REDISTRIBUTION, INEQUALITY AND POLITICAL CONFLICT

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Abstract: *This paper investigates the relationship between redistributive policies and socio-political conflict in developing economies. It argues that redistribution is central to the process of socio-economic development of developing countries prone to political instability. The paper provides a theoretical analysis of the relationship between redistribution and conflict, using a discrete two-period recursive model. This relationship is also analysed empirically using panel data for 14 major states. The empirical analysis shows that redistributive policies can be an important factor in the diffusion of conflict in situations where the causes of conflict lie in the discontent of some population groups with persistent poverty, increasing inequalities and deteriorating living conditions.*

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1. INTRODUCTION

A large number of developing countries has experienced serious socio-political conflicts[1] in the last decades, including large-scale civil wars. Those conflicts have affected millions of people and have led to significant lost opportunities in terms of economic growth and social development. Although conflict can assume a variety of forms, all types of conflict will entail important private and social costs. While violent types of conflict are frequently responsible for the death of valuable members of society[2] and the loss of livelihoods, most forms of conflict (including riots, insurrections, industrial disputes and so forth) increase the risk of private investment, lead to a loss of trust between economic agents and waste resources. For instance, the use of military or police forces, a common reaction against conflict, implies the diversion of important financial flows and labour supply from productive activities into the maintenance of unproductive security forces. In addition, risk-averse investors faced with conflictual socio-political environments will have the incentive to withdraw national investments or invest abroad in more stable locations. The worse consequence of conflict is the danger of self-perpetuation: social, political and economic disruption usually leads to further economic disruption, which will severely decrease people's well-being and, consequently, increase even further existing poverty and inequality gaps in society.

Inequality has been proposed in the literature as a significant cause of conflict. Economic, social and political inequalities can harm economic growth if they result in the accumulation of discontent amongst some population groups to a sufficiently high level as to break social cohesion. Although not all social and political conflicts are driven by the existence and/or persistence of inequalities, several studies have suggested that inequality and persistent poverty amongst certain population groups are important causes of riots, insurrections and other forms of civil upheavals.[3] Recent literature on the economic causes of civil wars in developing countries has also identified poverty and inequality as possible causes of this extreme type of conflict (Stewart, 1998, 2002; Elbadawi, 1999; Dollar, Easterly and Gatti, 2000), whereas other studies have found strong links between increased income inequality and the rise of crime rates (Becker, 1968; Ehrlich, 1972; Sala-i-Martin, 1996; Fajnzylber, Lederman and Loayza, 1998; Cruz et al., 1998; IADB, 1998).

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[1] Conflict is understood in this paper as encompassing a range of activities (strikes, riots, crime, civil wars, coups d'état and so forth) that disrupt normal productive and social activities. This notion is similar to that used in Gupta (1990), Alesina, Özler, Roubini and Swagel (1992), Alesina and Perotti (1993), Perotti (1993) and Bénabou (1996).
[2] Between 1950 and 1990, wars in developing countries (including international conflicts, civil wars and government violence against citizens) have resulted in over fifteen million deaths (Stewart and Fitzgerald, 2001).
[3] For an extensive review see Gupta (1990).

The general tendency of governments in conflict-prone economies is to resort to the use of military force to counteract civil and/or political upheavals. In many circumstances this will be a counterproductive measure since it does not address the direct causes of conflict and may even emphasise underlying persistent forms of inequality.[4] Furthermore, in societies where the potential for conflict is high, the continued use of coercive force may in fact leave sufficient resentment in the population as to provoke further conflict in the long run.

This paper investigates the possible use of redistribution (such as the establishment of safety net policies, land reforms, public expenditure on education and health, and so forth)[5] as a way of preventing the occurrence of conflict or a means of diffusing existing conflicts. The implementation of redistributive policies is not, however, a popular policy recommendation for developing countries. These countries face, in general, large social, political and economic constraints (high tax evasion, political pressure against income transfers exerted by richer classes, administrative and managerial inefficiencies, budget limitations and so forth) that difficult the implementation of redistributive programmes. Redistributive policies are also seen as distortions to those economies since they may result in implicit taxes on investment which, consequently, will lower economic growth and further increase poverty and income inequalities (Persson and Tabellini, 1991; Alesina and Rodrik, 1994).[6] In addition, redistributive policies may be constrained by opposition to redistribution by political and social elites or lack of political will for redistribution from governments involved in the pursuit of electoral advantages. A better way of reducing poverty and inequality would thus be to increase economic growth rather than implement redistributive policies (Bruno, Ravallion and Squire, 1997; Dollar and Kraay, 2000). However, although economic growth is an important factor in the promotion of sustainable development strategies, economic growth per se does not guarantee that those in most acute need will benefit from increased incomes. Initial protection mechanisms against poverty, destitution and vulnerability would guarantee better protection of vulnerable elements of the population against life contingencies, which, in turn, would remove significant incentives for social tensions and conflict.[7] By contributing towards the reduction of socio-political tensions, redistributive policies may also impact on the welfare of higher income groups that get negatively affected by conflict (but that may nonetheless oppose redistribution) (Sala-i-Martin, 1996). Even if the income and other

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[4] See Gurr (1970) and Hirschman (1981)..

[5] We refer to redistribution in this paper in its broadest sense. It encompasses not only traditional systems of income transfers but also all types of policies that will increase the social, economic and political welfare of disadvantaged population groups.

[6] This view has been part of mainstream economic theory since the classical economists (Adam Smith, David Ricardo) who argued that the redistribution of incomes to the poor would decrease the share of national income available for savings and accumulation and, thus, the potential for economic growth (see Justino, 2001 for discussion).

assets of those groups do not face a direct risk of destruction by conflict (because, for instance, they are kept in safe bank accounts abroad), conflict may still threaten the social and political power of elites, as well as their personal safety and that of their families.[8]

This paper discusses the relationship between redistributive policies and conflict and analyses how that relationship may affect the prospects for economic development in developing economies. Section 2 provides a theoretical framework for the analysis of the relationship between conflict and redistribution using a two-period recursive model. The model considers the trade-off between the use of redistribution and the use of police in containing conflict and illustrates the circumstances in which redistributive policies will be the optimal instrument for the prevention and/or alleviation of socio-political conflict. Sections 3 and 4 examine the relationship between redistribution, use of police and conflict in the context of India. Section 3 provides a descriptive analysis of conflict in India, whereas section 4 investigates the relationship between redistribution, the use of police and conflict in India using panel data for 14 major Indian states for the period between 1973-74 and 1999-2000. The section tests the assumptions of the model developed in section 2 and analyses the determinants of social and political conflict in India during the last three decades. The results show that redistribution has played an important role in the prevention and reduction of conflict in India and has been a central factor in preventing smaller-scale conflicts from escalating into violent civil wars. These results are robust to changes in model specification and the correction of possible problems of endogeneity in the initial model. Section 5 concludes the paper.

