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Redistribution, Inequality and Political Conflict

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Abstract: This paper analyses the relationship between redistributive policies and civil unrest. This relationship is modelled in a discrete two-period recursive model. Key theoretical assumptions and outcomes are tested empirically using data for a panel of 14 major Indian states between 1973 and 2000. The analysis shows that, in the medium-term, redistributive policies have been significantly more effective in reducing civil unrest in India than more direct solutions, such as the use of police and military forces, and have resulted in important positive externalities on economic growth. This represents an important lesson for countries where social cohesion tends to break frequently but large-scale wars may be avoidable.

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I. Introduction

Conflicts across the world, ranging from civil wars to riots, civil protests and industrial disputes, have affected millions of people and have resulted in lost opportunities in terms of economic growth and human development. All types of conflict entail significant private and social costs. Violent conflicts, including civil wars, have been responsible for many deaths and injuries and the loss of livelihoods, due to the destruction of markets and private and public property and infrastructure, loss of employment and increase in food prices due to the scarcity of goods (Stewart, Fitzgerald and Associates [2001], Fearon and Laitin [2003]).

The magnitude of private and social costs of recent conflicts across many developing countries has brought the analysis of conflict into the forefront of modern development economics. In recent years, a vast literature has theorised, quantified and analysed in detail the economic causes of conflict in developing countries and its impact on economic and social development. This literature has been dominated by the analysis of large-scale civil wars based on evidence from extensive cross-sections of countries across several years. A significant number of these studies have focused on the analysis of the determinants of civil wars and their duration and have centred around the 'greed versus grievance' thesis proposed by Collier [1999] and Collier and Hoeffler [2000]. There are, however, very few studies concerned with intra and inter-communal conflicts.

Although civil wars have represented a serious constraint to development in recent decades, many developing countries have also been badly affected by intra- and inter-communal internal conflicts.[1] These forms of internal civil unrest may not necessarily result in large-scale wars but

have still been responsible for the destruction of livelihoods and markets, increases in the risk of investment, loss of trust between economic agents and the waste of significant human and economic resources (Barron, Kaiser and Pradhan [2004], Boix [1994]). Persistent forms of civil unrest may also constitute the preliminary stages of more violent conflicts.

The lack of concern in the development literature with civil unrest and internal forms of socio-political instability is therefore at odds with the current political need to understand what triggers wars and violence, in order to prevent the onset of large-scale conflicts and develop more sustainable approaches to human security.

There is also still a widespread tendency in the economics literature to treat conflict episodes as external shocks to the normal functioning of the markets (Gintis and Bowles 1982). Although some types of conflict may be external to local economic decisions and can thus be modelled as exogenous shocks (similarly to illness or weather shocks), many civil conflicts are determined by the welfare characteristics of their instigators and must therefore be analysed within an endogenous framework.

This paper addresses some of these gaps in the literature. The paper provides an analysis of the determinants of civil unrest in developing countries and the relative merits of specific means of reducing and/or preventing the onset and the proliferation of civil unrest, taking into account the possible endogenous nature of civil unrest. The paper is structured as follows. Section II provides a theoretical framework for the analysis of the determinants of civil unrest using a two-period recursive model. The model considers the trade-off between the use of two policy measures to

reduce the level and intensity of civil conflicts – the use of redistributive policies and the use of police. Sections III tests the assumptions of this model based on empirical evidence for a panel of 14 major Indian states between 1973-74 and 1999-2000. The results show that redistributive policies have played an important role in the prevention and reduction of internal unrest in India and has been a central factor in preventing smaller-scale conflicts from escalating into violent civil wars. The empirical results are robust to changes in model specification and the presence of endogenous effects. Section IV examines the welfare impact of civil unrest and shows that redistributive policies may not only prevent the onset of conflict, but also result in important positive externalities on economic growth and social development. Section V concludes the paper.

II. Theoretical framework

In a situation of conflict, governments face the usual 'stick or carrot' dilemma. The general tendency of governments in economies prone to civil unrest is to resort to the use of police or military force to offset upheavals. The use of force may, however, be counterproductive in many circumstances. In particular, most populations living in democratic or semi-democratic regimes are likely to be subject to a repression threshold beyond which the continued use of coercive force may result in resentment and may, therefore, increase the risk of further civil unrest in the longer run (Gurr [1970], Hirschman [1981], Gupta [1990], Bourguignon [1999], Boix [2004]).

An alternative option to prevent civil unrest or offset existing conflicts is to resort to social policies that allow the transfer resources to relevant population groups. Although some studies

have suggested that conflicts are largely associated to economic motivations (the 'greed' hypothesis) (Collier [1999], Collier and Hoeffler [2000]), several other studies have suggested that inequality and persistent poverty amongst certain population groups have been responsible for the onset of civil wars, riots, insurrections, other forms of civil upheavals and crime. Olson [1963], Sigelman and Simpson [1977], Hardy [1979], Weede [1981, 1987], Muller [1985], Park [1986], Muller and Seligson [1987], Midlarsky [1988], Londregan and Poole [1990], Boswell and Dixon [1990], Brockett [1992], Binswanger, Deininger and Feder [1993] and Schock [1996] show that inequalities in the distribution of various assets (land, income, wealth and so forth) have been associated with episodes of socio-political instability in several countries.[2] Perotti [1992], Svensson [1993], Keefer and Knack [1995], Alesina and Perotti [1996], Alesina et al. [1996] and Perotti [1996] illustrate the impact of income inequality on political instability within the endogenous growth literature. Stewart [1998, 2002], Elbadawi [1999], Dollar, Easterly and Gatti [2000] have analysed the impact of group inequalities and ethnic divides on civil wars. Becker [1967], Ehrlich [1973], Sala-i-Martin [1996], Fajnzylber, Lederman and Loayza [1998], Cruz et al. [1998], IADB [1998] show how socio-economic inequalities have impacted on crime. Boix [2004] finds that income inequality is statistically significant in explaining the onset of different forms of conflict, ranging from civil wars to guerrilla warfare, revolutions, political assassinations and riots.

When internal conflict is caused by inequalities between communal groups and the persistence of social divides along economic, social or political outcomes, redistributive policies may become an effective form of preventing the occurrence of conflict or a means of diffusing existing conflicts. In unstable socio-political environments, redistributive social policies may constitute an

important institution for the management of conflict, as they address directly the discontent of certain population groups with their economic or social status. Redistributive policies will also protect people against losses of incomes and basic capabilities, therefore increasing the potential costs of these groups engaging in conflicts. 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 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.[3]

In this section, we use a simple two-period recursive model to illustrate this mechanisms. The model illustrates the impending dynamic trade-offs faced by governments when conflict is caused by persistent inequalities between groups and is used to derive the conditions in which redistributive policies will be the optimal instrument for the resolution of socio-political conflicts. The model assumes, in the tradition of the literature reviewed above, that inequalities between social groups (I_t) cause social discontent. 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.

The model assumes also the existence of a repression threshold, whereby the excessive use of force will cause discontent amongst the population. P_t represents the immediate or short-term

effect of the use of police on conflict. This effect is assumed to be negative indicating that the immediate use of police will reduce the onset of civil unrest in period *t*. P_{t-1} represents the long-term effect of continuous use of police on conflict. The existence of a repression threshold is incorporated in the positive coefficient of P_{t-1}. 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.[4]

The interplay between inequality, use of police and civil unrest can be represented in a difference equation:

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

where the level of conflict in period *t* is assumed to depend on the level of conflict in the previous period, as well as on the use of police.[5] Conflict is also determined by the level of inequality in society. In particular, it depends on past levels of inequality, assuming that it will take a while before feelings of unfairness result in the breach of social cohesion (Hirschman [1981]).

