Economics Bulletin

Volume 40, Issue 2

Conditional Cash Transfers and Crime: Higher Income but also Better Loot

Fernando Borraz
Facultad de Ciencias Sociales-Universidad de la República and Universidad de Montevideo

Ignacio Munyo
IEEM - Universidad de Montevideo

Abstract

We quantify the effect of conditional cash transfer programs on crime. We find a positive correlation between welfare payments in cash significantly and criminal activities. We exploit the exogenous increase in the payment and the number of beneficiaries given by a major reformulation of the CCT program in Uruguay. The increase in crime is exclusively observed in property crime suggesting the impact is driven by economic reasons. Our findings suggest that an increase in cash available on the streets improves the loot from crime and thus increases the incentive for illegal activities.

We thank José María Cabrera and Juan Dubra for their useful comments and suggestions.
Citation: Fernando Borraz and Ignacio Munyo, (2020) "Conditional Cash Transfers and Crime: Higher Income but also Better Loot", *Economics Bulletin*, Volume 40, Issue 2, pages 1804-1813
Contact: Fernando Borraz - fborraz@gmail.com, Ignacio Munyo - imunyo@gmail.com.
Submitted: April 28, 2020. **Published:** June 24, 2020.

1. Introduction

In the nineties, we observe an increase in the number of conditional cash transfer (CCT) programs in developing economies. The objectives of these programs were to improve family human capital accumulation. These programs were based on a monthly cash payment conditioned on schooling attendance and regular health regular checks. In 2005 Uruguay launched a CCT targeted to vulnerable households. However, there was a reformulation of the program in 2008 that expands the number of beneficiaries (15%) and the amount of the cash transfer (100%).

This paper is based on the 2008 change of the CCT program to empirically estimate the impact of welfare transfers on crime. We show that the change in the CCT program in Uruguay was not related to previous crime trends. Then, we show econometric estimations that welfare cash payments significantly increase criminal activities. The increase in crime is exclusively observed for offenses that have a financial motivation (such as thefts and robberies) and not for other types of offenses (such as assaults and domestic violence) suggesting that the impact is driven by economic reasons.

Becker (1968) postulates that agents decide whether to engage in criminal activities by comparing the financial reward obtained from crime and the return from legal activities. Within this framework, the welfare transfer produces a positive income effect that allows households to purchase goods and thus reduces the incentive to engage in economically motivated crimes. At the same time, welfare payments may precipitate crime by encouraging recipients to expend their resources prematurely, leading them to turn to crime to supplement their income for the remainder of the month (Foley, 2011). Given that the potential effects on the aggregate level of crime are ambiguous, the outcome is an open empirical question.

Previous empirical evidence of the impact of welfare payments on crime suggests that the positive income effect on potential offenders outperforms other incentives for criminal activities. Several studies report that welfare payments significantly decrease arrests in the US (DeFronzo, 1996; DeFronzo, 1997; Hannon & DeFronzo, 1998; Jacob & Ludwig, 2010; Zhang, 1997), and similar results are found in Colombia and Brazil (Camacho & Mejía, 2013; Chioda, De Mello & Soares, 2016).

This research includes yet another ingredient that could affect crime rates: payments in cash. In the previous empirical works, the welfare transfer is usually delivered as a credit in individual accounts. In sharp contrast, in Uruguay welfare payments are delivered in cash. Welfare recipients who have just cashed their money represent especially attractive targets for potential offenders on the streets. More cash available on the streets improves the potential loot from crime and thus increases the incentive for criminal activities. Cash usually plays a relevant role in fueling street crime due to its liquidity and transactional anonymity. The value of the liquidity and transactional anonymity of cash is critical to the performance of the underground economy (Varjavand, 2011).

Criminologists argue that street crime is motivated by a perceived need for cash to finance hedonistic activities (Shover, 1996; Wright & Decker, 1994; Wright & Decker, 1997). Studies based on interviews and observations of active street criminals state the mechanisms through

which the need for cash motivates street crime (Topalli, Wright & Fornango, 2002; Wright & Decker, 1994; Wright, Topalli & Jacques, 2013; Wright & Topalli, 2011). The mechanism is straightforward: cash is a necessary functional component of the etiological cycle that drives street crime. Therefore, an increase in the amount of cash in circulation should produce a concomitant increase in crime rates (Watson, Guetabbi & Reimer, 2020).