2. THEORETICAL FRAMEWORK: THE TRADE-OFF BETWEEN REDISTRIBUTION AND POLICING

This section analyses the relationship between conflict and redistribution and the trade-off between redistributive transfers and the use of police or military forces using a two-period recursive model. The model is used to derive the conditions in which redistributive policies will be the optimal instrument for the resolution of socio-political conflicts. This model simplifies reality to a large extent since it does not take into consideration a potentially large number of social, cultural and even other economic factors that may impact on conflict. However, the model provides a good illustration of the impending trade-offs faced

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[7] See Alesina et al. (1992), Alesina and Perotti (1993) and Bénabou (1996) for similar arguments.
[8] The introduction of conflict as a constrain to the maximisation of the utility function of the rich introduces an externality effect, which results from the interdependency that necessarily arises between the utility function of the rich and the utility function of the poor when the conflict variable is taken into consideration. This externality effect of redistributive policies is similar to the externality effects of income transfers analysed by Zeckhauser (1991), Sala-i-Martin (1994) and Cashin (1995) and manifests itself on an indirect increase of the welfare of the group that provides the transfers, whether the transfer is intra-generational (as in Zeckhauser's work), or intergenerational (Sala-i-Martin).

by governments and other policy-makers in conflictual societies, where the occurrence of conflict is strongly related to the persistence of inequalities. Section 4 will highlight the full extent of the predictive and explanatory power of this model in the understanding of the relationship between conflict, redistribution and use of police.

The analysis in this section assumes an unequal society where conflict is largely caused by social discontent with the persistence of inequalities (I_t). In order to simplify the analysis, we assume a society formed by two groups (the *rich* and the *poor*). Choices regarding conflict management (i.e. choices about the use of police or the implementation of redistributive programmes) are taken by the *rich* in a two-period (t and $t-1$) decision process. P_t represents the immediate or short-term effect of the use of police on conflict. This effect is assumed to be negative suggesting that, at least temporarily, the use of police will reduce the level of conflict. P_{t-1} represents the long-term effect of continuous use of police on conflict. This impact is assumed to be positive.[9] This captures the assumption that, although repression may be efficient in decreasing any manifestation of conflict in the short term, it may have negative repercussions in the long term as it may increase people's discontent and resentment.[10]

The effects of inequality and use of police on conflict can be represented in a difference equation:

$$C_t = C_{t-1} - \sigma P_t + \lambda P_{t-1} + \theta I_{t-1},$$

(1)

where the level of conflict in period t is assumed to depend on the level of conflict in the previous period,[11] on the level of persistent inequality in society (rather than the current level of inequality) and on the use of police. σ, λ and θ are coefficients that represent the marginal impacts of each variable on conflict. They are set to take values between 0 and 1, inclusive, if we normalise the equation. θ represents the impact of economic inequality on social and economic conflict. An increase of inequality in period t will lead to an increase of conflict in the same period. This comes from the initial assumption that conflict in this society is largely being driven by inequality. σ and λ are fixed coefficients that represent the impact of the use of police and military forces on conflict. σ measures the effect on conflict of police

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[9] See Bourguignon (1999) for a similar argument.
[10] The assumptions that underlie this model will be empirically tested in the next section for the case study of India.
[11] As discussed in previous section, there is a risk that conflicts caused by social discontent are self-perpetuating and thus previous levels of conflict will affect positively the level of conflict in the next period. When no other variables are taken into consideration, this model assumes that conflict in period t will be exactly the same as conflict in period $t-1$. In other words, in the absence of factors that either contain or encourage conflict, the level of conflict in society will remain constant across time.

used in period t. λ measures how conflict responds, in period t, to the use of police in period $t-1$. λ lower than σ indicates a decrease in the potential for conflict from one period to the next. Thus, the condition $\lambda < \sigma$ will generally characterise a low-conflict society. A society with high potential for conflict will be represented by $\lambda > \sigma$. In this case, the use of police in the $t-1$ period left sufficient resentment to provoke further conflict. The more severe the use of police and military forces in period $t-1$, the higher will λ be in period t. Thus, λ can also be understood as a measure for people's 'memory' on the negative effects caused by the use of police in the previous period.

Each variable in equation (1) represents a choice process. The decision on the amount of police depends on the amount of conflict the *rich* face (because these are the decision makers). Thus, the function that represents the use of police and military forces in order to repress conflict is given by $P_t = \alpha \, C_t$, where α, with $0 \le \alpha \le 1$, represents policy-makers' response to conflict by using police and military forces. In order to simplify the model, it is assumed that the instigators of conflict are only concerned with the persistence of income inequality and not with other forms of inequality or other types of unfair situations. More specifically, they are concerned with the over time differences between changes in the income of the *rich* over time (ΔY^R) and changes in their own income. If we make the reasonable assumption that the poor do not save from their earned income, any changes in their income over time will depend on the amount of income transfers in society. Thus, $I_t = \Delta Y^R - T_t$.[12] Furthermore, transfers of income from the richer income groups to the poorer members of the population depend positively on the level of conflict observed in society (the higher the amount of conflict, the higher the amount of transfers needed to decreased it), i.e. $T_t = \beta C_t$.

The propositions discussed above provide a solution for (1). By replacing all variables in (1) by their explicit decision functions, we have that

$$(1+\sigma\alpha)C_t - (1+\lambda\alpha - \theta\beta)C_{t-1} = \theta\Delta Y^R. \tag{2}$$

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[12] This equation defines inequality as the difference between maximum and minimum incomes accrued to population groups agglomerated, respectively, at the top and bottom of the distribution. This is a crude measure of inequality but is useful as an indication of effectively observed level of inequality in society. The empirical analysis to be undertaken in section 4 will use more sophisticated measures of inequality. In an analysis of inequality in India, Justino (2001) found that most indices of inequality to be highly correlated in India.

