but not in health and education spending, suggesting UBIs have significant impacts on economic outcomes and more public discussion is needed.

The Program

UBIs programs as policy measures have received worldwide attention due to macroeconomic events from the beginning of 2008 subprime crisis and the current pandemic, but evidence of positive or negative impacts still scarce, even more in developing countries. As the economic activity decreased significantly from October 2025, the Colombia government in coordination with Universidad del Rosario started in March 2026 an UBI program in the most impoverished areas with a $400M COP budget, being poor people of Chocó department one of the first receipts. Coordination with local governors and NGOs has enabled collected data to evaluate the impacts in an ongoing final document. The program consists of a $250.000 COP non-conditional cash transfer per month to randomly selected 850 households of 5 municipalities and 122 villages, has an estimated duration until October (eight months), was funded (utopically) through GiveDirectly – a NGO focused on helping poor families with UBIs in developing countries – and no political interests were involved in.

Closely-Related Programs

The most closely related program to this program is *Familias en Acción*, implemented in Colombia from 2003 as fully operating from a loan disbursed by the World Bank and the Inter-American Development Bank (IADB) in national scale. The beneficiaries receive an amount of money, nutritional complements if she/he has five or less years old sons conditioned to participating in a health checking component – child development checkups, vaccines programs and healthcare training programs -. Additional amounts are given if the children go to school or college (Attanasio and Mesnard, 2006). To study empirically the effects through a differences-in-differences approach, Attanasio and Mesnard collected a database of 11.500 households corresponding to 122 villages, selecting 57 as treatment and 65 control groups. The baseline survey was done one year before the beginning of the programm 2002) and one year thereafter (2003). Outcomes variables are mainly related to consumption and its composition, finding positive effects in general.

Eligibility, Randomization & Timing

Treatment and spillover households were selected randomly after defining a number of eligibility criterias: households in Chocó Department – located in the western coast of the country – that never participated in previous experimental studies of government programs – "Familias en Acción" or "Ingreso Solidario" – and register low levels of unsatisfied needs (score below a SISBEN cut-off point level). The selected participants were told the transfer will be unconditional and temporal, were explained the nearest point in which they can receive it and were provided with cell phone access in case they do not have any.

A two-stage randomization was carried out by the proponents of this program, one at the village level, resulting in treatment and control villages, and the other at the household level, resulting in "treatment" and "spillover" households in treatment villages, and "pure control" households in control villages.

Regarding to timing, the selection and surveying of recipient households proceeded as follows: (1) GiveDirectly identified 5 municipalities of Chocó – Istmina, Quibdó, San José del Palmar, Alto Baudó and El Carmen de Atrato – as municipalities with data availability and sensitively affected by the current economic crisis. Villages were selected randomly; (2) Eligible households within treatment villages were identified by using different government datasets; (3) A baseline survey was done in January 2025 in treatment and control villages. The purpose of the baseline was described as providing information to researchers about living conditions in the area; no mention was made of GiveDirectly or transfers; (4) Spillover, pure control and treatment households were informed about the results in February 2025; (5) Transfers were sent between mid-February and March; (6) An endline survey was conducted in October 2025.

Outcome Variables

Outcomes of interest are explained as follows, following Haushofer and Shapiro (2016) definitions:

(i) Food Security Index: Standardized weighted average of the number of times household adults and children skipped meals, went whole days without food, had to eat cheaper or less preferred food, had to rely on others for food, had to purchase food on credit, had to hunt for or gather food, had to beg for food, or went to sleep hungry in the preceding week, indicators for whether household members ate at least two meals per day, ate until content, had enough food for the next day, and whether the respondent ate protein in the last 24 hours; and the (positively coded) proportion of household members who ate protein in the last 24 hours, and proportion of children who ate protein in the last 24 hours.

