TWO FACES OF PARTICIPATION: THE STORY OF KERALA

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Abstract: *This paper analysis the impact of collective action and political participation on the economic development of the south Indian state of Kerala over the last three decades. Despite its low economic basis, Kerala's successive governments have implemented a large redistributive programme that resulted in impressive levels of social development. Kerala's success has been largely attributed to the actions of organised collective movements, both in the formal and informal sectors, in the form of militant peasants associations and labour unions. Collective actions have, however, also contributed towards political instability, increase in the risk of investment and uncertainty in labour productivity. This paper examines the effects of collective actions on Kerala's economic growth during the last three decades using time-series analysis techniques, considering in turn collective action and redistributive policies to be external and then endogenous variables to the process of economic growth in Kerala. The results show that while some forms of collective action can contribute towards the decrease of poverty and increase in state income, other forms harm economic growth. We compare these results with those obtained for a panel of 14 major Indian states.*

JEL codes: O1, O5

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1. INTRODUCTION

Kerala is one of India's 25 states, situated in the south-western tip of the country. It was formed in 1956, by integrating the Malayalam-speaking states of Travancore and Cochin and the British province of Malabar. Kerala's coastal area and its somewhat isolated location contributed to the state's very specific climatic, religious, socio-political and economic characteristics. Its location allowed Kerala since very early to maintain contact with foreign cultures, and kept it little affected by the many wars that took place in India (Pillai, 1994). Kerala's contact with foreign cultures in the past is still reflected in its unique pattern of religious affiliations, the most heterogeneous in India with 57% Hindus, 21.5% Christians, 21% Muslims and the remaining 0.5% Buddhists, animists and others (Pillai, 1994).[1] Kerala combines this unique social structure in one of the most densely populated regions in the world.[2]

The state of Kerala has occupied an eminent position in the development debate since the early 1970s, when its government implemented a singular development strategy. Unlike most developing economies, Kerala's policy-makers followed a successful 'basic-needs-first' strategy, which prioritised the improvement of socio-economic standards of its population (in terms of education, health, food and social security) and implemented an extensive land reform, which has been widely viewed as one of the most successful outside socialist countries (Heller, 1995). Thanks to this development strategy, Kerala's quality of life indicators (literacy, life expectancy, infant mortality, death and birth rates) compare today quite favourably to those of many industrialised nations (table 1). More remarkable is the fact that these policies were implemented in the context of a very poor economy: Kerala's net state domestic product was, in 1999, below the India's average and was around half of Maharashtra's state income (table 2). As a result of the development strategy followed, income poverty that, in 1973-74, was well above the all-Indian average, has decreased significantly during the last three decades (table 3).

Several factors explain the success of Kerala's development strategy. One of those factors is Kerala's dense population distribution, which makes it cost effective to implement redistributive policies. In addition, the redistributive programme implemented in the 1970s was largely assisted by the early role of Christian missionaries and the Travancore-Cochin kings in promoting education and health care (Franke and Chasin, 1992; Prakash, 1994; Pillai, 1994). More importantly, Kerala's development success has been

[1] India's population is divided according to religious affiliation into 83% Hindus, 2% Christians, 11% Muslims and 4% Buddhists, animists and others.

[2] Kerala comprises 3.43% of India's total population in an area that covers 1.18% of India's total area (Government of India, 1998). According to the 1991 Census, the state's population density was 747 people per squared kilometre (1000 in coastal areas).

accredited to the actions of well-organised collective movements, both in the formal and informal sectors, in the form of militant peasants associations (which had a leading role in the implementation of Kerala's effective land reforms) and labour unions, which has resulted in a very successful interaction between public demand and a pro-active state (Oommen, 1993; Prakash, 1994; Heller, 1996, 2000).