The solution for this difference equation is given by the general form $C_t = J(K)^t + L$, where J can be fixed by some initial condition C_0, $K = \dfrac{1 + \alpha\lambda - \theta\beta}{1 + \sigma\alpha}$ and $L = \dfrac{\theta}{\alpha(\lambda - \sigma) - \theta\beta} Y^R$. $J + L$ represent the initial level of conflict, whilst L represents the amount of conflict that will always persist, even when $(K)^t \to 0$ and σ, λ, θ and δ are fixed. It constitutes thus a dynamic equilibrium or stationary state for C_t. $J(K)^t$ specifies, for every period of time, the deviation of C_t from its equilibrium. This means that the minimum level of conflict depends essentially on the total gross income of the *rich*.

The equation solved above has three regions in its moduli space, corresponding to $K > 1$, $K = 1$, and $K < 1$.[13] In the first region, conflict increases. The second region corresponds to a discontinuity point. In the third region, conflict decreases (i. e., converges towards its dynamic stable equilibrium, L). This is shown in the figures below. Fig. 1 represents the case of a high conflict society, whereas fig. 2 shows the situation in which conflict converges towards its minimal (dynamic equilibrium) level.
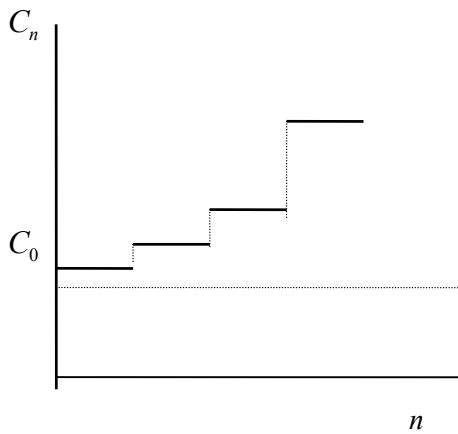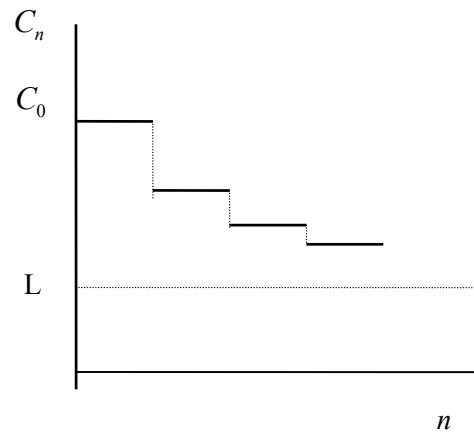

Fig. 1

Fig. 2

In order to guarantee that the model behaves as in fig. 2, we must have

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[13] Because $\lim\limits_{n \to \infty} K^t = \begin{cases} 0; & K < 1 \\ 1; & K = 1 \\ \infty; & K > 1 \end{cases}$

$$\frac{1}{\theta}(\lambda - \sigma) < \frac{\beta}{\alpha}. \tag{3}$$

Condition (3) has important policy implications. β and α are the decision coefficients: they determine the use of police or income transfers by policy-makers in response to changes in conflict. θ represents the response of conflict to income inequality. λ and σ represent the response of levels of conflict to the use of police and military forces in periods $t-1$ and t, respectively, and the difference $(\lambda - \sigma)$ can be defined as a coefficient of people's effective 'discontent' towards the use of police.

When faced with a conflictual situation, the *rich* must decide whether to transfer or not transfer some percentage of their income to those worse-off (assumed to be the conflict perpetrators). I will first consider the case in which they decide to transfer income to the poor (i. e. $\beta > 0$). The impact of the use of transfers on conflict will depend on whether we consider a low- or a high-conflict society.

Scenario 1: Positive transfers in low-conflict societies

In a low-conflict society, that is when $\lambda \leq \sigma$,[14] condition (3) is always true. Given that all the coefficients take values between 0 and 1, inclusive, the left hand side of (3) will be a negative number, which will always be lower than the ratio between two positive numbers (β and α). In this region, it does not matter whether the *rich* try to decrease conflict by resorting to redistributive income transfers or to the use of police. This is a situation likely to occur in societies where distributional differences have been resolved to a level where the potential for conflict does not oscillate much or, in the opposite extreme, in dictatorship regimes that keep socio-political conflict stable by resorting to strong military repression. In a low conflict society, conflict does not provide any direct incentive for the implementation of income-redistributive systems because any occasional outbreak of conflict can be easily repressed by the use of police.

Scenario 2: Positive transfers in high-conflict societies

$\lambda > \sigma$ represents then the case of a society with a high potential for conflict. In this case, it matters whether transfers are used or not. When $\lambda > \sigma$, the use of police is inefficient. The only way to decrease conflict in the long term is therefore by decreasing inequality. This can be achieved by implementing a

system of income transfers from the *rich* to the *poor*. Condition (3) allows the calculation of the optimal ratio between the use of transfers and police that leads to a decrease of conflict in a high conflict society by taking into account the relationship between $(\lambda - \sigma)$ and θ. $(\lambda - \sigma)$ shows the total impact of the use of police on conflict, whereas θ represents the impact of inequality on conflict. Although the model does not predict any exact relationship between β and α in this scenario, the large impact of inequality on conflict suggests that conflict will only decrease if inequality is effectively reduced. In the second scenario, we have that $(\lambda - \sigma) > \theta$. This implies the following condition: $\frac{1}{\theta}(\lambda - \sigma) > 1 \Rightarrow \frac{\beta}{\alpha} > 1 \Leftrightarrow \beta > \alpha$. This expression indicates that in high-conflict societies a necessary and sufficient condition to decrease conflict is that the transfer coefficient must be higher than the police coefficient. In those circumstances, the *poor* will realise that their income is increasing, inequality is decreasing, and thus have no incentive to resort to further conflict.