(ii) Health Index: Standardized weighted index of several variables: percentage of injured/sick adults in last month; percentage of ill children; percentage of household members who went to hospital; percentage of vaccinated children; percentage of 14 or less years old children who went to medical check-ups, BMI, etc.

(iii) Education Index: Amount of money spent in education activities or courses.

(iv) Psychological well-being index: Calculated separately for the primary male and primary female in the household, and is a standardized weighted average of their (negatively coded) scores on the CESD scale, custom worries test, stress scale, life satisfaction questions and log-cortisol levels.

(v) Total Revenue (Monthly): Total income from all household enterprises, including revenue from agriculture, stock and flow revenue from animals owned by the household, and revenue from all non-farm enterprises owned by any household member.

(vi) Total Non-Land Wealth: Value of all non-land assets owned by the household, including savings, livestock, durable goods, and metal roofs.

Methodology

The methodology followed a number of steps:

1. I checked for baseline differences between treatment and spillover groups through t-tests presented in Table 1 and descriptive analysis.

Dependent Variables (First two in Logs)	Mean (Control)	Mean (Treatment)	T-test (p-value)
Total Non-Land Wealth	15.60 (0.68)	15.53 (0.74)	0.14
Monthly Revenue	13.40 (0.56)	13.34 (0.54)	0.15
Food Security Index	0.03	0.01	0.70

	(0.99)	(0.92)	
Health Index	0.07 (0.93)	0.08 (0.97)	0.88
Education Index	0.02 (0.96)	-0.04 (0.79)	0.22

Table 1. Baseline differences.

Further extensions of the work with more randomization levels can use the a-priori algorithm – proposed by Agrawal and Srikant (1994) – to calculate possible combinations of treatment variables explaining outcome variables. This helps to automatically determine baseline differences between treatment and spillover households and determine which variables are important to control for.

2. Because error terms between outcome variables are correlated, I estimated a set of regressions associated to a SUR (Seemingly Unrelated-Regression Model) model, according to the Haushofer and Shapiro (2016) strategy:

$$Y_{vhE} = \beta_0 + \beta_1 T_{vh} + \delta_1 Y_{vhB} + \delta_2 \boldsymbol{X_{vh}} + \varepsilon_{vh}$$

In this specification, Y_{vhE} is the outcome of interest for household h in village v measured at the endline, restricting the sample to treatment and spillover groups. Y_{vhB} is the baseline outcome variable included to improve statistical power and $\boldsymbol{X_{vh}}$ refers to a set of control variables: baseline consumption, age of female, years of education of female, number of children, number of members in the household, marital status and dummies of wage labor primary income, non-agricultural business primary income, non-agricultural business owner and own farm primary income.

3. Following the methodology specified by Belloni et. al. (2014), I used LASSO high-dimensional methods to estimate which variables should be included as baseline variables or controls (Y_{vhB} and $\boldsymbol{X_{vh}}$) in the specified regressions: (i) I select variables with $\boldsymbol{T_{vh}}$ as dependent variable and Y_{vhB} and $\boldsymbol{X_{vh}}$ as independent; (ii) I select variables with Y_{vhE} as dependent variable and Y_{vhB} and $\boldsymbol{X_{vh}}$ as independent; (iii) The union of these two sets are used as controls in each regression.

Main Results

Treatment-effects estimated through SUR-regressions after including controls are presented in Table 2 [2].

Dependent Variables (First two in Logs)	Treatment Effect (% increase)	Lower CI	Upper CI
Total Non-Land Wealth	49.95***	40.83	59.08
Monthly Revenue	11.57***	4.24	18.91
Food Security Index	30.57***	17.79	43.35
Health Index	6.16	-5.05	17.37
Education Index	6.69	-4.51	17.89
Number of Observations: 753			
Estimation Method: SUR (Seemingly Unrelated Regressions)			
*** P-value < 1%.			

Table 2. Main Results. Source: Python.