Recent evidence suggests that when there is less cash available on the streets, in response to the change in the delivery of welfare transfers from cash to debit cards, there is a significant reduction in crime rates in the US (Wright et al., 2017). In the same line, Armey, Lipow, and Webb (2014) analyzes a sample of 49 countries in order to show that the global spread of electronic financial transaction technology plays an important role in reducing crime and enhancing physical security. They present evidence on a negative and significant statistical relationship between access to electronic payments and the incidence of economic crimes such as robbery and burglary. As expected, they also find that electronic transactions do little to reduce the incidence of non-economic crimes such as homicide and rape.

In more general terms, our paper contributes to the literature on the intended and unintended economic and social consequences of the CCT programs. The literature finds that these programs are effective to reduce extreme poverty, increase school attendance, and improve health care (Fiszbein & Schady, 2009; Rawlings & Rubio, 2005; Schultz, 2004). However, CCT programs also have unintended economic consequences as decrease formal labor supply because workers believe that they can lose the cash payment. At this point the empirical evidence is mixed. (Alzúa, Cruces & Ripani, 2013; Fiszbein & Schandy, 2009, Borraz & Gonzalez, 2009). Another unintended consequence is that the beneficiaries have a lower chance to contribute to social security (Amarante & Vigorito, 2010).

We present empirical evidence that shows that welfare payment given in cash significantly increases criminal activities. Our results are in line with Wright et al. (2017) but within the framework of a sustained increase in crime over time. They present evidence that changing the cash payment to a debit card was associated with a significant decrease in the overall street crime rate. Moving from a check-based system to electronic benefit transfer in the US effectively reduced the amount of cash on the streets available to be taken or used for illegal purposes. Unlike Wright et al. (2017) our results are in a framework of a sustained increase in crime over time

The paper is organized as follows: Section II describes the database used to estimate the effect of the CCT program on crime and introduces the equations to be estimated; Section III introduces the econometric results and the robustness tests to check the main results; Section IV presents the conclusions of the analysis.

2. Data and Methods

2.1Data

We exploit the database of the Police Department, which includes the universe of criminal incidents recorded in Montevideo between April 2005 and December 2010. We focus on the three most frequent types of crime: theft, robbery, and assault. This subset of crimes comprises 77

percent of the total number of police-recorded offenses in Montevideo. Theft is defined as depriving a person of a property without the use of violence (60 percent of total offenses), whereas robbery is defined as depriving a person of the property with the use or threat of violence (10 percent of total offenses). Assault is an intentional physical attack against another person (7 percent of total offenses). We have labeled theft and robbery as property crimes and assaults as non-property crimes.

We also use information from the *Banco de Previsión Social* that is the public agency responsible for the CCT program on the date and the amount of the CCT payment in Montevideo between April of 2005 and December of 2010. According to these official agencies, the payment of the transfer was not concentrated on specific days: the date of the effective payment varies between the beginning and the end of the month.

Lastly, the socioeconomic information on each beneficiary household such as schooling, labor income, and housing characteristics was obtained from the annual Uruguayan household survey conducted by the *Instituto Nacional de Estadística* (National Institute of Statistics).

Montevideo City with 1.5 million inhabitants is divided into 24 police jurisdictions. Each of these jurisdictions is made up of several of the city's neighborhoods. Since Montevideo has an area of 540 square kilometers, police jurisdictions have an average area of 22.5 square kilometers.

Table 1 shows summary statistics for the data that is defined at the police jurisdiction level from April 2005 to December 2010. Then, we have panel data for 24 police jurisdictions in 68 months (1,656 observations). The treatment variable is beneficiary that is defined as the number of beneficiaries of the CCT program (in thousands) per police jurisdiction. There is a difference between the mean and the median of beneficiaries that can be explained by the concentration of household beneficiaries in police jurisdictions. More specifically, seven out of ten beneficiaries are concentrated in six police jurisdictions. Property crime and non-property crime are defined at the police jurisdiction level; in both cases, we have considered the logarithm. The population is defined at the police jurisdiction level and it is measured in a hundred thousand inhabitants. Per capita income is defined at the police jurisdiction level and it is measured in October 2014 constant Uruguayan pesos (simple average). The unemployment rate is also defined at the jurisdictional level (simple average).