The political participation of the worse-off population groups is of fundamental importance in developing countries. Participation in social and political decisions provides individuals with a sense of value and identity and is an important means to voice their needs. One of the most common forms of political participation is the membership of labour unions. These can play a significant role in the protection of political representation of member workers, as well-organised unions will be able to influence both local job practices undertaken by public and private enterprises and lobby for the interests of otherwise disadvantaged groups in the design of national policies.[3] Labour union demands in Kerala (both in the organised and unorganised sectors) and their political power were central in the implementation of the state's redistributive model. However, labour unions' actions have also created an element of socio-political instability in Kerala, predominantly in the state's industrial sector where demands for higher wages and increased risk of disruption have discouraged private investment and have led companies to establish themselves in other Indian states with more stable labour markets.

This paper revisits the story of Kerala's 'model of development' and asks how collective action in general and labour market activism in particular have affected the state's economic development over the last three decades. Heralded as one of the most impressive development successes during the late 1970s and throughout most of the 1980s, Kerala's economy financial, agricultural and industrial sectors started to falter in the late 1980s and the 1990s (Prakash, 1994; Tharamangalam, 1998). This paper examines the reasons for the state's economic instability in recent years and analyses the role political participation had both on Kerala's glory and downfall. In section 2, the main characteristics of Kerala's development process throughout the 1970s, 1980s and 1990s are re-examined. Section 3 includes a discussion of the patterns of collective action and political participation in Kerala and the particular role of labour unions. In section 4, I analyse empirically the impact of labour union actions on Kerala's economic development, using time-series analysis techniques. In the first instance, the model assumes collective action and redistributive policy variables to be external to the process of economic growth in Kerala. This assumption is later relaxed and the variables are modelled as endogenous. In section 5, the results for Kerala are compared with those for a panel of 14 major Indian states and the main differences between Kerala's development strategy and the strategies followed in other states are examined. The objective of

this section is to understand the role of collective action across India and assess how unique Kerala's development strategy has been in the context of the Indian society as a whole. Section 6 summarises the evidence and concludes the paper.

2. KERALA'S 'MODEL OF DEVELOPMENT'

Kerala's social development strategy consisted of an extensive programme of social policies, combined with one of the most extensive programmes of land reforms in the developing world. One of the central pillars of the development process was the food programme. This was similar to that implemented in the whole of India in the late 1960s. India's food programme was integrated within a wider rural poverty alleviation scheme that combined a large programme for land reforms,[4] and the introduction of new technologies and crops in the agriculture sector (the 'Green revolution'), with an extensive rural employment scheme, designed to address the unemployment problems of the landless,[5] and the Integrated Rural Development Programme (IRDP), targeted towards the creation of assets for the landless.[6] Kerala's food security policies rested also on the implementation of the Public Distribution System, which tackled the issue of food security by supplying food grains and other essential commodities at subsidised prices in fair price or 'ration' shops, and the School Meals Programme, which distributed free lunch for primary school children and one free meal for women and their infants.[7]

The food programme was complemented by a large amount of public spending on primary and secondary education, health care (free health care in public health institutions) and immunisation, and a large programme of family planning. These policies were further accompanied by a large social assistance and social insurance programme. Following central government plans, Kerala has introduced a means-tested old age pension scheme, together with an accident insurance scheme for those under the poverty line, group life insurance schemes for agricultural labourers and for beneficiaries under the IRDP, a rural hut insurance scheme, and a crop insurance scheme.[8] In 1995, the state of Kerala started, like the rest of India,

[3] For evidence see Freeman and Medoff (1984).
[4] Which, in Kerala, resulted in a massive redistribution of land rights. See Herring (1983, 1991) for excellent accounts of Kerala's land reforms. See also Franke (1992) for an interesting case study of the Nadur village in Kerala. For other good reviews see Oommen (1994), Pillai (1994) and Ramachandran (1997).
[5] It provided food for work in selected areas, together with regular employment generation schemes.
[6] See Byres (1993) and Gaiha (1996), for instance, for a review of the IRDP in India and Prakash (1994) and Pillai (1994) for an analysis of the IRDP in Kerala.
[7] See UN (1975), Franke and Chasin (1992) and Pillai (1994) for details of the programmes. See also Suryanarayana (2001).
[8] For extensive discussion of the social insurance and the social assistance programmes in Kerala see Gulati (1990), Kannan (1995) and Government of Kerala (1996, 1997a, 1997b). Altogether there are over 25 social security and pension schemes implemented in Kerala. Of those, the ones with larger impact in terms of budget allocation and

