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Does poverty relief spending reduce crime? Evidence from Argentina

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Does poverty relief spending reduce crime? Evidence from Argentina

Abstract.

A large body of empirical research suggests that welfare spending reduces crime. Contrary to this dominant finding, a few recent studies conclude that there is no relationship between several measures of welfare spending and serious crime. This paper contributes to the debate using data from the largest poverty alleviation program launched by the Argentinean government to cope with the deleterious effects of the 2002 crisis featuring double-digit unemployment and half of the population below the poverty line. Province – level dynamic panel data reveals that the cash transfers program had a negative impact total crime although the effect was rather weak. The analyses of various types of crime show that the influence of the Argentine poverty relief spending was greater in Property Crimes than Crime against Persons, with the highest effect on larceny.

Keywords: Crime, Welfare Spending, Dynamic Panel Data, Argentina.

Classification JEL: K4, I3, D72, P16.

1. Introduction

The aim of this paper is to explore the impact of the poverty alleviation program launched by the Argentine government to cope with the deleterious effects of the 2002 crisis on various types of crime. Additionally, it embeds the findings for the Argentine case within the broader empirical debate regarding the effect of welfare programs on delinquency.

Few years ago the copious literature on crime seemed to have arrived at a consensus on the influence of relief spending programs on crime. The evidence from various U.S. data sets fitted the theoretical argument, rooted in Becker (1968) seminal contribution that transfers to the needed individuals increase the opportunity cost of committing crime (Defronzo, 1983 and 1996; Zhang, 1997; Chamlin et al., 2002). Nonetheless, Worrall (2005) has challenged that view presenting empirical evidence and theoretical arguments for little or no connection between serious crime and poverty relief spending¹. He argues that the resulting negative correlation between crime and economic assistance obtained in several empirical studies comes mainly from cross-sectional data, and therefore not controlling for fluctuations of the dependent variable over time. Further, he claims that a small amount of welfare transfer is unlikely to change individual attitudes towards crime. This is a key point. Relief transfers might help divert individuals “specialized” in minor offenses like larceny, petty theft or shoplifting from illegal to legal activities, because the investment necessary to participate in those activities is very small, but might not be enough to dissuade offenders dedicated to more sophisticated crimes like robbery and auto theft that require higher degree of investment in both, human capital and inputs.

Recent evidence from U.S. and international panel data by Johnson et al. (2007) and Savage et al. (2009) respectively, showing negative impact of welfare spending on property crime, added interest to the discussion. This paper contributes to this empirical debate by offering evidence from Argentina, an emerging economy that suffered a severe downturn in 2002, compelling the federal government to alleviate poverty by means of a massive cash transfer program that reached almost two million beneficiaries (20% of the labor force) in the first half of 2003. I estimate a

¹ Homicide, robbery, aggravated assault, burglary and larceny are considered serious crimes for Worrall (2005).

dynamic panel data that spans 23 districts for the period 1st semester 2002 to 2nd semester 2005, when the program had a widespread coverage, before substitution by several specific poverty-alleviation programs.

The remainder of the article is organized as follows. Section 2 reviews the theoretical and empirical literature linking welfare spending and crime. Section 3 describes the Argentine socioeconomic context during the period 2002 -2005 and the characteristics of the Unemployed-Headed Household Program (UHHP). Section 4 details the data and econometric specification, while Section 5 supplies the empirical results and explores the possible mechanisms behind those results. Section 6 concludes.

2. Economic conditions, Criminal Activity and Welfare Spending

For analytical purposes, the relationship between criminal activity and welfare spending can be split in two separate (but closely related) links. On one hand, there is a connection between economic conditions and crime that has been extensively studied, in particular the unemployment–crime link (Paternoster and Bushway, 2001; Kleck and Chiricos, 2002; Yearwood and Koinis, 2009; Arvanites and Defina, 2006) and the inequality and crime association (Kelly, 2000; Brush, 2007; Choe, 2008; Scorzafave and Soares, 2009). Following Becker (1968), an individual engages in an illicit activity only if its expected net value is higher than the expected gain from a legal activity. Hence, any deterioration in the labor market that changes the return of legal *vis a vis* illegal activities, like job loss, wage cuts or reduction in extra hours, is expected to augment the crime rate. Nonetheless, this effect may be offset by shrinking crime opportunities in a declining economy. As explained by Cantor and Land (1985), there are two opposite forces at work over the business cycle: motivation and opportunity. Recessions increase motivation to commit crime but may be counteracted by diminishing opportunities as the economy gets poorer². The opposite occurs in recoveries. Opportunities increase *pari passu* with the widespread availability of goods and profitable illegal activities but can be counterbalanced by diminishing motivation.