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 inverse of the level of inequality aversion in society (Atkinson [1970], Hirschman [1981]). Values of $1/\theta$ close to zero indicate a society with a high tolerance for inequality, whilst values close to one indicate high levels of inequality aversion. σ and λ are fixed coefficients that

represent the intertemporal impact of the use of police and military forces on conflict. The relative size of these two coefficients can be conveniently used to characterise two types of society. If λ is lower than σ, there will be a decrease in the potential for conflict from one period to the next. We define the condition $\lambda < \sigma$ to characterise a low-conflict society. A society with high potential for conflict will be represented by $\lambda > \sigma$. λ can thus be understood as a measure for people's 'memory' on the effects of repression.

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 and can be represented by $P_t = \alpha C_t$, where α, with $0 \leq \alpha \leq 1$, measures the elasticity of the use of police in response to conflict.

In order to simplify the model, it is assumed that only relative income inequality matters. More specifically, conflict in this model is affected by intertemporal differences between changes in the income of the *rich* (ΔY^R) and changes the income of the *poor* over time. If we make the reasonable assumption that the poor do not save from their earned income, and normalise the income of the poor by the poverty line, any changes in their income over time will equal the amount of income transfers (T_t) in society. In other words, $I_t = \Delta Y^R - T_t$. 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.[6]

This definition also establishes implicitly that, by resorting to conflict, the *poor* do not incur in any costs, only benefits in the form of T_t (Becker [1967], Boix [2004]). Costs can be incorporated into the analysis by removing the assumption that changes in the income of the poor between two time periods depend only on the amount of transfers. This will, however, complicate unnecessarily the intuitive aspects of the analysis without changing the final outcome, other than adding further constants to the solution of the difference equation.[7]

As with policing, transfers of income from the richer income groups to the poorer members of the population depend on the level of conflict observed in society, i.e. $T_t = \beta C_t$, where β, with $0 \leq \beta \leq 1$, measures the elasticity of the use of redistributive transfers in response to conflict.

The propositions discussed above provide a solution for the difference equation (1). This solution is given by the general form $C_t = J(K)^t + L$, where *J* can be fixed by some initial condition C_0, $K = \frac{1 + \alpha\lambda - \theta\beta}{1 + \sigma\alpha}$ and $L = \frac{\theta}{\alpha(\lambda - \sigma) - \theta\beta} Y^R$. $J + L$ 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 dynamic equilibrium.

The equation solved above has three regions in its moduli space, corresponding to $K > 1$, $K = 1$, and $K < 1$.[8] 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.

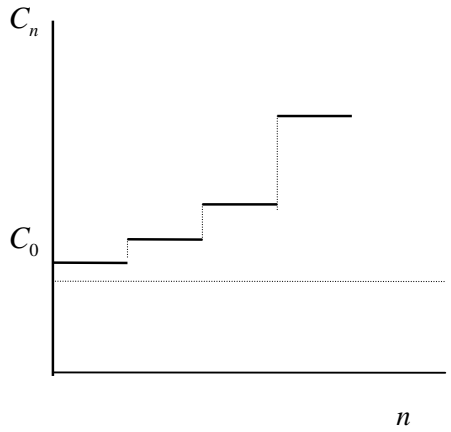


Fig. 1

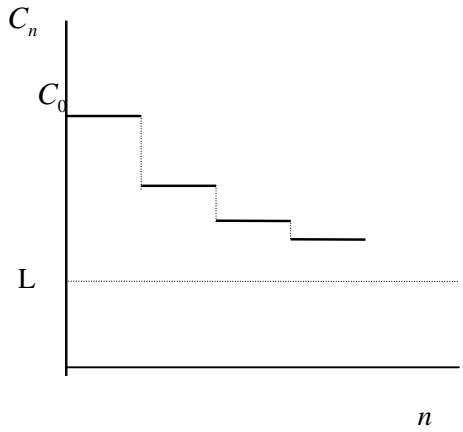


Fig. 2

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

$$(2) \qquad \frac{1}{\theta}(\lambda - \sigma) < \frac{\beta}{\alpha}.$$

Condition (2) has important policy implications. The right-hand side of (2) represents the ratio between the police and income transfer elasticities, whereas the left-hand side of (2) includes the expression for the repression threshold $(\lambda - \sigma)$, calibrated by the inequality aversion coefficient.

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). β/α represents the choice mechanisms within the model. In reality, this ratio depends on various

factors and is affected by political and social institutions, including voting mechanisms and the relative bargaining power between the two groups. We will first consider the case in which the *rich* decide to transfer income to the poor (i. e. $\beta > 0$). The impact of the use of transfers on conflict will depend in turn 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 $\lambda \leq \sigma$,[9] condition (3) is always true, since all the coefficients take values between 0 and 1, inclusive. In this region, it does not matter whether conflict is tackled by using redistributive income transfers or policing. This is a situation likely to take place in either a perfect democracy or a perfect dictatorship regime. In a perfect democracy, everyone votes over the optimal level of taxation (i. e. β). Therefore, the higher the level of inequality, the higher the preference of the median-voter for taxation and redistribution will always be at the optimal level (see Persson and Tabellini [1991], Alesina and Rodrik [1994]). In a perfect dictatorship, the wealthy are powerful enough to exclude the *poor* from any decision-making process. Since the poor do not participate in the decision-making process, no redistribution will take place (Buchanan and Tullock [1962], Buchanan [1967]).

Scenario 2: Positive transfers in high-conflict societies. In this case, it matters whether transfers are used or not. High conflict societies are generally neither perfect democracies nor perfect dictatorship regimes. When $\lambda > \sigma$, the use of police is inefficient. The only way to decrease conflict in the long term is to decrease inequality. Because the propensity for conflict is high in this society, the rich must take into consideration the fact that the poor have the capacity to engage in conflicts and have therefore some bargaining power in the decision-making process.

There is therefore an interdependency between the welfare functions of the *rich* and the *poor*, which results from the fact that by instigating unrest, the poor can influence the income and welfare of the rich. This interdependency will result in redistribution (Sen [1997]). The *poor* will demand a certain level of redistribution and *the* rich must decide on the level of those transfers. 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. The optimal ratio will depend on the aversion to inequality coefficient $1/\theta$. The closer this coefficient is to one, the larger the reduction in inequality must be for conflict to decrease. In order to guarantee decreases in conflict, we must thus have $(\lambda - \sigma) > \theta$. This implies the following condition: $\frac{1}{\theta}(\lambda - \sigma) > 1 \Rightarrow \frac{\beta}{\alpha} > 1 \Leftrightarrow \beta > \alpha$. In other words, in high-conflict societies, conflict will be reduced iff the transfer elasticity coefficient is larger than the police elasticity 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.

This condition will also maximise the income of the rich. This happens for three reasons. First, the use of force may have a repression effect and therefore the rich need increasing levels of police to deal with conflict in the absence of transfers. Second, an increase of transfers in period *t* will decrease inequality, which in turn will have a diminishing effect on conflict. Finally, income transfers, by having an indirect decreasing effect on conflict through inequality, will also have an increasing effect on Y^T because the costs of conflict endured by the *rich* will decrease. Hence, redistributing income from the *rich* to the *poor* constitutes, not only an indirect form of reducing

conflict (by affecting inequality), but also yields a positive externality effect for the richer group's own income. In an independent study, Ghate, Le and Zak [2003] show similarly that the marginal efficiency of the police at reducing socio-political instability and the marginal sensitivity of socio-political instability to changes in the income distribution determine the country's growth trajectory in a country characterised by high inequality and political instability.