Scenario 3: No redistributive transfers

It would also be interesting to see what happens to conflict when the rich simply decide not to transfer income to those worse-off, that is, $\beta = 0$. In order to decrease conflict, this would imply that $\frac{1}{\theta}(\lambda - \sigma) < 0$. This happens only if $\lambda < \sigma$. That is, when there are no transfers from the rich to the poorer fractions of the population, conflict only decreases if the impact of police in *t* is greater than people's memory of the negative impacts caused by the use of police in the previous period. This means that when transfers do not occur, the use of police in *t* has to become either very large or the police used has to become very efficient as to overcome people's 'memory'. If it does happen that $\lambda > \sigma$, in the region where $\beta = 0$, then the difference equation becomes impossible and so $(K)^t \to \infty$ as $t \to \infty$, that is, $(K)^t$ increases with *t* at an increasing pace (fig. 1). This means that, when those better-off decide not to transfer a fraction of their income to the poor, conflict can only decrease in low-conflict societies. In high-conflict societies, if mechanisms of redistributive income transfers are not in place, conflict will always increase away from its equilibrium state.

3. CONFLICT AND REDISTRIBUTION IN INDIA

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[14] The case $\lambda = \sigma$ is included in this scenario because we assume $\beta \neq 0$. Condition (3) is automatically satisfied for $\lambda = \sigma$ and $\beta \neq 0$.

India is a very diverse country both in religious and cultural terms. Hindus constitute the majority of the Indian population (around 83%), whereas Muslims, India's largest religious minority, represent 11% of the country's total population. Other minorities are the Sikhs, concentrated in Punjab (2% of the total population), Christians, Buddhists, Jains, Parsees and Jews (Hardgrave, 1993). Hindus are, in turn, divided in thousands of castes and sub-castes, different languages and across different states. There are more than a dozen major languages in India and Hindi, the official language, is spoken by a mere 30% of the population (Hardgrave, 1993). This enormous diversity poses serious pressures on India's social and political cohesion.

India's various governments have managed to cope relatively successfully with social and political pressures caused by diversity through its federal system of administration, which has allowed the compartmentalisation of conflict into contained borders (Hardgrave, 1993). The federal administration is not, however, a perfect system and compartmentalisation has not impeded the occurrence of social and political conflicts in India, some of them with very serious repercussions. These conflicts have three broad motivations (Hardgrave, 1993). The first is ethno-linguistic regionalism and demands for separatism. India's federal system has not entirely contained regional pressures and the pursue for religious and cultural identity has led to further demands for separatism and caused social and political tension across many Indian regions (Hardgrave, 1993).[15] The second motivation lies in Indian secularism and Hindu-Muslim communal relations. Ever increasing linguistic and cultural identities have led further to conflicts against outsiders, whereas serious religious conflicts have often taken place between Hindus and Muslims. These started in 1947 at the time of partition, when India and Pakistan separated into two nations and have continued ever since. The recent massacres if Gujarat and bombings in Mumbai are further examples of the escalation of conflicts between Hindus and Muslims. Finally, India has also experienced a significant number of caste-based conflicts. One of the most significant forms of violence have been those against Dalits (the former "untouchables"). This has resulted in groups of Dalits organising themselves into protesting groups against social, political and economic exclusion and human rights violations by higher-caste individuals and the police. Those movements have has been, in turn, counteracted by groups of

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[15] Two of the most serious regional conflicts have taken place in the northern states of Punjab and Kashmir. The ethnic conflict between Sikhs and Hindus in Punjab have led to the death of more than 20000 people since 1981 and resulted in the assassination of the Prime Minister Indira Gandhi in October 1984 (Hardgrave, 1993; Jodhka, 2001). The conflict in Kashmir, on the other hand, has resulted in two wars between India and Pakistan and has led to the death of around 12000 people since 1989.

higher-caste that feel their livelihoods and social dominance threatened by the more successful Dalits' movements (Human Rights Watch, 1999).[16]

Various statistical bodies have kept records of the extent of these forms of socio-political conflict in India. One of the most reliable ways of measuring the level of socio-political conflict in India is to examine data on riots.[17] Riots in India have included more or less violent public manifestations against specific private or public institutions motivated by either the discontent of some population groups with economic or political decisions that have affected their job security, the maintenance of their living conditions or inter-caste and inter-religion issues. As such, these data represents a fair picture of the extent and evolution of socio-political conflict in India, independently of the main motivation.[18] Table 1 shows the volume of riots in India between 1973 and 1999. Although this has changed little, the results hide differences between the various states. Rajasthan, Kerala, Karnataka and Assam registered the highest incidence of riots in India in 1999-2000 and, while the volume of riots in all-India decreased by around 17% between 1973 and 1999, it increased by 100% in Gujarat and by over 50% in Karnataka, Maharashtra and Rajasthan, while it decreased by over 70% in Uttar Pradesh and West Bengal.

As discussed above, the Indian federal system provides the main institutional form of conflict management. By compartmentalising conflict in each state (defined by different ethnic and linguistic characteristics), the Indian federal system avoids the spreading of localised conflicts on to other states. This system has, to a large extent, successfully contributed towards preventing the escalation of ethnic, religious and caste-based conflicts into large-scale civil wars similar to those that have recently taken place in other regions in the world. India's strong democratic values and political institutions have also played an important role in the diffusion of conflict. In general, problems of ethnic and regional conflict tend to ease in India when political and group leaders deal with them by accommodating demands from different factions and using their bargaining power within the democratic political process. Problems tend to get worse when the state intervenes directly to impose its will on a group or region. The use of force -

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[16] Recent caste-based conflicts have been triggered by a government programme of caste reservations that retained 22.5% of all central government jobs for members of the Scheduled Castes and Tribes. Similar reservations were made at the state-level and extended to college and university admissions. This has been a controversial system with higher-caste Hindus feeling they have been victims of reverse discrimination (Hardgrave, 1993; Alexander, 2003).

[17] This data may underreport the true extent of riots as the police (who records the occurrence of riots) in recent years has not intervened in riots of small-scale and duration (B. Narayanan, private communication). The reliability of the data may also depend on the reporting accuracy of each state police bureau. However this data is collected systematically every year and no major discrepancies were found in the data sets.