² An economy undergoing a crisis usually shows high levels of strain, weak social control and high rates of unemployment and underemployment, which reduces the opportunity cost of offenses. Social control is described as the ability of society to regulate its members through formal and informal norms. See Arvanites and Defina (2006)

On the other hand, there is a connection between welfare spending and crime that has received much less attention in the literature. The main argument is that welfare payments to disadvantaged individuals change their time allocation between legal and illegal activities favoring the former in detriment of the latter. Zhang (1997) presents a model with risk averse individuals that respond to cash transfers by diminishing crime rate. The intuition is simple; an increase in welfare payments reduces the marginal utility of a marginal gain from illegal activities. Zhang's empirical evidence from U.S. state-level data for the year 1987 shows that in-kind and cash transfers were negatively and significantly associated with property crime³. Similar conclusions were reached by DeFronzo in a couple of very well known cross sectional studies with unambiguous policy implications. In DeFronzo (1983) the level of public assistance to poor families in 39 U.S. Standard Metropolitan Statistical Area (SMSA) in 1970 was found to have negative effect on the variation of several crime rates, including rates of homicide, rape, and burglary. The same sign for the welfare-crime correlation was obtained by DeFronzo (1996) that focused on the impact of Aid to Families with Dependent Children (AFDC) Program on burglary in 141 U.S. cities.

At the turn of the century the sign of the welfare spending-crime connection seemed to admit no further discussion despite the scarce evidence from longitudinal or panel data studies⁴. Worrall (2005) confronted that view on theoretical as well as empirical grounds. He used panel data from California counties and concludes that there was little to no relationship between serious crime (homicide, robbery, assault, burglary or larceny) and social welfare spending during the period 1990–98. Moreover, he claims that individual attitudes towards crime are unlikely to change due to small amount welfare transfers.

The debate was revived by Burek (2005) that obtained a positive association between the Aid to Families with Dependent Children (AFDC) program with property crimes, working with a panel data including 180 counties in Kentucky from 1980 to 1990. She relied on several hypotheses to explain such challenging result. Firstly, low levels of AFDC assistance may leave potential offenders with a large number of unmet needs for which larceny can effectively supplement. Secondly, welfare may

³ Different from Zhang(1997) I am not addressing the question about the appropriate welfare spending but the impact of a particular relief program on crime

⁴ Chamlin et al. (2002) is an example of longitudinal analysis of the welfare spending-crime relationship. They found a negative association between the number of welfare recipients per month and the monthly level of family homicides.

weaken control that family and employment have over community behaviors. Moreover, welfare may influence the breakdown of family (fathers leave home because a mother traditionally could not be married to collect welfare) and may also discourage parents from seeking gainful employment in the job market because eligibility rules require that the parent be unemployed what leaves them with free time for illegal activities

In another provocative paper, Burek (2006) obtained no association between two categories of crime (instrumental” and “expressive”) and relief spending for 81 counties in Iowa’s in 2000. On the contrary, Johnson et al. (2007) found a negative impact of relief spending by all levels of government on crime rates for 81 large American cities for the years of the Great Depression, 1930 through 1940⁵. Their estimations suggest that a ten percent increase in relief spending during the 1930s lowered property crime by roughly 1.5 percent. They found that work relief was more effective than direct relief (cash transfers) in reducing crime because the former limited the amount of free time for relief recipients.

The majority of empirical studies deal with U.S. data. Only recently Savage et al. (2008) analyzed various hypotheses regarding the connection between crime and welfare spending and its causality with a panel data of 52 countries and 13-year period from 1972 to 1984. Their estimations suggest that a 10 percent increase in social welfare spending generates, on average, 2.3 percent lower theft rates and 3.3 percent lower homicide rates. They conjecture that social welfare affects crime directly (in the short-run), by mitigating the effects of inequality and indirectly (in the long-run), by decreasing absolute deprivation, improving early health care and increasing the chances of a better education.