Scenario 3: No redistributive transfers. In this scenario, conflict will decrease iff $\frac{1}{\theta}(\lambda - \sigma) < 0$, i.e. iff $\lambda < \sigma$. In other words, in the absence of systems of income redistribution, the immediate use of police has to be either very large or very efficient. If not, conflict will always increase away from its equilibrium state. Here we return to the case of perfect dictatorship regime. Whether any given society will be in scenario 1 or 3 will depend on how much repression the *rich* can afford. If the *rich* have a lot to loose, they will vote for a little redistribution (because conflict will impact on their own level of welfare, as discussed above). If the *rich* do not have a lot to loose and can sustain indefinitely high levels of repression, we will have scenario 3. Sustainable increases in policing can only be maintained when police is extremely efficient and results in net positive impact on economic growth (by maintaining stable socio-political environments) (see also Ghate, Le and Zak [2003]). If the cost of police becomes too high, the equilibrium will be broken. Sustainable increases in policing also depend on the economy's capacity to attract national and international investment and their endowment in natural resources (Ghate, Le and Zak [2003]), as well as on how mobile capital is (and allowing the rich to send capital abroad thus avoiding costs of conflict) (Boix [2004]).

III. Empirical analysis

In this section, we examine the theoretical considerations discussed above using empirical evidence for India. India is a very diverse country, both in religious and cultural terms.[10] It is also one of the poorest countries in the word (Table I). Social, economic and political diversity have posed large pressures on India's social and political cohesion. Some of those pressures have resulted from separatist movements,[11] whereas others have been caused by clashes between ethnic and religious groups and different castes, as a response to disparities in the distribution of employment conditions, access to land and other assets, use of and access to social services, access to institutional power and legal institutions, and so forth, across different population groups.[12] Civil unrest in India, measured by levels of rioting,[13] has shown a steady upward trend between 1970 and 1999, though variation across states is large (Graph I and Table II).

Despite the upward trend in the number of riots in India since the early 1970s, civil unrest has not resulted in major civil wars as in other countries in Africa and South and Central America.[14] Episodes of civil unrest caused by social and economic divides are, nonetheless, a constant fact in many Indian regions and affect millions of people in both rural and urban areas. Remarkably, the large existing literature on poverty in India has not considered conflict to be a serious constraint to poverty reduction strategies and the elimination of social exclusion amongst certain religious groups and marginalised castes.

In this section, we investigate the relationship between civil unrest, redistributive policies and the use of police in India using data for 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) between 1973 and 1999.[15] The use of panel data allows us to capture the large heterogeneity between all Indian states in social, cultural, religious, economic and even political terms.[16]

In empirical terms, the theoretical framework developed in the previous sections entails the following hypothesis: (i) civil unrest tends to self-perpetuate across time, i.e. if nothing is done, conflict will always increase as a result of previous levels of conflict; (ii) high levels of inequality between the *rich* and the *poor* lead to social discontent and, eventually, the breakdown of social cohesion; (iii) most societies respond to a repression threshold, whereby excessive use of force will result in further discontent; (iv) redistributive policies can reduce existing conflicts. These hypothesis can be tested using the following panel-data model:

$$(3) \qquad C_{it} = \alpha_i + \beta_t + \gamma Y_{it-1} + \delta X_{it} + \varphi N_t + \varepsilon_{it},$$

where α_i represents the state effects, β_t are the year effects, Y_{it-1} is the vector of lagged regressors defined in the model developed in the previous section, X_{it} is the vector of independent variables that vary across state and time, N_t is a vector of national-level independent variables, invariant across state, and ε_{it} is the error term. We have estimated model (3) using two different specifications. The first, presented in column (1) of Table IV, includes only the independent variables considered in the initial specification of the theoretical model discussed in the previous section. The independent variables in this model are the volume of riots (per 1000

people), the total number of police and its lagged value (number of civil plus armed police per 1000 people) and the lagged level of consumption inequality (measured by the Gini coefficient) in state *i* in period *t*. Table III presents basic descriptive statistics for all variables used in this section.

Civil unrest may also be affected by a variety of variables not controlled for in column (1) of Table IV. We have therefore included further control variables (column 2). These are the lagged levels of consumption poverty (measured by the headcount index) and, following the extended specification of the theoretical model, the level of redistribution across Indian states, represented by the logarithmic function of per capita expenditure on social services at 1980-81 constant prices. We have also included lagged values 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, the model in column (2) includes the level of state income (logarithmic function of per capita net state domestic product at 1980-81 constant prices) and a measure for the level of education in each state (per capita number of individuals enrolled in primary and secondary education).[17] In addition, we have incorporated two national-level variables. The first is 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 economic liberalisation - which accelerated in India in the early 1990s[18] - can be a cause of conflicts as economic reforms may cause some groups to benefit and others to become worse-off (Winters [2002]). In order to capture the effects of political institutions on conflict (Alesina et al. [1996], Barro [2000]), we have included a second national-level variable

representing the result of national elections. This is a binary variable that takes the value 1 if the Indian National Congress party obtained the majority of the votes n each given year.[19]

Model (3) can be estimated using panel estimation methods. The two standard methods are fixed effects and random effects. The fixed effects estimates are calculated by applying ordinary least squares to the differences within each state across time. The random effects coefficients are obtained from a matrix of weighted averages of the estimates produced by the between and within estimators. The random effects is therefore a more efficient estimator since it includes information across both the various states and the various time periods. However, the random effects estimates are consistent only if the state-specific effects are not correlated with the other independent variables. This assumption can be tested using the Breusch-Pagan multiplier test for random effects (Breucsh and Pagan [1980]) or the Hausman specification test (Hausman [1978]). The results from the Breucsh-Pagan test suggested that we should reject the hypothesis above and use the fixed effects estimates. However, the Hausman specification test indicates that there is not a systematic difference between the fixed effects and the random effects estimates.[20] Because we cannot out rightly reject the hypothesis that the α_i may be random rather than fixed (i.e. uncorrelated with the explanatory variables), Table IV presents the estimates for both fixed and random effects. All models in the table have been corrected for heteroskedasticity and serial correlation in the residuals.[21] In order to deal with those statistical problems, the results for the fixed-effects models are based on robust standard errors estimated using White's variance estimator and clustered at state level. The random effects model has been estimated using feasible generalised least squares (FGLS), which allows for a heteroskedastic error structure and AR(1)-type correlation (see Greene [2000]).

A. Results

Hypothesis 1: Self-perpetuation of civil unrest. Fixed- and random-effects estimations for the first model specification (columns (1) and (3) in Table IV) 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. This effect disappears in column (3) but is still present in column (4).