the implementation of the National Social Assistance Programme (NSAP). Together with the NSAP, the government of Kerala has also in place the provision schemes for the workers in the unorganised sector,[9] a direct result of the strong political power of their unions.[10] The success of these policies is reflected in Kerala's extraordinary achievements results in terms of improved literacy, health care and demographic characteristics of the population (table 1). Although some problems still remain - caste intolerance has not been completely eliminated, land reforms have resulted in new forms of rural exploitation between poor landowners and their landless workers, the unorganised sector in Kerala is still characterised by underemployment, decentralised production, pronounced market fluctuations and narrow margins of profit and groups like the fishermen and tribals, amongst others, have been left at the margin of Kerala's development model (see Franke, 1992; Franke and Chasin, 1992; Heller, 1996) - Kerala's development programme has in general provided traditionally vulnerable groups, such as the lower castes, the women[11] and the workers in the unorganised sector, with better capacity to access social entitlements and the mechanisms of power, both important elements of any development strategy.

As a consequence of its development strategy, Kerala benefited throughout the late 1970s from more stable socio-political relations and a significant accumulation of human capital. These achievements were not, however, reflected in Kerala's economic performance. During the 1970s, Kerala's economy grew at an average of 0.4%. This increased to 1.5% during the 1980s but was still well below the average of all major Indian states for the decade (table 2).[12] Although there have been recent signs of economic recovery, Kerala's per capita domestic product is still below the Indian average, almost half of that of Maharashtra and significantly lower than the per capita domestic product of Tamil Nadu, Kerala's

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coverage are the Agricultural Workers Pension Scheme, the Destitutes and Widows Scheme and the Pension Scheme for the Handicapped (Government of Kerala, 1997a).

[9] This is an important feature of Kerala's development strategy as workers in the unorganised (informal) sector are generally not covered by public social protection policies in India or in most other developing countries. This is despite the fact that, in India, only 9% of rural households and about half of urban households work in the formal sector (Harriss-White, 1999). See Sasikumar and Subrahmanya (1996) and Nambiar (1996).

[10] See Gulati (1990) for a full analysis of these schemes, in particularly the Kerala Headload Workers (Regulation of Employment and Welfare) Scheme. The headload workers have traditionally been one of Kerala's most active groups and their labour union is one of the most politically influential unions in India, despite being part of the unorganised sector (see Heller, 1996).

[11] Women in Kerala are much better-off than their all-India counterparts. They have higher literacy rates, fewer children and live longer than the average Indian woman. Female children also survive more than male children, in contrast to the situation in the rest of India. Kerala's female to male ratio was 1.036 to 1 in 1991 in contrast to the all-India average of 0.927 to 1 (Government of Kerala, 1997a). See also Franke and Chasin (1992); Jeffrey (1992) and Pillai (1994). However, one source of gender inequality remains in Kerala: about 61% of females in Kerala are currently unemployed or underemployed (Government of Kerala, 1997a).

[12] See Kannan (1990), George (1993), Prakash (1994), Isaac and Tharakan (1995) and Heller (1996) for excellent analyses of Kerala's economic progress.

neighbour state with an equally large redistributive programme, and West Bengal, where the role of collective action has also been extensive.