3. Crisis, Social Distress and Crime in Argentina

Argentina is constitutionally organized as a federal republic with 23 provinces and an autonomous federal district, the city of Buenos Aires. In 2002 Argentina suffered the deepest crisis in its history. The ten-year old currency board that had been established by law in the early 1990s to stabilize the economy and promote growth, collapsed following devaluation, massive capital outflows and the world largest debt

⁵ According to Burke (2006) instrumental crimes yield monetary or material gain rather than emotional satisfaction. Conversely, expressive crimes are committed to resolve issues of anger, the desire for control, frustration, and/ or despair. Crimes such as homicide, aggravated assaults, and rapes are considered to be expressive in nature.

default ever. GDP plunged 11% and consumer price inflation escalated to 26%. The contraction of the economic activity reduced labor demand, particularly the demand for unskilled workers. The unemployment and underemployment rates peaked 20% and 12% respectively in the first half of 2003. More than 50% of the population fell below the poverty line and almost a third of the total urban population starved. The poor had limited or no access to credit markets and lacked assets to hedge against employment shocks and the inflation tax that deteriorated their wealth and income. Moreover, the rapid currency depreciation increased the price of tradable relative to non-tradable goods, hurting the poor via fall in real wages. Middle income population also suffered since bank deposits denominated in U.S. dollars were partially confiscated by the government. Massive protests and rallies of unemployed and depositors contributed to social unrest. Table 1 presents the behavior of some key socioeconomic variables at the of peak the crisis

Table 1. Socioeconomic impact of the Crisis

	Percentage of the population under the poverty line	Infant Mortality Rate	Unemployment rate	Underemployment Rate
Country average	52.5 (1 st half 2003)	16.8 (Year 2002)	20.0 (1 st half 2003)	12.2 (1 st half 2003)
Province or Urban area with the highest rate	74.9 (City of Corrientes -1 st half 2003)	26.7 (Province of Chaco – 2002)	22.7 (Greater Rosario -1 st half 2003)	17.6 (Greater San Miguel de Tucuman -1 st half 2003)

Source: Instituto Nacional de Estadísticas y Censos (INDEC)

The extreme socioeconomic circumstances impelled the federal government to launch a cash transfer program called Unemployed-Headed Household Program (Programa Jefes y Jefas de Hogar Desocupados) to alleviate poverty. The program transferred 150 pesos per unemployed household with pregnant women or children under 18 years old living at home, which represented about 14.6% of the average salary of the public sector and about 75% of the minimum wage⁶.

⁶ In 2002 the average salary of the public sector in Argentina was 1024 pesos. The province with the highest average salary was Tierra del Fuego with 1821 pesos and the one with the minimum, Salta with 846 pesos.

The Program started in May 2002 with 574,434 recipients across the country but increased sharply, reaching its maximum in May 2003, with 1,990,735 beneficiaries that represented almost 20% of the total labor force of Argentina and 146% of the total employment in the provincial public sector of the 24 jurisdictions (see Table 2). By the end of 2005 the number of beneficiaries had decreased to approximately 1,539,000 due to the improving economic conditions and the introduction of new poverty alleviation programs focused on vulnerable segments of the population like Family Plan (Plan Familias para la Inclusion Social), Adults Program (Programa Adulto Mayor Más) and Hands at Work (Plan Manos a la Obra). The intense migration from the Unemployed–Headed Household Program to the Family Plan explains the abrupt fall of the number of recipients from 2006 on. In April 2007, the number of recipients was less than one million and in September 2008 less than half million.

Table 2. Number of beneficiaries of the Unemployed-Headed Household Program from 2002 to 2005 (monthly average)

Year	Semester	Number of Beneficiaries	Rate of growth (%)
2002	1 st	877,266	
	2 nd	1,707,081	94.6
2003	1 st	1,955,824	14.6
	2 nd	1,887,865	-3.5
2004	1 st	1,757,362	-6.9
	2 nd	1,622,638	-7.7
2005	1 st	1,559,260	-3.9
	2 nd	1,538,969	-1.3

Source: Instituto Nacional de Estadísticas y Censos (INDEC)