Hypothesis 2: Inequality increases civil unrest. With the exception of the FGLS estimator in column (4), we have not found any statistically significant relationship between income inequality and the volume of rioting in India. This result is in line with other literature (fir instance, Boix [2004]). This result has two possible explanations. On the one hand, it could suggest that inequalities play a more relevant role in more violent forms of conflict, as indicated by the economic literature on civil wars (Stewart [1998], Boix [2004]). On the other hand, the result could be due to the presence of other types of inequality not captured by the consumption Ginis. Examples include disparities in employment conditions, such as those that have been in the origin of recent Hindu-Muslim conflicts in India in the 1980s and 1990s, differences in the access to land and other assets, which have provoked serious separatist conflicts in West Bengal, Assam and Bihar, discrepancies in the use of and access to health, education and other social services, a significant cause of tensions between higher- and low-caste Hindus, and differences in the rights of access to political power and legal institutions, which again has been reflected in conflicts between scheduled tribes and other populations and in caste-based conflicts across several Indian

states. Theoretically, there is no reason to expect these dimensions of inequality to be captured by the consumption Gini (Justino [2004]). Non-monetary welfare attributes are, however, notoriously difficult to measure as quantitative continuous non-monetary variables are often not available. One way to address the problem is to use proxies that may represent non-monetary divisions within society. In the case of India, religious diversity is likely to be correlated with various dimensions of inequality (Harriss-White [2002]). Based on census data, we have calculated the percentage of Hindus in the total population of each Indian state. Because this percentage does not vary significantly across the time period of the analysis, we can only model the effect of religious diversity within the FGLS framework. The results are given in column (5) of Table IV and show a negative and statistically significant coefficient for this variable: the larger the majority of Hindus in the total population of each state, the lower the volume of rioting. This suggests that more religiously diverse states are more likely to experience episodes of civil unrest. Note also that state income appears to have a positive and statistically significant impact on rioting in India (in the presence of state and year effects). It is thus possible that the inequality effects are being captured by stronger state-level income effects. One explanation why higher incomes would lead to increases in civil unrest could lie in the uneven way in which the benefits from economic growth get to be distributed across all population groups. Civil unrest is also affected positively by poverty (in the fixed effects model). The desegregation of the poverty and inequality measures by rural and urban areas (column (6)) suggests that the result is driven mostly by rural poverty.[22]

Hypothesis 3: Existence of repression threshold. The results in table IV confirm the presence of a repression threshold in India. Almost all the models indicate that rioting is affected negatively by

the use of police at the time the riot takes place. However, the larger the use of police in the past, the larger the likelihood of further rioting in the present. This repression threshold may be explained by the heavy-handiness of police intervention at times (Upadhyaya [2002]). We should also notice that the absolute value of the coefficient for the use of police (λ) on conflict (0.052) is larger than that of lagged use of police (σ) (0.039) in the fixed effects model (column (2)), though the opposite is true in column (4). The estimates are thus not accurate enough to predict the scenario where India may be placed in terms of the theoretical model discussed in the previous section. Redistributive policies are, therefore, likely to have an important role to play in India.

Hypothesis 4: Redistribution decreases civil unrest. The results show that conflict in India has been negatively affected by the level of expenditure on social services. School enrolments, which can be seen as a form of distribution of assets (Perotti [1996], Bourguignon [2002]), have a similar effect. The public expenditure effect is statistically significant in columns (2), (5) and (6), whereas the education effect is statistically significant in columns (4) and (5). The impact of lagged social expenditure is also negative across all model estimations but not statistically significant.

B. Sensitivity analysis

One obvious extension of the models presented above is to ask whether redistributive policies and policing affect not only the levels of conflict but also their evolution across time. We have therefore applied the panel data models discussed above to the analysis of the determinants of the

growth rates of rioting across the same 14 Indian states (columns (1) and (2) of Table V). The growth rates refer to changes in the volume of riots for every of the six time periods being considered between 1973 and 2000. In this case, the regression threshold effect is only statistically significant in the absence of fixed effects. The results show, however, a very strong association between public expenditure on social services and the growth rates of rioting in India: levels of current and lagged expenditure have a comfortable statistically significant negative impact on the onset of civil unrest in India. This result is independent of the estimation technique used. Increases in civil unrest in India are further associated with increases in state income (perhaps explained by unevenness in the distribution of state income) and increases in poverty. This latter effect is not, however, robust to the inclusion of state effects (column (2)). As before, states that are more religiously homogenous are associated with decreases in the growth rates of civil unrest.

A final question we have addressed is whether our theoretical and empirical frameworks can be used to analyse other forms of political instability. One example is industrial disputes. We have gathered data on the volume of strikes and lockouts per 1000 people across the same 14 Indian states for the same six time periods. The results for this analysis are given in columns (3) and (6) of Table V. Although the volume of strikes and lockouts in India does not seem to be associated with either the use of police or redistributive policies, the relationship between these two variables comes into play when we model changes in strikes and lockouts between each time period (columns (5) and (6)). These estimates show that the use of police has, as expected, a negative impact on the onset of strikes and lockouts. They do not, however, support the repression threshold hypothesis. This result is understandable given that the onset of strikes and

riots will be likely to have different motivations. Whereas feelings of repression may provide strong motives for individuals to engage in riots, strikes will be specific to labour market decisions. The police is also less likely to resort to more aggressive methods of crowd management in strikes than in riot situations. Increases in strikes are nonetheless related to higher levels of poverty. They also respond to public expenditure on social services which, as with riots, decreases the likelihood of the volume of strikes increasing between two time periods.

C. Endogeneity

The evidence presented so far has not addressed concerns over potential endogeneity problems in both the fixed effects and the random effects estimators. Model (3) contains at least one lagged endogenous variable – the lagged volume of riots. Even if this variable is not correlated with ε_{it}, because t is finite, neither the fixed effects or the random effects models will be consistent (Wooldridge [2002]). Another possible source of endogeneity results from the theoretical framework of section 3. That framework implied that conflict, income transfers and use of police are determined simultaneously within the decision process of the *rich*. This means that the models estimated in Table IV may be inconsistent as the right-hand side regressors may be correlated with the disturbance term.

Arellano and Bond [1991] have suggested an estimation method to correct for the bias introduced in the model by the presence of the lagged endogenous variable. This method allows also for the endogeneity in the other regressors. Arellano and Bond [1991] derive a generalised method of moments (GMM) estimator that uses the first differences of all variables (thus removing the state

specific effects) and lags of all variables as instruments. This estimator is consistent and efficient as long as the X_{it} variables are predetermined by at least one period, and there is no second-order autocorrelation in the first-difference of the residuals. This GMM procedure is thus quite useful to estimate a dynamic panel where the regressors may be correlated with the error term due to the inclusion of lagged endogenous regressors, or due to unknown endogeneity in the other regressors.

Due to the theoretical specification developed in the previous section, we can also address the possible existence of endogeneity in the model by estimating simultaneously a system of three equations – where rioting, expenditure on social services and use of police are the dependent variables – using traditional instrumental variable techniques. Baltagi [1995], chapter 7, has adapted standard two-stage least squares (2SLS) procedures to panel data. Baltagi's method allows the estimation of a single equation (model (3)) from a system of equations whose functional form does not need to be estimated, though a minimum of two instruments for the other two endogenous variables must be provided, including the level of rioting itself. All exogenous variables in the first equation are taken to be additional instruments in the first-stage estimation of the social expenditure and police equations. We had nonetheless to look for two further instrumental variables. The two most promising candidates were the membership of labour unions and the number of people in live register. Labour unions have played an important role in the establishment of welfare policies in India (Justino [2003]). At the same time, expenditure on social services takes into account the number of people in live register in each state, as unemployment benefits constitute one the largest expenditure items. We do not expect

these variables to affect the number of police in India,[23] which is expected to depend mostly on the volume of civil unrest plus all other exogenous variables from the first equation.