Kerala's low income levels have been reflected in the low performance registered in all the economic sectors (particularly, the agriculture and manufacturing sectors)[13] and have been aggravated by a fiscal crisis[14] and the increase in unemployment in the state since the mid-1970s.[15] Kerala's poor economic performance has, in turn, started to have significant negative impacts on the implementation of further social redistributive policies. The state's low agricultural output poses serious constraints to food security, which may jeopardise a large network of government programmes such as the school and nursery lunches, special feeding centres and ration and fair price shops. These and other social programmes have also been negatively affected by Kerala's fiscal crisis. Because most social security and development policies are financed out of the revenue account, the increasing deficit poses a serious financial restriction on the maintenance of Kerala's social development programme. This may make further expenditure on social sectors unsustainable. In fact, expenditure on social services per capita decreased significantly in Kerala between 1973 and 1999 (table 4). Furthermore, whilst Kerala had the highest levels of real per capita expenditure on social services in India in 1973, in 1999 five states (Gujarat, Karnataka, Maharashtra, Tamil Nadu and West Bengal) had over passed Kerala (table 4). These were also some of the states with the best economic performances during the 1980s and 1990s. In addition, constant rises in unemployment have threatened to offset Kerala's educational achievements. In fact, the largest percentage of unemployment in Kerala has been amongst the educated population. In 1993-94, the unemployment rates amongst the educated[16] were 18.5% (rural male), 49.6% (rural female), 27.2% (total rural), 15.6% (urban male), 32.3% (urban female) and 21.3% (total urban). These estimates were more than twice the all-India estimates (NSSO, 1996).

It is not clear why Kerala registers such as high percentage of unemployed people amongst the educated fractions of the population or what will the consequences of such situation. One of the reasons put forward has been the fact that Kerala's education system is not targeted towards the needs of its economic

[13] See Sankaranarayanan and Bhai (1994), Heller (1996), Kerala Economic Survey (1996-97).

[14] Kerala's fiscal deficit had its origins in its non-plan revenue account. While fiscally solvent states use their revenue account surpluses to meet capital deficits, Kerala has used its capital account surpluses to finance its recurrent revenue deficits. This is not a wise strategy because diverting capital receipts in order to finance revenue expenditure reduces public investment and aggravates debt-servicing difficulties in the future (which were already high in Kerala) (George, 1993; Roy, 1997). See Lizy (1990), Herring (1991), George (1993) and Heller (1995) for detailed discussions of Kerala's fiscal crisis.

[15] See Prakash (1994), Isaac and Tharakan (1995), Ramachandran (1997) and Tharamangalam (1998).

sectors, producing degrees in mass and of low quality (Oommen, 1993). Another reason proposed is that most jobs available in the state involve manual labour, which does not attract people with higher technical expertise (Economic and Political Weekly, 1997). This situation creates thus a group of discontented people without access to adequate work, which may add increasing pressure to social relations in the state. One immediate consequence has been the sharp decrease in school (primary and secondary) enrolments in Kerala between 1973 and 1999 (table 4). Given the importance education has had on the development strategy followed in the state, decreases in school enrolments may affect negatively Kerala's model of development in the future.

Kerala's low economic basis has, until recently, been compensated by the remittances of emigrants in the Gulf. The difficulty to find adequate jobs in their state has forced a large percentage of Keralites to find work elsewhere. The most important destination has been the Gulf states, particularly after the boom experienced by the oil-producing countries in the 1970s, which opened up new employment opportunities for those who otherwise would have been unemployed or underemployed in Kerala.[17] The inflow of remittances from the large scale emigration of Keralites to the Middle-East has been pointed out as the one single factor that has influenced Kerala's economic performance in the 1970s and 1980s. However, although remittances represent an enormous saving potential,[18] most of these savings have gone straight into immediate consumption (houses and luxury goods) (Government of Kerala, 1987), and have thus not contributed in any way towards the establishment of a strong manufacturing sector in the state**,** nor created a multiplier effect on the state's level of economic growth.

3. POLITICAL PARTICIPATION IN KERALA

Kerala's disappointing economic performance has been blamed to a large extent on the strength of militant movements in the state (Oommen, 1993; Prakash, 1994; Heller, 1996, 2000). Although labour union demands in Kerala (both in the organised and unorganised sectors) and their political power were central to the implementation of Kerala's redistributive model, they have also created an element of socio-political instability in Kerala, particularly in the state's industrial sector. Although Kerala's industrial

[16] The educated for the purpose of the NSSO report are "persons who have obtained an educational level of secondary and above". Usually you can obtain this educational level at the age of 15 years and above which is why the estimates that follow are restricted to the universe of people of 15 years or above only.

[17] Although there was a significant repatriation of migrants due to Iraq's invasion of Kuwait in 1991, it is still estimated that about 500000 Keralites live in the Middle-East (Prakash, 1994).