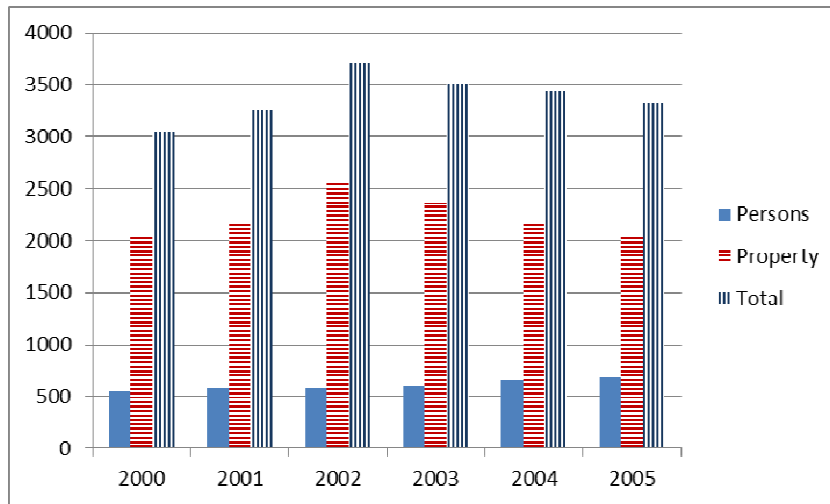
Note: The program distributed cash transfers from May 2002.

Crime in times of Crisis

For most of the 20th century Argentina could proudly show the lowest crime rates in America. But starting in the 1980s crime rate climbed uninterruptedly until 2002, reaching a historical record of 3697 offenses per 100,000 inhabitants, more than the triple of the rate registered in 1983 (Cerro and Meloni, 1999 and 2000). To preexisting conditions characterized by very low deterrence, high unemployment rates and impairing income inequality, the 2002 crisis added a context of social

turbulence that spurred crimes rates. In 2002 total crime grew 13.8% and property crimes 19.7% with respect to 2001. Interestingly, the types of property crime that registered the highest rates of growth were larceny and robbery with 22.9% and 22.8% respectively. As economic conditions improved and social control was restored crimes rates descended to values prevailing in 2000/2001⁷.

Figure 1. **Evolution of Total Crime, property Crime and Crime against Persons**



Source: Direccion Nacional de Politica Criminal. Ministerio del Interior.

4. Econometric Specification and Data

In order to study the conjectured connection between welfare spending and criminal activity I work with a panel data that comprises 23 out of 24 Argentine provinces and 8 consecutive semesters from the first half of 2002 to the second half of 2005. I excluded the province of Rio Negro from my analysis because control variables such as unemployment and income distributions measures were not available for most of the sample. By focusing on a single country this paper exploits within-country variation. This is a remarkable source of variation that goes beyond cross-country empirical studies. I estimate the following linear equation where criminal activity is assumed to depend on its lagged value, the number of beneficiaries of the poverty alleviation program and several socio economic variables to account for variability in the data due to factors other than poverty relief. That is,

⁷ Other factors influencing crime rate were presidential and gubernatorial elections that took place 2003. See Meloni (2011)

$$Crime_{it} = \beta_0 + \beta_1 Crime_{it-1} + \beta_2 RELIEF_{it} + \beta_3 CONTROLS_{jt} + \varepsilon_{it} \quad (I)$$

Where i indexes jurisdictions and t represents time (half years)

Dependent variables

I test the impact of poverty relief program on seven variables measuring criminal activity: total crime rate, property crime, robbery, larceny, crime against persons, aggravated assault and homicide. Property crimes represented 65% of total offenses in the period under study and its two main categories, robbery and larceny, accounted for 32% and 27% of total crime respectively. Likewise, crime against persons explained 18% of total crime and the share of aggravated assault and homicide were 11% and 0.2% correspondingly.

Key Independent Variable

The independent variable of primary interest in my analysis is RELIEF, defined as the monthly average of number of beneficiary of the Unemployed–Headed Household Program per 1000 inhabitants in a given district and semester.

Controlling socioeconomic influences

My empirical study includes a series of socioeconomic control variables which have been found in the extant literature to explain the behavior of different categories of crime rate. I include the unemployment rate to capture the effect of the implicit price of legal relative to illegal activities. In Cantor and Land (1985) language, the increase in unemployment rate augments the motivation for crime, particularly property crimes. To account for additional influences of weak labor market, I construct another variable that adds the rate of underemployment to the rate of unemployment.