[18] Riots are typically defined as collective acts of spontaneous violence that include five or more people (see Gurr, 1970). Riots are classified as violent crimes by the Indian Penal Code, under the category of cognisable crime. This data is provided by the National Crime Records Bureau (NCRB). The data in graph 1 refers to volume of riots per capita.

which has, sometimes, resulted in police and paramilitary abuses (Upadhyaya, 2002) - has, generally, been unable to counteract ethnic and regional violence (Hardgrave, 1993). Estimates for the strength of police (civil and armed)[19] are published by the Indian National Crime Records Bureau and represented in table 2. The table shows an increase in the use of police at the all-India level between 1973 and 1999, although the results conceal significant inter-state differences. The estimates do not seem, however, to show a very close relationship between police strength and conflict in India. In fact, the coefficients of correlation between the volume of police and the volume of riots is –0.356 at the all-India level (and not statistically significant) over the entire 1973-1999 period.

The low coefficients of correlations between use of police and conflict suggest that other institutions may play more relevant roles in the prevention and elimination of conflict in India. This paper asks whether redistribution has been one of those institutions. As discussed in the section above, a large fraction of the conflicts that have taken place in India may have been caused by forms of economic, social and political inequalities between different ethnic and religious groups and different castes and the persistence of poverty, destitution and unemployment amongst some of those groups. India is one of the poorest countries in the world (table 3). In 1997, 44.2% of its population lived with less than 1$US per day, one of the highest values amongst the developing world (table 3). Poverty in India has, however, decreased significantly between the early 1970s, when around half of the population lived below the poverty line and 1999-2000, when 26.8% of the country's rural population and 24.1% of its urban population lived below the national poverty line (table 4).[20] All major Indian states benefited from the same sharp decrease in poverty between 1973 and 2000 (table 4).

Changes in income inequality during the last three decades in India were not as drastic. Although rural income inequality decreased by around 9.5% between 1973-74 and 1999-2000, urban income inequality increased in the same period by almost 11%. Most Indian states registered a similar evolution in income inequality. Although India has some of the lowest Gini coefficients amongst low- and middle-income countries, the increase in urban inequality indicates that something is not well.

An interesting question that arises is how the Government of India has addressed these inequalities. One practical way of looking at the level of redistribution in India is to examine data on social services expenditure, as this is one form of redistribution that will be targeted at the poor. In cases where public

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[19] Both types of police are called in cases of riots. Graph 2 shows the number of total police per 1000 people.
[20] The Indian poverty lines are 327.56 rupees per capita per month for the rural sector and 454.11 rupees per capita per month for the urban sector (Deaton, 2001a).

expenditure on social services effectively contributes towards raising the incomes of the poor, it may also counteract important incentives for conflict. In India, the coefficient of correlation between public expenditure on social services and volume of riots is –0.673 (and statistically significant at less than 1% level of significance). Another way is to look at other more extensive forms of redistribution, such as education, which has been shown to be a central element in the fight against poverty and the increase of economic growth in developing countries (see Saint-Paul and Verdier, 1992; Perotti, 1993 and Rehme, 2002).[21]

Public expenditure on social services in India[22] is quite low, even in relation to India's low income base (tables 2 and 3). The education and health sectors constitute the bulk of social expenditures in India. In 1997, 3.2% of Indian's total GNP was dedicated to education expenditure, whereas only 0.6% of GNP went to the health sector between 1990 and 1998 (table 3). Although close to the South Asian average, these are some of the lowest contributions in the world (table 3). Although larger expenditures on social services does not necessarily imply more or better redistribution, these values still reflect a low commitment of the Indian government to social development. This is naturally reflected in India's social indicators: India has some of the lowest rates of female illiteracy and some of the highest rates of infant mortality in the world (table 3). Expenditure on social services has, however, increased sharply in the late 1990s (graph 2), which may be related to the strong decrease in poverty during the same period. Expenditure on social services varies, however, significantly between states in India (table 2). While states like Gujarat, Maharashtra, Tamil Nadu and West Bengal spend over 200 rupees per year per capita on social services (which in itself is not a great amount), other states such as Assam (where ethnic conflict has been high since the early 1990s) and Uttar Pradesh spend less than 6 times that amount on social services. Education enrolments per capita in India have increased by around 27% in the last three decades (table 2). Rajasthan, Andhra Pradesh and Madyha Pradesh were the states that registered the better performances between 1973 and 1999, whereas education enrolments per capita decreased in Gujarat, Kerala and Uttar Pradesh. The next section analyses in further detail the impact of redistribution – in the form of public expenditure on social services and education enrolments – on the level of conflict across India.

4. EMPIRICAL ANALYSIS

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[21] Rehme (2002) shows further that (OECD) countries may be able to raise economic growth and lower pretax and posttax inequality if they spend more on education.

In this section we ask the following question: How has the trade-off between the use of police and redistributive policies impacted on the levels of social and political conflict in India discussed above? The aim of this section is to explain empirically the model developed in section 3. This section investigates the relationship between redistribution, use of police and conflict in India during the last three decades using a panel of 14 major Indian states (Andhra Pradesh, Assam, Bihar, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal) over almost 30 years, based on six observations during that period: 1973-74, 1977-78, 1983, 1987-88, 1993-94 and 1999-2000.[23] Although it would have been possible to estimate time-series results for all-India, we felt that a panel analysis would be more adequate given the large heterogeneity between all Indian states in social, cultural, religious, economic and even political terms. The choice of states for the panel was based on data reliability, which is higher for the larger states. We do not expect that the exclusion of smaller states and Union territories to affect significantly our results as in 1999-2000 these 14 states represented 93.3% of the total Indian population.

The analysis is based on the estimation of the following model:

$$C_{it} = \beta X_{it} + \varepsilon_{it} \tag{4}$$

with the error term $\varepsilon_{it} = v_i + \eta_{it}$, where v_i represents all individual effects and η_{it} is assumed to be normally distributed with zero mean and constant variance, uncorrelated with the explanatory variables X_{it} = $[C_{it-1} \ P_{it} \ P_{it-1} \ I_{it}]$, as defined in section 2, and uncorrelated with the individual effects term. The error term of equation (4) is thus divided into two parts: (i) v_i varies across individuals but is constant across time, whereas (ii) η_{it} varies unsystematically across time and individuals. Model (4) can be estimated in two different ways, depending on the assumption we make regarding the correlation between the individual effects and the vector of explanatory variables. If we assume the two to be uncorrelated, model (4) becomes a random effects model. We can also use a fixed effects model if we assume the individual

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[22] Includes expenditure on education, health and family welfare, welfare of scheduled castes, schedule tribes and other backward classes, labour welfare, social security and welfare and nutrition.