Table 1. Summary statistics

	Obs.	Mean	Median	St. Dev.	Min.	Max.
Beneficiaries (thousands)	1,656	4.37	1.20	4.83	0.24	17.49
Property Crime (log)	1,656	5.33	5.47	0.70	1.39	6.49
Non-property Crime (log)	1,656	2.90	3.00	0.80	0.00	4.00
Population (thousands)	1,656	51	49	26	6	115
Per capita Income (thousands of Oct-2014 UR$ pesos)	1,656	6,568	5,246	5,139	1,103	33,736
Unemployment Rate	1,656	8.68	8.36	2.84	0.88	19.99

2.2Methods

We analyze the effect of welfare cash transfers on crime. Thus, the main identification concern of the causal effect is that CCT programs are targeted to vulnerable socioeconomic neighborhoods, which, in turn, can be positively correlated with crime. Poorer neighborhoods have higher transfer coverage and also higher crime rates. To deal with this problem, we exploit an exogenous variation in the number of beneficiaries and in the amount of the transfer of the CCT program in Uruguay.

In Uruguay, the first stage of the CCT program was implemented to eliminate the reduce extreme poverty rates observed after the 2002 crisis when the unemployment rate reach 20%. A monthly cash transfer per household of US dollars 67 was given to the beneficiaries defined by school attendance records and regular health status control for each child in the household.

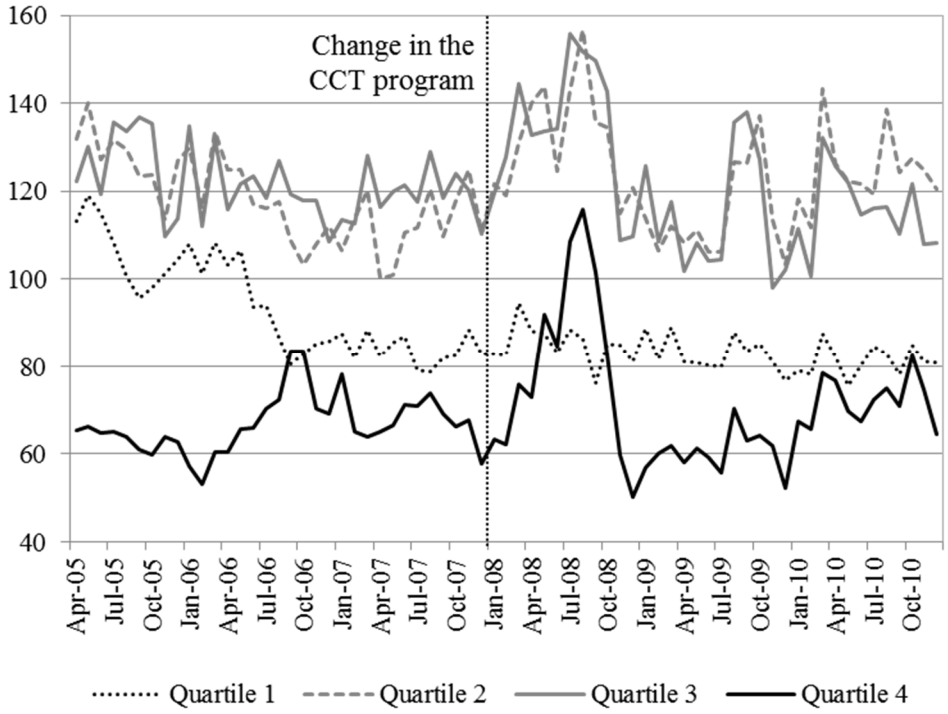
This program was only implemented between April 2005 and December 2007. The second stage of the CCT program (called *Plan de Equidad*) was introduced in January 2008 as a reformulation of an old program (called *Asignaciones Familiares)*. There was a substantial increase in the cash payment from about $67 to $131 and an increase of 15 percent in the number of beneficiaries. To encourage the education of minors in the households, the payment was no longer fixed and became variable. The payment was made by the following formula: $\$56*(\text{Number of kids})^{0.6} + \$17*(\text{Number of kids in high school})^{0.6}$. For example, for a family in which two children are attending primary school and two children attending high school, the total payment equals to $\$154=(\$56*(4)^{0.6} + \$17*(2)^{0.6})$. The beneficiary households of the first stage of the CCT were automatically incorporated to the new CCT program.

Even though cash transfers are not countercyclical programs to alleviate poverty in the short run, for our empirical strategy it is relevant to state that the change in the Uruguayan CCT program was not explained by economic activity fluctuations. GDP per capita growth was more than six percent in 2007, a year before the extension of the program.