Following the abundant literature on crime determinants I include the Gini coefficient to reflect the impact of income distribution on crime. I assume that the greater the baseline level of Gini Coefficient in the province, the higher the criminal activity. Alternative measures of income inequality like the Theil and Entropia indices were also considered.

I incorporate the collection of turnover tax per capita as a proxy for economic activity. The usual variable to capture the opportunity effect on crime is GDP per capita but it is only available on annual basis. The turnover tax is a provincial duty applied to

sales in every stage of production. On average, turnover tax accounted for 60% of local tax collection in the period 2002-2006. I expect improving economic conditions to increase the income of legal activities relative to the illegal ones and therefore to be negatively correlated to crime rates, particularly property crimes. In addition to the socioeconomic control variables discussed above I also include Population Density to account for the fact that crime is higher in highly populated areas.

Table 3 provides summary statistics for the variables included in the econometric estimations. The coding of each variable is shown in the Appendix⁸. These data show clear differences in the chronological behavior of property crimes and crime against persons. Property offenses increased sharply from the beginning of the period, peaking in first semester of 2003 and then decreasing slowly to reach the values prevalent in the first half of 2002. Conversely, crime against persons and its main category, aggravated assault, show an upward tendency all along the period. The exception to this behavior is the homicide rate that present a V-form reaching its maximum in 2002.

Table 3. **Descriptive Statistics.**

Variable	Obs	Mean	Std. Dev.	Min	Max
Dependent Variables					
Total Crime	184	1869.89	649.82	764.04	3400.52
Property Crime	184	1234.50	512.23	361.92	2512.92
Robbery	184	507.64	273.82	148.05	1296.54
Larceny	184	565.64	258.73	130.29	1254.01
Crime against Persons	184	328.24	117.14	118.26	672.64
Aggravated Assault	184	212.69	81.79	29.8	453.74
Homicide	184	2.77	1.52	0	8.58
Key Explanatory Variable					
Relief	184	46.11	26.14	4.8	110.8
Socio economic controls					
Turnover tax Collection (pesos per capita)	184	10.49	9.36	1.13	47.59
Unemployment (%)	184	12.27	5.43	0.7	25.5
Gini	184	0.51	0.06	0.375	0.72
Density (inhabitants per squared kilometers)	184	668.13	3078.79	0.084	15128.86

Note: numbers of districts: 23; numbers of periods: 8 (half-years)

⁸ See Table 1A

Data

Crime data were obtained from the Dirección Nacional de Política Criminal, Ministerio de Justicia y Derechos Humanos (www.ius.gov.ar). Argentine authorities classify crime data in six categories: crime against persons, sex offenses, crime against the State and the Community, crime against liberty, property crime and other crimes. But only crime against persons and property crimes are officially available on a monthly basis. Crime against persons consists of Homicides, Aggravated Assault and other crimes. Crimes against property comprise Robbery, Larceny and other property crimes. The well-known under-reporting bias that affects property crimes is expected to be correlated with some of the explanatory variables.

The source for the number of beneficiaries of the Unemployed-Headed Household Program (Programa Jefes y Jefas de Hogar Desocupados) was Ministerio del Interior. Data on population, unemployment and underemployment come from the Argentinean Bureau of Statistics named Instituto Nacional de Estadísticas y Censos (INDEC). The Rate of Unemployment is defined as total unemployed (People who are jobless, looking for jobs, and available for work) as percentage of civilian labor force. Underemployment, instead, is defined as total involuntary employed part time (less than 25 hours per week), as a percent of the civilian labor force.

The Gini Coefficient and other measures of income inequality like the Theil and Entropia were computed by the Instituto de Estudios Laborales y del Desarrollo Económico (IELDE), Universidad Nacional de Salta from Household Surveys performed by INDEC. Tax collection data were obtained from Dirección Nacional de Coordinación Fiscal con las Provincias, Ministerio de Economía (www.mecon.gov.ar)

5. Regression results

Table 4 presents estimations of equation (I) for the selected crime categories. Regressions (1), (3), (5), (6), (7), (9) and (11) display the estimations of the full model for each independent crime variable while regression (2), (4), (8), (10) and (12) only contain control variables that pass the .10 level of significance, so they are the ones upon which I base my conclusions. Notice that regressions (5) and (6) having Robbery and Larceny as dependent variables present all explanatory variables at usual levels of significance.