[23] These dates correspond to the dates of the large sample National Sample Surveys (NSS). The National Sample Survey Organisation (NSSO) provides the main source of information on consumption expenditure (and thus poverty and inequality) in India. Their surveys were conducted annually until 1972-73 but more or less every five years thereafter: 1973-74, 1977-78, 1983, 1987-88, 1993-94 and 1999-2000. Our analysis focuses on these six years in order to ensure consistency across all variables.

effects to be correlated with X_{it}. The results for both models are presented in table 5.[24] Equation (4) has been estimated for the form of socio-political conflict discussed in the previous section: volume of riots (per 100000 people).[25] The total strength of police (P_{it} and P_{it-1}) (number of civil plus armed police per 1000 people) is the proxy used for the use of police and/or military forces discussed in the previous section. Inequality is illustrated *by* the levels of rural and urban income inequality (measured by the Gini coefficient) in state *i* in period *t*.

4.1. RESULTS

The results for the estimation of equation (4) are presented in table 5. The table shows that estimates from the fixed-effects and random-effects models are quite similar. In both cases, current levels of rioting are positively affected by the extent of rioting in the past, which suggests that forms of social and political conflict may tend to self-perpetuate. The models show also similar results for the effects of the use of police on conflict. In both models, conflict is affected negatively by the use of police at the time of the riots. However, the larger the use of police in the past, the larger the amount of conflict in the present (only the random-effects model coefficient is statistically significant). This confirms the intuition behind the theoretical model developed in section 2 and reflects people's resentment to the use of police, which is reasonably high in India, where police has often been accused of breaching human rights. According to Upadhyaya (2002), more than half of the total number of complaints received by the National Commission of Human Rights refer to police excesses including arbitrary arrest, custodial violence and misconduct towards weaker population groups such as women and Dalits. Such police exploits have often been attributed to inertia from state governments and resistance to change from the forces.[26] The models show further that conflict is affected by persistent income inequalities, although only the rural coefficient is statistically significant.

One question that spring to mind at this stage is what will happen to the model if other possible correlates of conflict are taken into consideration? Although the results above are robust to changes in the types of panel effects, conflict may be affected by a variety of variables not controlled for in model (4). I have decided to modify this initial model in order to include other possible correlates of conflict. These were the levels of rural and urban poverty (measured by the headcount index) and redistributive policies,

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[24] The uncorrected model showed signs of heteroskedasticity, which have been corrected for in both models.
[25] Although periodocity is not constant across all periods, the estimators are efficient and unbiased as the model considers observations for each variable in the same time periods (Greene, 2000).

represented by the logarithmic function of per capita expenditure on social services at 1980-81 constant prices. I have also included a lagged value for expenditure on social services in order to allow both long- and short-term responses of conflict to the use of redistributive policies as with the use of police. In order to control for other determinants of conflict, I have also included the level of state income, the level of unemployment in each state[27] and a measure for the level of education in each state. The inclusion of a measure of education in each state should capture other redistributive effects not encompassed by the social services expenditure variable. These variables are represented, respectively, by the logarithmic function of per capita net state domestic product at 1980-81 constant prices, the per capita number of people in live register and the per capita number of individuals enrolled in primary and secondary education.[28] I have also included a measure for openness of the Indian economy, given by the all-India ratio of imports and exports over national domestic product (per capita at 1980-81 constant prices). This variable is invariant across the 14 states. The inclusion of this variable was motivated by the fact that increased levels of economic liberalisation - which accelerated in India in the early 1990s[29] - can be a cause of conflicts as economic reforms may cause some groups to benefit and others to become worse-off (Winters, 2002).

As before, both fixed- and random-effects models have been estimated. There are not many significant differences between the initial model and the extended model, apart from the fact that the rural inequality coefficient becomes statistically insignificant in the extended fixed-effects model. The extended model shows further that conflict in India has been positively affected by the level of rural poverty (only the coefficients in the fixed-effects model is statistically significant), but negatively affected by the level of urban poverty (in the random-effects model). This seemingly paradox result may be related to conflict being motivated by different factors in different sectors. It may also depend on the characteristics of the poor in both sectors, suggesting that the urban poor may respond less strongly to conflict than the rural poor.

The results for the estimation of the extended model show further that conflict in India has been negatively affected by current and lagged expenditure on social services and higher levels of education: the higher

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[26] The National Police Commission, set up in 1978, has proposed various models for police reform. Police leadership and political parties have, however, failed to incorporate those reforms for over two decades (Upadhyaya, 2002).

[27] The discussion in the previous section suggested that raising unemployment has been in the origin of some ethnic conflicts in India.

[28] Only the current values of these variables have been included as present enrolment and live register rates reflect already the accumulation of these variables across time. For instance, the number of people enrolled in primary and secondary school or on live register in 1999 includes the number of these people enrolled or in live register in previous years plus additional registrations on that year.

the level of current expenditure on social services in India (in fixed-effects model only) and the higher the amount of past public expenditure on social services (the coefficients is statistically significant only in the random-effects model), the lower the level of rioting. In addition, the higher the number of people enrolled in primary and secondary schools (an indication of the level of education in the state), the lower the probability of rioting.

We found further that rioting is positively affected by the level of income (the variable is only statistically significant in the fixed effects model), suggesting that increases in income may not be distributed equally and may, as a consequence, result in highlighting unfair situations. One strange result is the fact that conflict seems to be affected negatively by the level of state unemployment. I will come back to this result later in the paper.

The results obtained seemed thus to confirm most of the assumptions of the theoretical model discussed in section 3. The empirical estimation of the model shows that past conflict in India affected positively the probability of further conflict in the country. Conflict in India is also affected by the use of police in the various states in the panel. The use of police has, as assumed in the theoretical model, differentiated short- and long-term effects on social and political conflict. In the short-term, increases in the number of police forces will be an effective measure to reduce conflict. However, in the longer run (in the case of the Indian panel the long-run refers, on average, to five years), the use of police will impact positively on conflict. This is likely to reflect people's resentment towards heavy use of police and similar forms of repression.