[18] This potential cannot, however, be accurately estimated because savings originated from remittances are not registered by the Government of Kerala as most go to national banks or other states (Tharamangalam, 1998).

sector has suffered from a lack of adequate public action, infrastructure and industrial basis,[19] demands for higher wages[20] and the increased risk of disruption have discouraged private investment and have led companies to establish themselves in other Indian states with more stable labour markets (Werff, 1992; Sankaranarayanan and Bhai, 1994; Nair, 1994; Heller, 1996).

Political and social activism, particularly in the labour market, is known to be an important factor in the promotion of social and political empowerment of the most vulnerable groups in the population (Drèze and Sen, 1991). There are, however, two sides to the debate over the specific importance of labour unions.[21] The supply-side of the debate argues that unions promote wage monopolism, create inefficiencies and inequalities between workers in unions and workers not in unions and thus reduce output.[22] The demand-side view of the debate argues that labour unions promote productivity, increase democracy and are an important channel for the most vulnerable groups to voice their needs. Unions are thereby viewed as a source of 'dynamic efficiency', by forcing enterprises to pay efficiency wages rather than 'market clearing' wages and encouraging companies to raise productivity by introducing new technologies rather than relying on low-paid labour (Standing, 1992).[23]

In Kerala, labour unions were in the centre of the implementation of its model of development. However, unstable labour relations in the state have been associated with increases in investment risks (for instance, with respect to labour productivity and the establishment of property rights) that potential investors may not be willing to undertake.

It is not exactly known when Kerala's trade union movement started or why.[24] Until the mid-1960s industrial relations were relatively better in Kerala than in most other states, thanks to the democratic relations and industrial culture trade unionism (especially in the unorganised sector) helped to institute. At that time, trade unionism was central to the design and implementation of land reforms, minimum wage legislation, institutionalised bargaining procedures and general welfare measures that empowered the lower classes (Heller, 1996). However, after the split of the Communist Party in 1964, trade unionism

[19] Subsidies, controls and increasing tax rates in order to expand resource mobilisation imposed by the successive governments in Kerala have diverted entrepreneurship to wasteful activities, "protected vested interests from the process of change", and led to "black markets, illegal transactions and smuggling" (Sankaranarayanan and Bhai, 1994).
[20] In 1998, Kerala's wages ranged between Rs. 19.5 and Rs. 114.16 per day, the highest in India by a long distance. These wage rates have steadily increased since 1975 (Kerala's Ministry of Labour, Annual Report, various years).
[21] For a review see Freeman and Medoff (1984) and Standing (1992).
[22] The supply side view on unions has been used to justify anti-union legislation and the suppression of unions in developing countries (see Freeman and Medoff, 1984).
[23] See also Park (1991) for similar evidence on Korea.

tactics started to rely on intimidatory actions, go-slow practices, short-duration wildcat strikes and unofficial strikes, rather than concern with longer term issues such as unemployment, declining industries or increase in wage inequalities (Nair, 1994). This was fuelled by a rapid process of unionisation and an increase in the number of trade union members, as well as the emergence of cast category-craft based unions and sectorial pressure groups, which led to unhealthy forms of competition between unions, inter-union rivalry and the consequent division of the trade union movement in Kerala (Nair, 1994). In 1991, Kerala had 9445 registered unions and perhaps the same number of unregistered unions (the average of India's 21 major states was 1960 unions in the same period) (Ministry of Labour, Annual Report 1996-97). The number of workers' unions continued to increase in Kerala and, in 1999, there were 22 registered workers' unions per every 1000 factory workers. This corresponded to around 22% of India's total number of workers' unions in a state that comprises less than 4% of India's total population.

Labour market instability in Kerala decreased in the late 1970s and throughout the 1980s thanks to "politics of class compromise" or "democratic corporatism" (Heller, 1996). It was then realised, both by the government and the people, that redistributive strategies had reached their limits and, by the early 1980s, class struggle and redistributive demands were no longer at the centre of Kerala's politics (Heller, 1996). According to evidence provided by Heller, unions in Kerala seemed to have succeed in establishing a framework for prevention and settlement of disputes (tripartite negotiations, which include Labour Department officials, union representatives and merchants), and the percentage of disputes settled through conciliation and direct negotiations was around 80 to 95% (Nair, 1994: 343).