Table 4. Does Welfare Spending affect crime?

Estimation Method: GMM (Arellano-Bond) with robust standard errors

Variables	Dependent variables											
	Total Crime		Property Crime		Burglary	Larceny	Crime against persons		Aggravated assault		Murder	
	1	2	3	4	5	6	7	8	9	10	11	12
Lagged dependent variable	0.0701 (0.2110)	0.1887 (0.1675)	0.4998*** (0.1631)	0.6135*** (0.1317)	0.3102** (0.1311)	0.4452*** (0.1384)	0.1904 (0.1619)	0.2170 0.1677	0.0646 (0.1394)	0.0423 (0.1440)	0.0670 (0.0893)	0.0731 (0.0827)
Relief	-8.4778** (4.3295)	-8.5211** (4.1140)	-9.9408*** (2.5864)	-10.339*** (2.5257)	-2.7128*** (0.8908)	-5.3026*** (1.6894)	-1.0906 (0.7191)	-1.1685* (0.6515)	-1.3727** (0.6319)	-1.2875** (0.6153)	-0.0097 (0.0153)	-0.0065 (0.0140)
Activity	-15.8552 (10.0550)	-20.3266* (10.8206)	-15.9415** (6.9503)	-18.453** (7.5946)	-6.5866** (2.7502)	-8.7054*** (3.0720)	-0.1167 (1.5604)		-0.9052 1.1170		-0.0423 (0.0453)	
Unemployment	8.5476 (5.6553)	13.3048** (5.4610)	9.5309** (4.6987)	11.4259** (4.5105)	4.6630*** (1.6633)	6.7307** (2.9435)	-2.3690*** (0.7757)	-2.5586*** (0.7003)	-1.0920** (0.5353)	-0.8060* (0.4427)	0.0480* (0.0282)	0.0588* (0.0323)
Gini	793.027** (398.621)		489.3719 (331.503)		305.043** (151.358)	283.7654* * (142.014)	-43.954 (63.363)		-8.8998 (37.4783)		5.5135** (2.4653)	6.0347** (2.3828)
Density	3.7790** (1.6474)	3.4147* (1.9924)	3.8122*** (1.0424)	3.6336*** (1.2196)	2.0898*** (0.5605)	1.6828** (0.7070)	0.4406 (0.3164)	0.4298** (0.1935)	0.1936 0.2271		0.0140* (0.0075)	0.0079* (0.005)
Constant	-683.037 (2648.087)	-270.606 (2581.359)	-1627.835 (2619.844)	-1381.002 (2514.866)	-1048.307 (1370.844)	-678.8066 (1355.519)	81.022 (231.420)	62.465 (227.813)	168.9787 143.6031	281.189** * (53.892)	-9.180 (8.036)	-6.0824 (4.481)
Test that average autocovariance in residuals of order 1 is 0. Pr>z=	0.672	0.2894	0.0279	0.0105	0.0365	0.0132	0.0881	0.0699	0.4427	0.4316	0.0189	0.0169
Test that average autocovariance in residuals of order 2 is 0. Pr>z=	0.981	0.6089	0.6891	0.5946	0.8418	0.803	0.6682	0.569	0.7383	0.7367	0.3467	0.3413

Notes: standard errors in parenthesis below coefficient. *** Significant at .01. ** Significant at .05. * Significant at .10.

Observations (N) = 184. Districts: 23. Periods: 8 (1st half 2002 - 2nd half 2005)

As already remarked, all the models include lagged dependent variables to capture the rigidity of crime rate from one year to another, thus I estimate using the dynamic panel technique developed by Arellano and Bond with robust standard errors. To minimize the possibility of simultaneous relationship between RELIEF and any of the Crime categories I also estimate equation (1) including RELIEF lagged one semester instead of the contemporaneous values⁹. As another robustness check I estimate equation (1) by OLS with fixed effects and robust standard errors. Results of both checks, shown in the Appendix, do not differ significantly from the ones obtained by Arellano-Bond technique with contemporaneous values of RELIEF¹⁰.