The results for both the GMM model and the simultaneous equation models are presented in table VI.[24] The new estimates emphasise further the role of redistributive policies in the evolution of rioting in India. In column (1), both lagged and current expenditure on social services have a negative impact on the volume of riots. Interestingly, these coefficients are not statistically significant in explaining increases in rioting (column (2)), which seems to suggest that the previous results were driven by the presence of endogeneity in the model. These conclusions are replicated in columns (3) to (6), though lagged values of social expenditure have a negative and statistically significant impact on the growth rate of riots in columns (5) and (6). We must not, however, forget that the 2SLS estimators address endogeneity in the predetermined regressors but not necessarily correct for the presence of lagged endogenous variables.

As before, both the volume and growth in riots are driven by larger levels of poverty and state income. We obtain for the first time a statistically significant coefficient for inequality in column (2), indicating that higher levels of consumption inequality are associated with increases in conflict. They do not, however, seem to be associated with levels of civil unrest. The repression threshold is still present in column (1) (though not statistically significant) but disappears in column (2), where the lagged value for use of police become for the first time negative and statistically significant. The repression threshold is nonetheless present in the 2SLS models (columns (3) to (6)), suggesting that this effect is likely to impact on the level of conflict but not necessarily on the rate at which conflict may change from one period to the other.

IV. Welfare impact of civil unrest

Violent conflicts are generally assumed to be bad for economic growth and social welfare. Conflicts often injure people, destroy markets and livelihoods and affect the establishment of trust between agents. However, thousands of individuals every year engage in conflict and are responsible for the onset of violence and instability. This suggests that some population groups may gains from conflict, either in terms of rent-seeking greed (Collier and Hoeffler [2000]), or in the enforcement of policies re-addressing initial unfair situations. In this sense, individuals use their engagement in various forms of civil unrest as a form of voicing their demands. This engagement can also been seen as a way of re-balancing opportunities, whereby the poor attempt to capture rents that are ordinarily better captured by the rich. The participation of the poor in the process of development has been viewed by many as an essential part of successful development strategies (Ahmad et al. [1991], Drèze et al. [1995], World Bank [2001]. Participation in social and political decisions provides individuals with a sense of value and identity and is an important means to voice the needs of vulnerable population groups. Politically motivated riots have been associated with both gains and losses in terms of social welfare amongst traditionally vulnerable population groups, as well as the whole population in India, and elsewhere, as they may influence both national and local job practices undertaken by public and private enterprises and lobby for the interests of otherwise disadvantaged groups in the design of national policies (Park [1991], Standing [1992], Justino [2003]). Such actions may provide strong incentives for the implementation of social policies and increased redistribution of incomes and social and political rights. On the other hand, civil unrest may also cause social and political uncertainty and,

consequently, increase the risk of investment and reduce economic growth. When associated with organized labor movements, collective action may also promote forms of wage monopolism, create inefficiencies, reduce labor productivity and again hamper economic growth (Freeman and Medoff [1984], Standing [1992]). However, if those actions result in higher incomes for a significant number of disadvantaged individuals, they may eventually be reflected in increases in aggregate national income.

We have analysed the impact of riots on various welfare variables collected across 14 major Indian states for the period between 1973 and 2000. The independent variables collected were the growth rate of state income (defined as above) and of real per capita rural and urban real consumption expenditure, and the levels of rural and urban poverty and inequality. We have used Arellano and Bond [1991] GMM technique to estimate the various models, where welfare, civil unrest and redistributive policies are assumed to be endogenous. This assumptions is in line with theoretical work by Alesina et al [1996] and empirical work for India discussed in Justino [2003a, 2003b].

Table VII presents the results for this analysis. The riot coefficient is statistically significant only in columns (1) and (6). However, the results tell a compelling story. Contrary to initial expectations, civil unrest in India appears to be associated with increases in state income, at the same time that it is associated with decreases in rural poverty. Riots in India, at least in rural areas, seem therefore to be associated with gains in terms of social welfare amongst people at the bottom of the income distribution. These results are slightly at odds with some of the evidence on the motivation for riots in India. In a large part of these riots, excluded castes and non-Hindu

minorities have often been the victims of riots, rather than the perpetrators. There has been some recent cases of groups of minorities protesting against social, political and economic exclusion and human rights violations by higher-caste individuals and the police (Human Rights Watch, 1999). Other types of riots have been motivated by driven by protests against unfair employment conditions, access to land and other assets, use of and access to health, education and other social services and access to political power and legal institutions (Hardgrave [1983], Oberoi [1997], Justino [2003]). The results obtain in this section seem to suggest that the Indian rioting data captures more accurately these 'voice' effects than it captures the 'tension' effects.

V. Conclusions

The analysis developed in this paper shows conclusive evidence for the importance of redistributive policies on India's socio-political stability. They also show that force is only at best a short-term instrument in the fight against civil unrest. In the longer-term, it may in fact make things worse. The results show quite irrevocably that redistributive policies have been very effective in diffusing conflicts stemming from discontent over poverty and persistent inequality. Higher public spending on social services and higher levels of education seem also to have contributed towards stronger economic growth in India. The results suggest thus 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.

The case study of India has several important aspects that may lead to advances in the understanding of the nature and effects of conflict on human security and social welfare. This case suggests thus important lessons for other countries where social cohesion tends to break frequently but large-scale wars may be avoidable. 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, former Soviet Union republics). Increases in redistributive policies may have an important role to play in the establishment and/or maintenance of stable socio-political environments in those countries.

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]). 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 or governments that face difficulties in building adequate support coalitions. Redistribution can , however, take various forms (Chenery et al. [1974], Killick [2002]), as inequalities do not arise exclusively from

disparities in wages and other earnings, but are also determined by the opportunities and choices each individual faces and by social structures. Redistribution can mean not only redistribution of incomes, wealth and assets, but also the guarantee of equal choices and the redistribution of social and political rights by, for instance, implementing universal primary and secondary schooling and universal access to primary health care and social security benefits, the guarantee equal access to job opportunities by all groups in the population, independently of gender, religion or ethnicity, protection of cultural differences and the right to use different languages, as well as establishing equal rights of access to economic, social, political and legal institutions by all population groups. These are not conventional forms of redistribution, as targeted poor households will not necessarily benefit from an increase of disposable income as with income transfers. They constitutes, however, forms of redistribution of income from the rich, or the whole population, into the accumulation of assets among the poor assets that will hopefully allow their recipients to be more productive and less excluded socially (Bourguignon [2002]). The Indian analysis suggests that these policies can have an important role to play in the prevention of civil conflicts.

These forms of redistribution may face similar difficulties to the redistribution of incomes, wealth and assets, both at the economic and political level. The lack of capital and insurance markets and the extent of budget restrictions that characterize most developing countries may constrain the implementation of efficient redistributive systems and education and health programs. In addition, the persistence of traditional labour structures may impede a change in social attitudes crucial to the reduction – and elimination – of discrimination and forms of segregation, not only in the labour market but in all areas of society. Finally, policies that guarantee more equal opportunities and a more equal distribution of social and political rights are also likely to face

opposition from established elites as such policies may be perceived as a direct challenge to their economic and political influence. The redistribution of financial resources and social and political rights require thus political determination on the part of the government, as well as the support of elites and a change of social attitudes. It requires also increased demand from the general population for redistribution and a more active participation of the civil society in holding the various governments to account on all issues related to redistribution.