Despite this long-term effect, India is not yet in the high-conflict scenario discussed in section 3, as the absolute value of the coefficient for lagged effect of use of police (λ) on conflict (0.040) is smaller than that of current use of police (σ) (0.055). In the scenario $\lambda \leq \sigma$, the model developed in section 3 predicts that it does not matter whether redistributive policies or police are used as a means to reduce conflict. In this case, conflict will not provide direct incentives for the implementation of redistributive systems because any occasional outbreak of conflict can be easily repressed by the police. Given the results in table 5, even if India is in a low-conflict scenario, the role of social policies such as expenditure on social services and improved education in the reduction and/or prevention of conflict must not be overlooked.

4.2. SENSITIVITY ANALYSIS

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[29] For discussion of the liberalisation process in India after 1990 see Srinivasan (2001).

Despite the strong results obtained, the models discussed above may suffer from one serious problem that merits further investigation. This refers to the issue of endogeneity. Given the discussion in section 2, it is easy to see how conflict can be simultaneously be a cause and effect of some of the variables taken as exogenous in model (4). One likely candidate for endogeneity is the state income variable. Alesina et al (1992) investigate the relationship between political instability (defined as the propensity of government collapse) and per capita GDP growth in a sample of 113 countries for the 1950-1982 period. They estimate a model that jointly determines political instability and economic growth arguing that the uncertainty associated with unstable political environments may reduce investment and economic growth, which may, in turn, lead to political unrest. If we believe, like Alesina et al. (1992), that state income is endogenous to conflict in India than the models estimated in the above section will not be appropriate.[30] Endogeneity implies that the right-hand side regressors will be correlated with the disturbance term, causing the estimates above to be inconsistent. This problem can be solved by using an instrumental variable method. We have used the two-stage least squares (2SLS) model adapted to panel data as in Baltagi (1995), chapter 7. This method allows the estimation of a single equation (conflict equation) from a system of equations whose functional form does not need to be estimated. It is thus a convenient method to correct for endogeneity without having to establish the true specification form of the endogenous variables. Consider a model of the following form (Baltagi, 1995):

$$C_{it} = \delta Z_{it} + v_i + \eta_{it} \tag{5}$$

with $Z_{it} = [C_{it} \ X_{it}]$, where X_{1it} is an 1 x k_1 vector of exogenous variables included a covariates, C_{it} is an 1 x g_2 vector of g_2 endogenous variables included as covariates and assumed to be correlated with η_{it}. The error term η_{it} is, as before, assumed to be uncorrelated with the exogenous variables X_{it} and has zero mean. Given the existence of C_{it} exogenous variables, in order to estimate (5) we assume a 1 x k_2 vector of instrumental variables X_{2it}, where $k_2 > g_2$. This means that the vector X_{it} can be expressed in terms of exogenous variables and instruments, i.e. $X_{it} = [X_{1it} \ X_{2it}]$. Model (5) can now be estimated in the usual way. The fixed-effects model will give the within-estimator after eliminating v_i by removing the panel level means from each variable, as before. The random-effects estimator treats v_i as random independent variables identically distributed over the panels. The two estimators are provided in the last two columns of table 5.

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[30] We have run Granger causality tests on VRT and the growth rate of state income and found signs of double causality in all states (except Bihar, Gujarat and Karnataka) and all-India at the 5% level of significance, using five lags. There are no signs of causality from VRT to state income at lower number of lags.

The results obtained for the fixed-effects model were almost identical to the simple panel estimation apart from the fact that the coefficients for social services expenditure and education enrolments become statistically insignificant. Also, the coefficients for state income increased significant in the 2SLS model. The random-effects estimators are also quite similar. The most significant change was the fact that the rural inequality coefficient becomes statistically insignificant, at the same time that the coefficients for expenditure on social services and education enrolments increased. The coefficients for urban poverty and unemployment become statistically insignificant in the 2SLS random-effects model, suggesting that previously counterintuitive results may have been caused by the presence of endogeneity in the original model. Despite these small changes, all conclusions drawn in the previous section remain unaltered.

5. Conclusions

The analysis developed in this paper shows conclusive evidence for the importance of redistributive policies on India's socio-political stability. The results showed that redistributive policies may not only contribute towards the socio-economic protection of the most vulnerable groups of the population, but may also generate important effects for the long-term economic development of poor economies in terms of the creation of politically stable environments (amongst other important effects).

The lessons learned from India's experience can be important in other contexts. Some countries in Latin America, such as Brazil, Mexico and Peru, have shown the combination of high income inequalities (much higher than India's) and high potential for socio-political conflict (see Binswanger, Deininger and Feder, 1993), while other countries have shown signs of deterioration of previously successful social development policies (for instance, Chile and Cuba). Increased redistributive policies in the form of social expenditure on education, health care and other services, land reforms, creation of labour-intensive jobs, micro-credit initiatives and so forth can have an important role to play in the establishment and/or maintenance of stable socio-political environments in those countries.

TABLE 1 – RIOTING IN SELECTED INDIAN STATES, 1973-2000

	1973-74	1977-78	1983	1987-88	1993-94	1999-00
Andhra Pradesh	0.069	0.078	0.065	0.063	0.046	0.038
Assam	0.231	0.215	0.402	0.164	0.186	0.141
Bihar	0.199	0.171	0.230	0.172	0.145	0.113
Gujarat	0.016	0.032	0.041	0.019	0.060	0.043
Karnataka	0.088	0.108	0.140	0.154	0.165	0.146
Kerala	0.256	0.207	0.206	0.175	0.201	0.207
Madhya Pradesh	0.064	0.070	0.103	0.046	0.052	0.042
Maharashtra	0.039	0.037	0.112	0.011	0.056	0.057
Orissa	0.079	0.068	0.100	0.055	0.058	0.041
Punjab	0.004	0.002	0.005	0.009	0.001	0.000
Rajasthan	0.201	0.241	0.307	0.274	0.372	0.313
Tamil Nadu	0.126	0.121	0.186	0.144	0.143	0.088
Uttar Pradesh	0.147	0.121	0.077	0.073	0.062	0.041
West Bengal	0.205	0.226	0.180	0.099	0.092	0.059
India	0.123	0.121	0.154	0.104	0.117	0.095

Source: Government of India, National Crime Records Bureau, Crime in India, various issues.