Additionally, law 17.869 by which the first CCT program was created in 2005, clearly states that it was a temporary poverty relief program in force from April 2005 to December 2007. Moreover, Amarante and Vigorito (2010) conclude that only two percent of the beneficiaries believed that the CCT would not end.

However, one important concern is that the expansion of the CCT program is explained for the increase in crime. The government could implement the program to counteract crime to a certain degree even if people knew the program would come to an end. For example, the Colombian CCT program (*Familias en Acción*) has a clear crime objective. We address this issue by showing data trends on crime rate in each quartile of jurisdictions considering the number of beneficiaries of the CCT program (see Figure 1). We observe that, crime remained the same or decreased in every quartile before the extension of the program. However, after the introduction of the modifications in the program, total crime increased much more in areas where the intensity of CCT program´s beneficiaries was higher, whereas in the first quartile of jurisdictions according to the intensity of the CCT program, the increase in the crime rate in 2008 was 7 percent and the increase in the fourth quartile was 83 percent.

Figure 1. Evolution of property crime by quartiles of CCT program beneficiaries' intensity



For these reasons, this important change in the Uruguayan CCT program can be considered as exogenous. Also relevant to our identification strategy, no legal modifications were affecting the expected level of punishment for crime in 2008.

Therefore, our estimation of the impact of the CCT program on crime is based on the fact that the first stage of the CCT program is an exogenous source of variation in the number of program beneficiaries across police jurisdictions. Our approach is to compare crime variations in geographical areas with different intensities of CCT beneficiaries before and after the reformulation of the CCT program. We use a difference-in-difference methodology that controls not only selection bias due to observable characteristics, but also unobservable constant characteristics (Abadie 2005; Athey and Imbens 2006):

$$Y_{pt} = \alpha_0 + \alpha_1 Post2008_t + \alpha_2 Beneficiaries_{pt} + \alpha_3 Beneficiaries_{pt} * Post2008_t + \varphi X_{pt} + \varepsilon_{pt}$$
$$p = 1,\ldots., 24; \text{ and } t = \text{April 2005 to December 2010} \qquad (1)$$

where Y_{st} represents the outcome variables (in this case property crime and non-property crime) for police jurisdiction p at time t; $Post2008_t$ is a binary variable with the value of one in the second stage of the CCT program and zero otherwise; $Beneficiaries_{st}$ is the number of beneficiary households in a police jurisdiction p at time t (it is useful to distinguish police jurisdictions that are sensitive to CCT change from those that are not); $Beneficiaries*Post2008_t$ is the interaction of the last two variables; X_{pt} represents the control variables for police jurisdiction p at time t

(population, per capita income and unemployment rate), and, finally, ε_{pt} is the error term. Our parameter of interest is α_3, and it captures the causal effect of the CCT program on property crime.

One concern concerning this strategy is the fact that the error term ε_{pt} could be divided into a component that varies across police jurisdictions and another one that varies at the police jurisdiction–time. To consider this error structure when estimating the standard error of our main estimator, we applied the commonly used robust-clustered standard errors at the police jurisdiction level.

As a robustness check we estimate the placebo test and we estimate the equation (1) with non-property crime as the dependent variable. We expect to find that the CCT program produced no impact on-property crime.

3. Results

In Table 2 we show the baseline estimations of our analysis. In each case, the dependent variable is property crime (in logs) in police jurisdiction *p* at time *t*; the independent variables include the treatment variable defined as the number of beneficiaries (in thousands) of the CCT program in police jurisdiction *p* in period *t*; population (in thousands), per capita income and the unemployment rate in police jurisdiction *p* in period *t*. We estimate our empirical model using a panel fixed effect regression.

Table 2. Impact of the CCT program on property crime

Panel Data Fixed Effect Model					
Dependent variable: property crime (log)					
Variables	(1)	(2)	(3)	(4)	(5)
Beneficiaries	0.007	0.005	0.005	0.004	0.004
	(0.011)	(0.012)	(0.012)	(0.012)	(0.011)
Post 2008	-0.269***	-0.267***	-0.143**	-0.280***	-0.158**
	(0.051)	(0.051)	(0.066)	(0.051)	(0.064)
Beneficiaries * Post 2008	0.011**	0.011**	0.011**	0.011**	0.011*
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Population		-0.001	-0.001	-0.001	-0.001
		(0.001)	(0.001)	(0.001)	(0.001)
Per Capita Income			-0.000		-0.000
			(0.000)		(0.000)
Unemployment Rate				-0.004*	-0.004*
				(0.002)	(0.002)
Fixed Effects	Yes	Yes	Yes	Yes	Yes
Month-Year Dummies	Yes	Yes	Yes	Yes	Yes
Observations	1,656	1,656	1,656	1,656	1,656
Number of Jurisdictions	24	24	24	24	24
Clustered standard errors in parentheses at the jurisdiction level					
* significant at 10%; ** significant at 5%; *** significant at 1%					