My estimations show strong evidence that welfare spending is significantly and negatively associated with all categories of crime except for Homicide. The estimated coefficient of RELIEF for Property Crime, Robbery and Larceny is negative and statistical significant at 1%; for Total Crime and Aggravated Assault is significant at 5% and for Crime against Persons at 10%. Nonetheless, the influence of RELIEF on crime is very small. Table 5 present the elasticities of RELIEF with respect to each type of crime computed from mean values of the sample. A 1% increase in the number of recipients of the Unemployed-Headed Household Program diminish the total crime rate in less than 1% in all types of crime, with larceny showing the highest response with just 0.43%. Notice that my estimated elasticities show remarkable similitudes to the ones obtained by Johnson et al. (2007) in their study on the consequences of relief during the Great depression and to those of Savage et al. (2008) in their cross country analysis.

As expected, the impact of poverty-alleviation aid on crime against person is very low and null on homicide. The value estimated for the elasticity of Aggravated Assault, close to the value of Robbery, may indicate that a substantial number of such type of offense is related to property crimes.

⁹ Federal government did not use crime rate to evaluate the need of relief spending (actually, they were guided by the percentage of population under the poverty line) so there is no simultaneity issue that could bias the RELIEF coefficient.

¹⁰ The Arellano-Bond estimation method is generally used when N is large (here the number of provinces) and T (time periods) is small. My data set has N= 23 and T= 8. See Tables 2A and 3A in the Appendix,

Table 5. Estimated Elasticity of Relief Spending (UHHP) with respect to each type of Crime

	Total Crime	Property Crime	Robbery	Larceny	Crime Against Persons	Aggravated Assault
Sample Mean	1869.9	1234.5	507.6	565.6	328.2	212.7
Elasticity of Welfare Spending with respect to:	-0.21	-0.39	-0.25	-0.43	-0.16	-0.28

6. Concluding remarks

In the last decade there have been an interesting discussion regarding the effects of welfare spending on crime which has obvious public policy implications. The extant literature has focused mainly on empirical issues using data sets from various U.S. states in different periods. The international evidence has been scarce on this topic. This paper contributes to this empirical debate by testing how diverse types of crime were affected by the Unemployed-Headed Household Program, a massive cash transfer program launched by the Argentine government to alleviate the poverty resulting from the deep crisis of 2002.

My findings suggest that welfare spending contributed to reduce total crime although the impact was rather weak. The analyses of various types of crime show that the influence of UHHP is greater in Property Crimes than Crime against Persons. As conjectured, poverty alleviation aid affected predominantly larceny. Apparently, the amount of cash transfer received by beneficiaries of the UHHP, influenced mostly the opportunity cost of committing minor offenses, like the ones considered under the category of larceny. The same reasoning fits the results obtained for Robbery and Aggravated Assault that were hardly influenced by UHHP and for Homicide that was not affected at all by poverty alleviation aid. Relief spending might have also helped to diminish crime indirectly by improving social control and lowering strain, but the limitations of my data set does not allow the identification of each effect.

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Table 1A. Definition of Variables

Type of variable	Variable	Definition
Dependent	<i>Crime_{it}</i>	Total offenses per 100,000 inhabitants in semester <i>t</i> at district <i>i</i>
	<i>Property_{it}</i>	Property Crime offenses per 100,000 inhabitants in semester <i>t</i> at district <i>i</i> . Property crimes include robberies, larcenies and other property crimes
	<i>Robbery_{it}</i>	Taking or attempting to take anything of value from a person by force or threat of force or violence per 100,000 inhabitants in semester <i>t</i> at district <i>i</i> . Attempted robberies are included. Robberies aggravated by injuries or death are excluded
	<i>Larceny_{it}</i>	Unlawfully taking property from another without force, violence or fraud (attempted larcenies are included) per 100,000 inhabitants in semester <i>t</i> at district <i>i</i> . Attempted larcenies are included
	<i>Persons_{it}</i>	Crime against persons per 100,000 inhabitants in semester <i>t</i> at district <i>i</i> .
	<i>Assault_{it}</i>	Aggravated assaults per 100,000 inhabitants in semester <i>t</i> at district <i>i</i> .
	<i>Homicide_{it}</i>	Homicide offenses per 100,000 inhabitants in semester <i>t</i> at district <i>i</i>
Key independent variable	<i>Relief_{it}</i>	Number of beneficiaries of Unemployed-Headed Household Program (Programa Jefes y Jefas de Hogar Desocupados) per 100,000 inhabitants in semester <i>t</i> at district <i>i</i> . (Monthly Average)
Control Variables	<i>Activity_{it}</i>	Turnover tax collection per capita in district <i>i</i> at semester <i>t</i> (in constant pesos of 2004)
	<i>Unemployment_{it}</i>	Rate of unemployment of district <i>i</i> in semester <i>t</i> .
	<i>Gini_{it}</i>	Gini coefficient of district <i>i</i> in semester <i>t</i> .
	<i>Density_{it}</i>	Population per square kilometers of district <i>i</i> at semester <i>t</i> .