The program shows positive effects in food security index (30.57%) and monthly revenue (11.57%) after eight months, but the effect on the value of non-land assets was the most concomitant: 49.95%, showing a remarkable preference for durable goods, given health and education indexes do not show significant improvements. These results are expected as only short-term effects are analyzed and Chocó department lacks of public-goods efficient provision.

A large number of missing values in the consumption composition makes very difficult to estimate the impact of the program – from 16 to 700 missing values of 753 households with data in the endline –, but comparing distributions before and after the program could give some insights and are presented in Figure 1. The results of regressions are supported: significant changes in overall food, proteins (meat and fish) and cereals consumption distributions are observed, but not in alcohol, education and health spending.

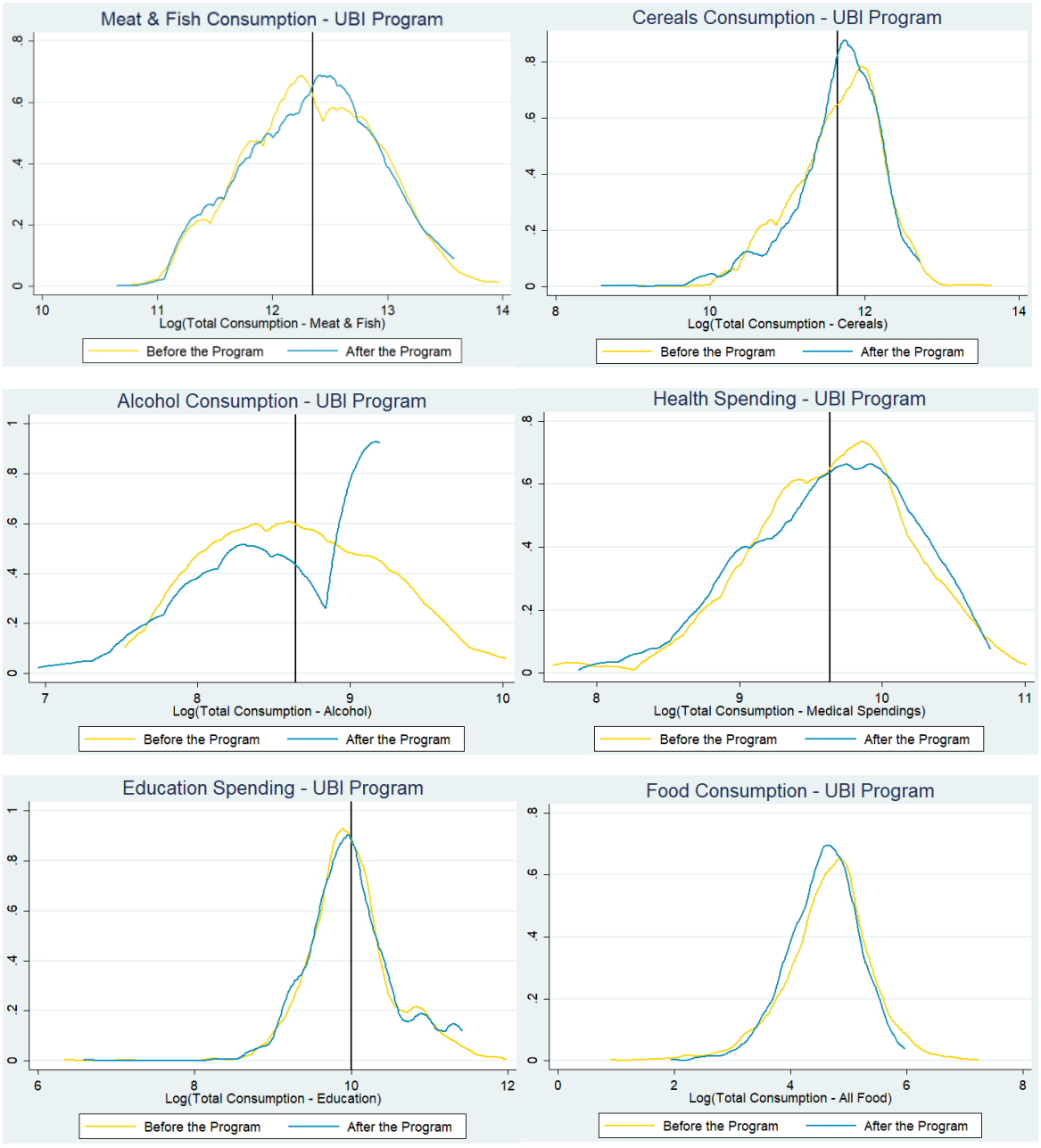

Figure 1. Consumption compositions distributions, in the beginning and the end of the program.

Possible issues of compliance and attrition arising from the experiment were addressed by running random forests and decision tress classifiers (Breiman, 2001), finding they did not pose threats to identification. For checking compliance, classifiers with treatment variable as dependent and controls as independent did not find

large subsets of households with large differences between treatment and control households. For attrition, I only missed 5.39% of the baseline households, being all excluded from the sample.

Ex Post Power Calculations

Following Haushofer and Shapiro (2016), I report for null results the minimum detectable effect size (MDE) with 80 percent power and 5% significance, given by

$$MDE = \left(t_{1-k} + t_{\frac{\alpha}{2}}\right).\frac{\sigma}{\sqrt{NP(1-P)}}$$

In this formula, t_{1-k} is the value of the t-statistic required to obtain 80 percent power, $t_{\frac{\alpha}{2}}$ is the t-critical value required to achieve a 5% significance, P is the fraction of treated households and $\frac{\sigma}{\sqrt{NP(1-P)}}$ is the standard error of the treatment coefficient. With $P = 0.5$, $t_{1-k} = 0.84$ and $t_{\frac{\alpha}{2}} = 1.96$, we obtain $MDE = 2.8\,.SD(\beta_1)$, so I calculate a simple multiple of the standard error of the treatment coefficient in each result. Computed values are shown in Table 3.