This is clearly reflected in the sharp decrease in the volume of strikes and lockouts per factory worker in Kerala since the mid-1980s (graph 1 and table 5),[25] which are the main form of industrial disputes in India and Kerala. Another way of assessing the extent of political instability in Kerala is to examine the data on riots provided by the Indian National Crime Records Bureau (table 5 and graph 1).[26] Although it is difficult to separate riots motivated by social discontent from other riots such as communal and caste-based conflicts, riots are a good variable to measure the level of collective action and the intensity with which society members make their voices heard. A large fraction of riots that take place in Kerala have

[24] For an analysis of the history of Kerala's trade unionisation see Nair (1994).
[25] This data is published by the Indian Ministry of Labour (Indian Labour Statistics, various years; Annual Report, various years; Indian Labour Yearbook, various years) and based on self-reporting. These statistics include work-stoppages that involve 10 or more workers (in the formal sector) whether directly and/or indirectly and exclude closures not related with industrial disputes (for example, closures due to shortages of raw materials, breakdown of machinery, financial reasons, etc) (Indian Labour Statistics, 1994: 199).
[26] Riots are typically defined as collective acts of spontaneous violence that include five or more people (see Gurr, 1970). In order to only encompass politically motivated riots, these data is net of juvenile delinquency. This data is provided by the National Crime Records Bureau, various issues.

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 some inter-caste and inter-religion issues.

Although the volume of strikes and lockouts has decreased significantly in Kerala since the mid-1980s, the volume of riots has been more or less constant, with values after 1988 consistently higher than the values during the 1970s and the earlier part of the 1980s. Table 5 shows further that, in 1999, Kerala had the second highest volume of riots per capita in India. This suggests that although workers' unions and the government have reached important compromises, manifestations of people's discontent is still pronounced and likely to both reflect and impact on Kerala's social and economic performance.

4. EMPIRICAL ANALYSIS

In this section we ask the following question: How have labour union actions and civil participation - in the form of strikes and lockouts and riots - impacted on Kerala's economy in the past three decades?

5.1. ECONOMIC EFFECTS OF CONFLICT IN KERALA

In order to address the question above, we have estimated a time-series model for Kerala covering the period between 1975 and 1999.[27] The model estimated was:

$$Y_t = a_1 + a_2 Y_{t-1} + a_3 VRT_t + a_4 VRT_{t-1} + a_5 VSL_t + a_6 VSL_{t-1} + a_7 TP_t + a_8 UNION_t + a_9 RD_t + a_{10} UNEMP_t + a_{11} EDUC_t + a_{12} OPEN_t + a_{13} ELECT_t + t + e_t \quad (1)$$

The dependent variable, Y_t is represented by the logarithmic function of per capita net state domestic product at 1980-81 constant prices. The level of civil participation is represented by the volume of riots (per 100000 people) (VRT) and volume of strikes and lockouts (per 1000 factory workers) (VSL). The model includes lagged values for both VRT and VSL. This was motivated by the fact that although political actions have had important benefits for Kerala's population, they have also been put forward as a central reason for the state's poor economic performance. This suggests that riots and strikes and lockouts may have different effects on the short- and long-terms.

[27] The choice of the period of analysis was driven by data availability.