TABLE 2 – REDISTRIBUTIVE POLICIES AND USE OF POLICE IN SELECTED INDIA STATES, 1973 AND 1999

	Expenditure on social services		Education enrolments		Use of police	
	1973	1999	1973	1999	1973	1999
Andhra Pradesh	85.7	151.8	0.11	0.18	0.98	0.99
Assam	203.7	31.6	0.15	0.24	1.66	2.03
Bihar	56.2	145.0	0.10	0.15	0.85	0.97
Gujarat	106.6	227.8	0.16	0.09	1.54	1.28
Karnataka	153.0	194.1	0.18	0.23	1.25	0.99
Kerala	227.0	184.0	0.22	0.16	0.96	1.18
Madhya Pradesh	81.4	52.2	0.13	0.21	1.33	1.24
Maharashtra	183.2	285.5	0.17	0.24	1.49	1.52
Orissa	113.9	50.3	0.12	0.19	1.04	0.99
Punjab	137.2	66.3	0.16	0.17	1.70	3.02
Rajasthan	105.0	129.3	0.10	0.22	1.40	1.24
Tamil Nadu	166.5	226.0	0.17	0.24	1.00	1.30
Uttar Pradesh	77.9	31.3	0.16	0.14	1.47	0.99
West Bengal	101.6	215.3	0.15	0.18	1.44	1.99
All-India[1]	128.5	142.2	0.15	0.19	1.29	1.41

Source: Data on social services expenditure published by the Reserve Bank of India, Bulletin, various years. Data on education enrolments published by Government of India, Ministry of Education, Education in India, various issues. Data on police from the Government of India, National Crime Records Bureau, Crime in India, various issues.
Notes: First column refers to real per capita expenditure on social services at 1980-81 constant prices, deflated using the GDP deflator published in the National Accounts Statistics. Education enrolments refers to number of people below the age of 15 enrolled in primary and secondary education. Use of police (armed plus civil) is per 1000 people. 1. Average for 14 major Indian states.

	GNPpc $US ppp (1999)	% people below $US1/day 1998	Gini 1995	Public exp educ 1997	Female illiteracy rates 1998	Public expend. health 1990-98	Infant mortality rates 1998
India	2149	44.2	0.378	3.2	57	0.6	70
Low and middle income countries	3410	21.6	0.414	4.1	33	1.9	59
East Asia & Pacific	3500	15.3	0.442	2.9	22	1.7	35
Europe and Central Asia	5580	5.1	0.347	5.1	5	4.0	22
Latin America & Caribbean	6280	15.6	0.498	3.6	13	3.3	31
Middle-East & North Africa	4600	7.3	0.365	5.2	48	2.4	45
South Asia	2030	40.0	0.376	3.1	59	0.8	75
Sub-Saharan Africa	1450	46.3	0.455	4.1	49	1.5	92
High income countries	24430	-	0.311	5.4	0	6.2	6

Source: World Development Report 2000/2001.
Notes: Public expenditure on education and health are given as percentage of GNP. Female illiteracy rates are in percentage of total population above the age of 15. Infant mortality rates are per 1000 live births.

TABLE 4 – INCOME POVERTY AND INEQUALITY IN SELECTED INDIAN STATES, 1973-74 TO 1999-2000

	Poverty				Inequality			
	Rural		Urban		Rural		Urban	
	1973-74	1999-00	1973-74	1999-00	1973-74	1999-00	1973-74	1999-00
Andhra Pradesh	56.84	10.5	51.02	27.2	29.52	23.80	29.49	31.00
Assam	56.84	40.3	40.15	7.5	29.52	20.10	30.46	31.10
Bihar	13.751	44	57.35	33.5	20.84	20.80	27.10	31.80
Gujarat	58.07	12.4	59.99	14.8	23.94	23.30	25.55	28.80
Karnataka	60.97	16.8	53.78	24.6	28.67	24.10	29.85	32.10
Kerala	62.06	9.4	62.72	19.8	32.02	27.00	37.57	32.00
Madhya Pradesh	66.09	37.2	56.56	38.5	29.16	24.10	27.85	31.20
Maharashtra	64.61	23.2	51.17	26.7	26.99	25.80	33.77	34.50
Orissa	58.67	47.8	59.99	43.5	26.75	24.20	34.94	29.20
Punjab	32.3	6	32.3	5.5	27.83	23.80	29.49	29.00
Rajasthan	59.26	13.5	54.19	19.4	28.40	20.90	29.55	28.10
Tamil Nadu	59.29	20	49.96	22.5	27.44	27.90	31.20	39.80
Uttar Pradesh	14.462	31.1	62.17	30.8	24.30	24.50	29.99	32.70
West Bengal	63.24	31.7	39.27	14.7	30.13	22.40	32.31	32.80
All-India	55.72	26.80	47.96	24.10	28.54	25.80	30.79	34.10

Source: 1973-74 data from Özler, Datt and Ravallion (1996), World Bank. 1999-2000 headcount indices from Deaton (2001b). 1999-2000 Gini coefficients from National Human Development Report 2001, Planning Commission, Government of India.

TABLE 5 – CONFLICT IN INDIA: ECONOMETRIC RESULTS

	VRT (fe)	VRT (re)	VRT (fe)	VRT (re)	2SLS VRT (fe)	2SLS VRT (re)
Lagged conflict	0.447***	0.854***	0.353**	0.891***	0.353**	0.877***
Use police	-0.066***	-0.054***	-0.043*	-0.055***	-0.043*	-0.064***
Lag use police	0.025	0.056***	0.026	0.040***	0.026	0.054***
Lag rural inequality	0.003**	0.004***	0.0003	0.003**	0.0003	0.002
Lag urban inequality	0.003	0.0002	0.003	0.001	0.003	0.002
Lag rural poverty			0.002*	0.0004	0.002*	0.0003
Lag urban poverty			-0.001	-0.002***	-0.001	-0.001
Soc serv expenditure			-0.003**	0.001	-0.003	0.001
Lag sserv expenditure			-0.073	-0.084*	-0.073	-0.119*
State income			0.114*	0.054	0.134**	0.087
Unemployment			-0.342	-0.421**	-0.342	-0.450
Education			-0.156*	-0.240***	-0.156	-0.255**
LOPEN			-0.018	-0.006	-0.018	-0.009
Trend						
Constant	-0.111*	-0.110***	-0.070	0.396*	-0.026	0.440
Wald/F-statistic	29.55***	381.84***	44.09***	556.60***	150.62***	293.59***
Observations	70	70	70	70	70	70

Note: ***significant at 1%; **significant at 5%; *significant at 10%.

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