For the case that includes controls (see Table 2, column 5) we find a positive and significant effect of the number of beneficiaries of the CCT program on property crime. We estimate that the CCT program increases property crime by 1.1 percent (exp(0.11)-1=0.011).

This result remains almost unchanged when we consider alternative specification including control variables (see Table 2, columns 2-5). We find that per capita income is significant and negatively correlated with crime, and the population and unemployment rate are not significant.

We run two placebo exercises to ensure the causal interpretation of the results. First, we run the same model for non-property-crime. As expected, we find no relationship between CCT beneficiaries and non-property crime in the panel date fixed-effect regression model without controls (see Table 3, column 1) and in the model including controls (see Table 3, columns 2-5).

Table 3. Impact of the CCT program on non-property crime

Panel Data Fixed Effect Model					
Dependent variable: non-property crime (log)					
Variables	(1)	(2)	(3)	(4)	(5)
Beneficiaries	0.023	0.024	0.024	0.024	0.024
	(0.026)	(0.027)	(0.027)	(0.027)	(0.027)
Post 2008	-0.068	-0.068	-0.069	-0.422***	-0.171**
	(0.091)	(0.091)	(0.073)	(0.092)	(0.080)
Beneficiaries * Post 2008	0.004	0.004	0.004	0.004	0.004
	(0.004)	(0.005)	(0.005)	(0.005)	(0.005)
Population		0.000	0.000	0.000	0.000
		(0.001)	(0.001)	(0.001)	(0.001)
Per Capita Income			-0.000		-0.000
			(0.000)		(0.000)
Unemployment Rate				0.002	0.002
				(0.006)	(0.006)
Fixed Effects	Yes	Yes	Yes	Yes	Yes
Jurisdiction Time Trend	Yes	Yes	Yes	Yes	Yes
Observations	1,646	1,646	1,646	1,646	1,646
Number of Jurisdictions	24	24	24	24	24
Clustered standard errors in parentheses at the jurisdiction level					
* significant at 10%; ** significant at 5%; *** significant at 1%					

Second, we performed a placebo test changing the year of expansion of the CCT program from 2008 to 2006 and 2010. Because we did not find coefficients statistically different from zero, our strategy was working properly (see Table 4).

Table 4. Impact of CCT program on property crime: Placebo test

Panel Data Fixed Effect Model		
Dependent variable: property crime (log)		
Variables		
Beneficiaries * Dummy Post **2006**	0.004	
	(0.004)	
Beneficiaries * Dummy Post **2010**		0.009
		(0.008)
Control Variables		Yes
Fixed Effects		Yes
Month-Year Dummies		Yes
Observations		1,656
Number of Jurisdictions		24
Clustered standard errors in parentheses at the jurisdiction level		
* significant at 10%; ** significant at 5%; *** significant at 1%		

As a final robustness check, we estimate a *Poisson panel data model* to take into account the count nature of the dependent variable. The results are aligned with those obtained in the main specification: the CCT program has a positive effect on property crime. The Poisson results are available upon request to the authors.

4. Conclusion

This paper contributes to the unintended consequences of conditional cash transfer programs. We present empirical evidence that shows that welfare payment given in cash significantly increases criminal activities.

Our results contradict previous findings in the literature that suggests that conditional cash transfer programs reduce crime rates. However, the fact that in previous studies the payment was not made in cash, which is the case for Uruguay, suggests that our findings should not be surprising after all.

Our results are in line with Wright et al. (2017) who present evidence that changing the cash payment to a debit card was associated with a significant decrease in the overall street crime rate. Moving from a check-based system to electronic benefit transfer in the US effectively reduced the amount of cash on the streets available to be taken or used for illegal purposes. Unlike Wright et al. (2017) our results are in a framework of a sustained increase in crime over time.

Finally, our findings have direct policy implications by highlighting the importance of avoiding cash payments in welfare programs.

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