Outcome Variable	Non-Land Wealth	M. Revenue	Food Security I.	Health I.	Education I.
MDE multiplied by 100	13.04% (SD:0.04)	10.472% (SD: 0.0374)	18.256% (SD:0.0652)	16.016% (SD:0.05)	16.016% (SD:0.05)

Table 3. Ex post minimum detectable effect sizes (MDE).

Concluding Remarks

Although long-term effects and inflation are not evaluated here, the obtained results show an overall positive effect of the program on the population in food consumption and investment. Haushofer and Shapiro (2016) did not find inflationary effects and the same results are expected. More attention to Universal Basic Income proposals is needed.

Footnotes

[1] The original database of Haushofer and Shapiro (2016) was modified for the purpose of this document. I re-escaled log variables to Colombian pesos units using mean and variances reported by Attanasio and Mesnard (2006), trying to be as realistic as possible.

[2] Given data availability and time issues in the writing of this document I do not present results related to control-spillovers, but further extensions to these effects are straightforward in coding because the spillover variable is already defined and spillovers controls are very similar to the used here: age of female, marital status, number of children, number of members in the household and years of education of female.

Bibliographical References:

Attanasio, O. & Mesnard, A. (2006). "The Impact of a Conditional Cash Transfer Program on Consumption in Colombia", *Fiscal Studies*, 27 (4), 421-442.

Belloni, A., Chernozhukov, V. & Hansen, C. (2014). "High-Dimensional Methods and Inference on Structural and Treatment Effects", *Journal of Economic Perspectives*, 28 (2), 29-50.

Breiman, L. (2001). "Random Forests", *Machine Learning*, 45 (1), 5-32.

Haushofer, J. & Shapiro, J. (2016). "The Short-Term Impact of Unconditional Cash Transfers to the Poor: Experimental Evidence from Kenya", *Quarterly Journal of Economics*, 131 (4), 1973-2042.