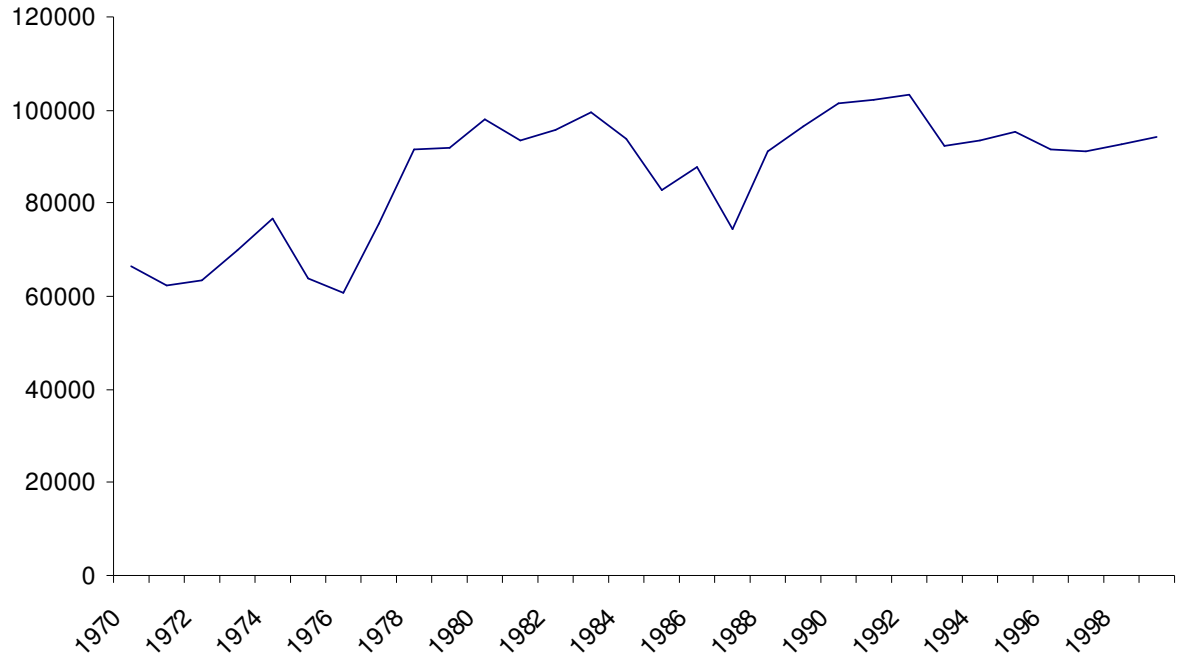
TABLE I: Poverty, Inequality and Redistributive Policies in Selected Countries

	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.

GRAPH I
Riots in India, 1970 to 1999



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

TABLE II: Number of Riots in Selected Indian States, 1973-2000

	1973-94	1977-78	1983	1987-88	1993-94	1999-00
Andhra Pradesh	3124	3925	3649	3836	3224	2842
Assam	3530	3631	7634	3351	4441	3647
Bihar	11699	11153	16865	13586	13341	11067
Gujarat	458	1012	1465	734	2609	2040
Karnataka	2701	3710	5421	6402	7846	7522
Kerala	5673	4976	5393	4796	6116	6605
Madhya Pradesh	2782	3391	5687	2736	3718	3303
Maharashtra	2063	2194	7422	802	4713	5146
Orissa	1807	1687	2761	1611	1941	1442
Punjab	50	37	89	160	12	3
Rajasthan	5494	7532	11136	10852	17562	16491
Tamil Nadu	5382	5566	9302	7602	8307	5408
Uttar Pradesh	13635	12491	9016	9228	9271	6791
West Bengal	9501	11523	10320	6132	6641	4601
Average 14 states	4850	5202	6869	5131	6410	5493

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

TABLE III: Descriptive Statistics

		Mean	Standard deviation
Volume of riots per 1000 people	Overall	0.119	0.088
	Between		0.081
	Within		0.039
Volume of strikes and lockouts per 1000 people	Overall	0.328	0.283
	Between		0.119
	Within		0.258
Total number of police per 1000 people	Overall	1.335	0.438
	Between		0.369
	Within		0.253
Overall Gini coefficient	Overall	29.172	4.098
	Between		2.923
	Within		2.960
Overall headcount index (%)	Overall	38.354	15.618
	Between		10.751
	Within		11.632
Rural inequality	Overall	28.161	4.563
	Between		2.933
	Within		3.568
Urban inequality	Overall	32.310	3.422
	Between		2.921
	Within		2.603
Rural poverty (%)	Overall	38.882	18.044
	Between		13.005
	Within		12.909
Urban poverty (%)	Overall	38.292	13.760
	Between		9.167
	Within		10.505
Log real expenditure on social services per capita	Overall	5.070	3.995
	Between		3.706
	Within		1.749
Log real net state domestic product per capita	Overall	7.481	0.395
	Between		0.316
	Within		0.249
Primary and sec. school enrolments per capita	Overall	0.149	0.053
	Between		0.022
	Within		0.048
Openness measure	Overall	24.248	0.822
	Between		0.000
	Within		0.822
Congress majority	Overall	0.667	0.474
	Between		0.000
	Within		0.474
Hindu majority	Overall	0.792	0.160
	Between		0.165
	Within		0.000

TABLE IV: Econometric Results

	(1) Volume riots FE	(2) Volume riots FE	(3) Volume riots RE	(4) Volume riots RE	(5) Volume riots RE [hindu]	(6) Volume riots FE [rural/urban]
Lagged riots	0.380**	0.328	0.916***	0.915***	0.893***	0.328
	(2.29)	(1.65)	(18.32)	(15.69)	(14.75)	(1.66)
Use of police	-0.047	-0.052	-0.047***	-0.048**	-0.060***	-0.051*
	(1.21)	(1.67)	(2.58)	(2.45)	(3.09)	(1.77)
Lagged use of police	0.021	0.039*	0.052***	0.050**	0.045**	0.041*
	(0.88)	(1.87)	(2.59)	(2.21)	(2.07)	(1.87)
Lagged Gini	-0.000	-0.001	0.001	0.002*	0.002	
	(0.12)	(0.26)	(1.25)	(1.69)	(1.26)	
Lagged headcount		0.003*		-0.000	0.001	
		(2.04)		(0.18)	(1.49)	
Lagged rural Gini						-0.001
						(0.31)
Lagged urban Gini						0.001
						(0.44)
Lagged rural poverty						0.003**
						(2.24)
Lagged urban poverty						0.001
						(0.30)
Exp social services		-0.003***		-0.001	-0.002*	-0.004*
		(4.12)		(0.77)	(1.93)	(1.84)
Lagged exp social services		-0.114		-0.042	-0.065	-0.107
		(1.17)		(0.82)	(1.23)	(0.95)
Natural log state income		0.153*		0.036	0.049	0.148
		(1.78)		(0.88)	(1.18)	(1.67)
School enrolments		-0.092		-0.152*	-0.188**	-0.096
		(0.95)		(1.90)	(2.32)	(0.86)
Openness measure		0.006		-0.003	0.004	0.006
		(0.29)		(0.55)	(0.54)	(0.17)
Congress majority		0.038		-0.003	-0.005	0.034
		(1.27)		(0.25)	(0.46)	(1.14)
Hindu majority					-0.090*	
					(1.85)	
Constant	0.068	-0.488	0.001	0.080	0.066	-0.541
	(0.50)	(1.03)	(0.03)	(0.50)	(0.40)	(0.71)
Observations	70	70	70	70	70	70
R-squared	0.885	0.913				0.916

Note: t-statistics in parenthesis. ***, ** and * indicate, respectively, statistically significance at the 1%, 5% and 10% level.