Note: Robbery and Larceny are included in the property crime category. Aggravated assault and homicide are included in the category Crime against Persons.

Table 2A. Robustness Check I: Lagged Welfare program

Estimation Method: GMM (Arellano-Bond) with robust standard errors

Variables	Dependent variables		
	Property Crime	Robbery	Larceny
Lagged dependent variable	0.4699*** (0.1228)	0.4370*** (0.1357)	0.3311*** (0.1224)
RELIEF (t-1)	-3.7421*** (0.6939)	-1.4788*** (0.3159)	-1.7549*** (0.4459)
Activity	-10.4784** (4.6850)	-5.6188** (2.5441)	-6.7015*** (2.6139)
Unemployment	5.0165 (4.6191)	3.3048* (1.8267)	4.9294* (2.6797)
Density	2.1708*** (0.7976)	1.5517*** (0.4505)	
Constant	-578.055 (1641.31)	-663.084 (972.501)	469.7943*** (111.7638)
Test that average autocovariance in residuals of order 1 is 0. Pr>z=	0.0171	0.0072	0.0142
Test that average autocovariance in residuals of order 2 is 0. Pr>z=	0.5980	0.7568	0.8006

Notes: standard errors in parenthesis below coefficient. *** Significant at .01. ** Significant at .05. * Significant at .10.

Observations (N) = 184. **Districts:** 23. **Periods:** 8 (1st half 2002 - 2nd half 2005)

Table 3A. Robustness Check II: OLS with Fixed Effects

Estimation Method: OLS with fixed-effects and robust standard errors

	Dependent variables							
	Total Crime		Property Crime		Robbery		Larceny	
	1	2	3	4	5	6	7	8
Lagged dependent variable	0.6190*** (0.0992)	0.6264*** (0.0980)	0.6720*** (0.0802)	0.6668*** (0.0782)	0.6352*** (0.0850)	0.6513*** (0.0793)	0.6538*** (0.0802)	0.6919*** (0.06849)
RELIEF	-2.5831 (1.5999)	-2.9992* (1.5540)	-3.2102** (1.4307)	-3.5718** (1.3522)	-0.7591* (0.4232)	-1.0138** (0.3724)	-1.837** (0.7378)	-3.066** (1.450)
Activity	-9.5474*** (2.5932)	-13.375*** (3.319)	-9.6239*** (2.3571)	-8.0631** (3.4886)	-23.52*** (0.954)	-3.2762** (1.3276)	-6.011*** (1.1425)	-7.404** (3.511)
Unemployment	3.4637 (5.2013)		4.4049 (3.8987)		2.7481 (1.7916)		3.0802 (2.3029)	6.9877** (3.402)
Gini	142.0621 (248.7794)		204.726 (204.177)	371.704** (179.156)	75.420 (112.687)	179.493* (99.910)	95.9069 (95.7740)	
Density	2.5983*** (0.5620)	2.7875*** (0.37028)	2.86955*** (0.5111)		0.921*** (0.1949)		1.624*** (0.302)	
Constant	-910.470* (505.749)	-876.856* (496.408)	-1303.733 (398.194)	473.437*** (118.144)	-429.429 (164.631)	167.91** (60.450)	-828.5*** (227.953)	551.87*** (89.295)
R ² within	0.4115	0.4050	0.5223	0.5008	0.5104	0.4893	0.5389	0.5088
R ² between	0.2537	0.2514	0.2295	0.9569	0.3992	0.9792	0.1004	0.9593
R ² overall	0.2356	0.2333	0.2106	0.9036	0.3773	0.9387	0.0901	0.9041

Notes: standard errors in parenthesis below coefficient. *** Significant at .01. ** Significant at .05. * Significant at .10.

Observations (N) = 184. Districts: 23. Periods: 8 (1st half 2002 - 2nd half 2005)