TABLE V: Sensitivity Analysis

	(1) Growth riots FE	(2) Growth riots RE	(3) Volume strikes FE	(4) Volume strikes RE	(5) Growth strikes FE	(6) Growth strikes RE
Lagged strikes			-0.067	0.377***		
			(0.32)	(4.26)		
Use of police	-1.078	-0.648***	0.080	0.008	-1.440***	-1.037**
	(1.73)	(4.07)	(0.82)	(0.13)	(3.24)	(2.14)
Lagged use of police	0.295	0.412**	0.264	-0.027	-0.787**	-0.052
	(0.78)	(2.51)	(1.30)	(0.40)	(2.28)	(0.11)
Lagged Gini	0.058	0.014	0.006	0.003	-0.036	0.029
	(1.13)	(1.27)	(0.60)	(0.55)	(0.50)	(0.90)
Lagged headcount	0.013	0.007*	-0.014	0.000	0.073*	0.018*
	(0.77)	(1.87)	(1.35)	(0.00)	(1.81)	(1.77)
Lagged rural Gini						
Lagged urban Gini						
Lagged rural poverty						
Lagged urban poverty						
Exp social services	-0.041**	-0.027**	0.008	-0.002	-0.061**	-0.021
	(2.79)	(2.13)	(1.24)	(0.56)	(2.23)	(0.66)
Lagged exp social services	-2.758**	-1.514***	-0.306	-0.181	-1.588*	-3.219***
	(2.25)	(2.92)	(0.50)	(1.00)	(0.83)	(3.60)
Natural log state income	1.921*	1.138***	0.450	0.147	4.013	1.321*
	(1.83)	(3.01)	(1.46)	(1.01)	(1.57)	(1.76)
School enrolments	-0.440	-0.359	0.485	0.233	1.499	2.536
	(0.22)	(0.50)	(0.55)	(0.74)	(0.49)	(1.24)
Openness measure	0.105	-0.027	-0.403**	-0.113***	0.441	0.933***
	(1.21)	(0.39)	(2.64)	(2.90)	(0.61)	(4.39)
Congress majority	0.044	-0.033	-0.103	-0.004	0.648	0.245
	(0.13)	(0.32)	(0.71)	(0.10)	(0.99)	(0.92)
Hindu majority		-0.920*		-0.023		-0.550
		(1.73)		(0.16)		(0.43)
Constant	1.879	3.640**	9.197**	3.078***	-31.293**	-10.476***
	(0.28)	(2.51)	(2.38)	(3.93)	(2.45)	(3.02)
Observations	70	70	70	70	70	70
R-squared	0.510		0.679		0.846	

Note: t-statistics in parenthesis. ***, ** and * indicate, respectively, statistically significance at the 1%, 5% and 10% level.

TABLE VI: Endogeneity

	(1) Volume riots GMM	(2) Growth riots GMM	(3) Volume riots 2SLS FE	(4) Volume riots 2SLS RE	(5) Growth riots 2SLS FE	(6) Growth riots 2SLS RE	(7) Growth strikes GMM	(8) Growth strikes 2SLS FE
Lagged riots/growth	0.865	-0.635***	0.262	0.883***				
	(1.14)	(4.32)	(0.79)	(12.70)				
Lagged strikes/growth							-0.065	
							(0.38)	
Use of police	-0.164**	-1.147*	-0.063	-0.078***	-1.103***	-0.869***	-1.508***	-1.459***
	(2.15)	(1.88)	(1.23)	(3.65)	(3.18)	(2.93)	(3.31)	(2.88)
Lagged use of police	0.018	-0.956*	0.012	0.063***	0.254	0.587*	-1.148***	-0.817
	(0.60)	(1.87)	(0.21)	(2.84)	(0.63)	(1.90)	(2.96)	(1.36)
Lagged Gini	-0.002	0.107*	0.000	0.002	0.061	0.020	0.001	-0.033
	(1.06)	(0.79)	(0.08)	(1.01)	(1.53)	(0.80)	(0.03)	(0.58)
Lagged headcount	0.005***	0.034*	0.007*	0.001**	0.019	0.013	0.081***	0.078*
	(3.60)	(1.83)	(1.88)	(2.07)	(0.74)	(1.37)	(2.66)	(1.79)
Exp social services	-0.003*	0.050	-0.038**	-0.004*	-0.100	-0.041	0.030	-0.105
	(1.79)	(1.11)	(1.97)	(1.78)	(0.72)	(1.16)	(0.87)	(0.33)
Lagged exp sservices	-0.122**	0.161	-0.159	-0.146**	-2.840**	-2.654***	0.160	-1.650
	(2.05)	(0.53)	(0.90)	(2.00)	(2.23)	(2.69)	(0.21)	(0.89)
State income	0.191***	2.392**	0.196	0.098*	1.989**	2.074***	2.589	4.064***
	(2.90)	(2.07)	(1.46)	(1.71)	(2.08)	(2.60)	(0.40)	(2.91)
School enrolments	-0.143	12.911	0.095	-0.218*	-0.142	-0.584	14.502**	1.722
	(1.04)	(1.43)	(0.31)	(1.75)	(0.07)	(0.34)	(1.96)	(0.53)
Openness measure	-0.466**	(dropped)	0.015	0.014	0.123	0.025	(dropped)	0.455
	(2.18)		(0.38)	(1.19)	(0.43)	(0.15)		(1.09)
Congress majority	(dropped)	(dropped)	0.029	0.020	0.026	0.228	(dropped)	0.634
			(0.66)	(1.05)	(0.08)	(0.85)		(1.38)
Hindu majority			0.000	-0.148**	0.000	-0.988		0.000
			(.)	(2.10)	(.)	(0.93)		(.)
Constant	0.190**	-0.415	-0.645	0.077	1.984	3.567	-0.082	-30.192***
	(2.12)	(0.92)	(0.67)	(0.34)	(0.29)	(1.16)	(0.04)	(3.02)
Observations	56	56	70	70	70	70	70	70
R-squared			0.434	0.849	0.427	0.396		0.496

Note: z-statistics in parenthesis. R-squared refers to within R-squared for fixed effects and overall R-squared for random effects. ***, ** and * indicate, respectively, statistically significance at the 1%, 5% and 10% levels.

TABLE VII: Welfare Analysis

	(1) Growth state income GMM	(2) Growth rural cons expenditure GMM	(3) Growth urban cons expenditure GMM	(4) Rural poverty GMM	(5) Urban poverty GMM	(6) Rural inequality GMM	(7) Urban inequality GMM
Volume riots	2.778***	-42.353	408.298	-4.094*	3.102	-0.120	2.388
	(3.38)	(0.33)	(1.01)	(1.92)	(1.02)	(0.82)	(1.13)
Use of police	0.218**	22.434	14.648	-0.280	0.152	-0.006	0.137
	(2.54)	(1.52)	(0.29)	(1.54)	(0.86)	(0.82)	(1.02)
Lagged Gini	0.003	0.774	1.814				
	(1.07)	(1.10)	(1.40)				
Lag headcount	-0.011**	-0.953**	-2.056				
	(2.29)	(2.12)	(1.27)				
Lag rural poverty				0.681		-0.037	
				(1.49)		(0.50)	
Lag urban poverty					-0.400***		-0.275
					(2.90)		(1.35)
Lag rural inequality				0.384		-0.326***	
				(0.36)		(3.60)	
Lag urban inequality					0.092		-0.528**
					(0.21)		(2.49)
Exp social services	0.011***	0.142	1.323	-0.009	0.004	-0.001	0.011
	(3.03)	(0.17)	(0.57)	(1.17)	(0.72)	(0.42)	(1.42)
Lag exp sservices	0.177***	9.558	-100.090	-0.106	0.137	0.002	0.127
	(3.36)	(0.40)	(1.07)	(0.89)	(1.63)	(0.10)	(1.40)
State income				0.213	-0.585	0.032	-0.364
				(0.59)	(1.00)	(1.06)	(1.37)
Lagged state income	0.187*			-0.829***	0.254	-0.019	0.200
	(1.86)			(3.17)	(0.63)	(0.54)	(1.13)
Lagged rural consumption		-0.862*					
		(1.76)					
Lagged urban consumption			-1.892				
			(1.27)				
School enrolments	0.152	164.803	34.974	-0.598*	-1.086	-0.037	0.178
	(0.37)	(1.38)	(0.15)	(1.71)	(0.35)	(0.67)	(1.16)
Openness measure	0.801***	-0.911	-73.836	-0.378	1.212	-0.018	0.543
	(3.82)	(0.02)	(0.51)	(0.85)	(0.72)	(0.29)	(1.29)
Congress majority							
Year effects							
State effects							
Constant	-0.264**	12.010	14.499	0.171	-0.546	-0.015	-0.208
	(2.51)	(0.86)	(0.42)	(0.98)	(0.73)	(0.62)	(1.26)

Observations	70	70	70	70	70	70	70

Note: z-statistics in parenthesis. ***, ** and * indicate, respectively, statistically significance at the 1%, 5% and 10% level.

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[1] There were about 4000 political riots across the world between 1919 and 1997 (Boix [2004], based on estimates from Banks [1997]).

[2] For a more extensive review see Gupta [1990].

[3] 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).

[4] The assumptions that underlie this model will be empirically tested in the next section for the case study of India.

[5] 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.

[6] Boix [2004] uses a similar measure of inequality in an independent study. 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 most indices of inequality to be very highly correlated.

[7] See Boix [2004]. Although his analysis incorporates possible costs of conflict for the perpetrators of conflict in his game theory analysis, his results do not differ significantly from ours.

[8] Because $\lim_{n\to\infty} K^t = \begin{cases} 0; K < 1 \\ 1; K = 1 \\ \infty; K > 1 \end{cases}$

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

[10] Hindus constitute around 83% of the Indian population. Muslims, India's largest minority, represent 11% of the population. Other minorities include the Sikhs, concentrated in the Punjab (2% of the total Indian population), Christians, Buddhists, Parsees and Jews (Hardgrave [1983]). Hindus are, in turn, divided into thousands of castes and sub-castes and different languages. There are more than a dozen major languages in India. Hindu, the official language, is spoken by a mere 30% of the population (Hardgrave [1983]).

[11] Two of the most serious separatist 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 (Hardgrave [1993], Jodhka [2001]). The conflict in Kashmir has resulted in two wars between India and Pakistan and has led to the death of around 12000 people since 1989. Other separatist conflicts include those fuelled by Nepalis, in the late 1980s, in West Bangal, demanding a separate "Gurkhhaland" state. This led to two years of violence in which more than 300 people were killed. Demands for a separate state have been recently renewed. The Bodo tribals in Assam have also been leading a violent struggle for the creation of a separate Bodoland, whilst tribals in the mineral-rich southern Bihar and contiguous districts in neighbouring states have demanded a separate Jharkland state. These demands have assumed particular violent forms since the early 1990s (EPW [2001]).

[12] Recent examples include riots across various states between Hindus and Muslims following the destruction of the Ayodhya mosque in 1992, violent riots in Gujarat and Maharashtra since the late 1990s, series of ethnic clashes and massacres between the Ranvir Sena and Naxalites in Bihar since 1994, violence against Dalits across various states, and so forth (Human Rights Watch 1999 2000 2001). Ever increasing linguistic and cultural identities have also led to conflicts against outsiders. One of the most violent manifestations of this type of conflict has taken place sporadically in Maharashtra, where the Shiv Sena, a regional party, has directed attacks against South Indian immigrants and Muslims. In Assam, violence against Bengali immigrants led to the death of about 5000 people between 1980 and 1986, whereas violence against Christians is relatively common in the states of Gujarat, Karnataka, Madhya Pradesh, Orissa, Maharashtra and Uttar Pradesh (Human Rights Watch [2000, 2001]).

[13] 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). 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. This possible data measurement error will, however, be systematic across all states and all years and thus unlikely to affect significantly our empirical results.

[14] There have been two wars between India and Pakistan. These did not, however, spread internally across the two countries.

[15] We have six data points within that period: 1973-74, 1977-78, 1983, 1987-88, 1993-94 and 1999-2000. 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. Our analysis focuses on these six years in order to ensure consistency across all variables. 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]).

[16] 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. In 1999-2000, these 14 states represented 93.3% of the total Indian population.

[17] Only the current values of these variables have been included as present enrolment rates reflect already the accumulation of this variable across time. The number of people enrolled in primary and secondary school in 1999 includes the number of these people enrolled in previous years plus additional registrations on that year.

[18] For discussion of the liberalisation process in India after 1990 see Srinivasan [1996] and Srinivasan [2001].

[19] This variable is published by the Indian Election Commission.

[20] The Breusch-Pagan method tests the null hypothesis that Var(ε)=0. For both specifications of model (3) we obtained $\chi^2(1) = 8.75$ with $\text{Prob} > \chi^2 = 0.0031$. The hausman method tests the null hypothesis that the difference between the fixed effects and the random effects are not systematic. For both specifications we obtained $\chi^2(4) = 0.00$ with $\text{Prob} > \chi^2 = 1.000$.

[21] The uncorrected model showed signs of heteroskedasticity and serial correlation.

[22] The aggregated inequality and poverty measures were calculated from rural and urban coefficients weighted by rural and urban populations in each state as provided by the Indian Census. The inequality and poverty data is taken from Özler, Datt and Ravallion (1996), World Bank for the 1973-94 to 1993-94 periods. The headcount indices for 1999-2000 are from Deaton (2001b), whereas the 1999-2000 Gini coefficients from National Human Development Report 2001, Planning Commission, Government of India.

[23] In the first-stage estimation, these two variables were only statistically significant in the social expenditure model.

[24] The 2SLS results presented are the second-stage results only as we are only interested in estimating model (3). The GMM estimator is the more efficient Arellano-Bond two-step estimator given the presence of heteroskedasticity we found previously in the model. We have tested the three GMM estimators presented in Table VI using the Sargan test for over-identification of restrictions. The results for columns (1), (2) and (7), respectively, were $\chi^2(9) = 1.27$ with $\text{Prob} > \chi^2 = 0.9985$, $\chi^2(9) = 0.72$ with $\text{Prob} > \chi^2 = 0.999$ and $\chi^2(9) = 2.47$ with $\text{Prob} > \chi^2 = 0.982$. We also rejected the hypotheses of first- and second-order autocorrelation in the three models at less than 5% level of significance.