In order to control for workers' bargaining power we have included the number of trade unions into the model: $UNION_t$ is the number of workers' trade unions (per 1000 factory workers) in period *t*. This data is provided by the Indian Ministry of Labour and refers to the number of registered unions. Hr_t, Hu_t, Gr_t and Gu_t are, respectively, the levels of rural and urban poverty (measured by the headcount index) and rural and urban income inequality (measured by the Gini coefficient) in period *t*. The poverty and inequality variables have been interpolated in order to avoid gaps in the NSS data.[28]

RD_t represents the effects of redistributive policies (logarithmic function of per capita expenditure on social services at 1980-81 constant prices) on conflict. Other possible correlates of state income included in the model are the strength of police[29] (TP_t) (number of civil plus armed police per 1000 people),[30] the level of unemployment in Kerala[31] and a measure for the level of education of the state. These variables are represented, respectively, by $UNEMP_t$ (per capita number of people in live register)[32] and $EDUC_t$ (per capita number of individuals enrolled in primary and secondary education). We have also included a political variable, $ELECT_t$, which takes the value 1 if a left-wing government was in place and 0 if not.[33] In addition, we have included a measure for openness of the Indian economy ($OPEN_t$), given by the all-India ratio of imports and exports over national domestic product (per capita at 1980-81 constant prices), to control for the increase in trade liberalisation in India in the 1990s.[34] This variable is invariant across

[28] Data series for poverty and income inequality are not complete time-series because the NSSO surveys are not conducted every year. We have thus an 'ignorable case' of missing data and thus can be interpolated without loss of efficiency of the eatimators (Greene, 2000). The data on poverty and income inequality was interpolated using linear interpolation across 1971-72, 1974-75, 1975-76, 1976-77, 1978-79, 1979-80, 1980-81, 1981-82, 1982-83, 1984-85, 1985-86, 1986-87, 1996-97 and 1998-99. Other more advanced methods of interpolation involve for instance the use of the Kalman-filter in order to replace the missing variables (see Harvey and Pierse, 1984; Greene, 2000). Since this analysis is not concerned with forecasting, the simpler linear trend at point interpolation method will yield satisfactory estimates.

[29] Large levels of police use in response to socio-political instability may lead to a trade-off in the allocation of funds to other expenditures and decrease the state's available income.

[30] This data is provided by the Indian National Crime Records Bureau. Both types of police are called in cases of strikes, lockouts and politically motivated riots. The data refers to the number of total police per 1000 people.

[31] Which has been a central feature of Kerala's economic crisis.

[32] This data is provided by the Indian Ministry of Labour, Annual Report, various years. It refers to the number of job seekers per capita registered with the Employment Exchanges, which provide placement and vocational guidance services to job-seekers registered with them.

[33] The left-wing party in Kerala, the Communist Party of India – Marxist, was responsible for the implementation of Kerala's redistributive model in the 1970s. See Heller (1995) for a discussion. This variable is provided by Kerala's Assembly Election Database (http://assembly.expert-eyes.org).

[34] Economic liberalisation has been the most significant economic change that has taken place in India in recent years. This variable is expected to capture the effects of economic changes not related to response to socio-political instability or redistribution decisions. For discussion of the liberalisation process in India after 1990 see Srinivasan (1996) and Srinivasan (2001).

all Indian states as the import and export decisions are taken by the central government. However, trade liberalisation measures are likely to affect production and consumption patterns within each state and are thus likely to be strongly correlated with the level of state income. Finally, *t* represents the trend variable. This variable is used to correct for non-stationarity in the time-series variables.[35] The regression exhibited a problem of serial correlation, which has been corrected by using a two-step Cochrane-Orcutt transformed regression estimator (see Greene, 2000).

5.2. RESULTS

The results for the estimation of equation (1) are presented in table 6. The table shows that Kerala's gross domestic product has been negatively affected by the number of riots that have taken place in the country. The lagged coefficient for strikes and lockouts are, however, positive and statistically significant. These results illustrate the complexity of the effects of collective action and political participation. On the one hand, the manifestation of people's discontent in the form of riots has a clear negative impact on economic growth, possibly due to the uncertainty such actions will cause on private property and political instability of the state. On the other hand, other forms of political participation and activism such as strikes may not entail negative effects. One reason for this may be the different impact of collective actions on the incomes of the poor, i.e. those that would benefit more from larger redistributive policies, better wages and similar demands that motivated workers to strike.

I have examined more closely the direct impact of riots and strikes and lockouts on poverty and inequality and found that the model estimated in column 2 of table 6 provides a likely explanation for this result: strikes and lockouts are related to decreases in poverty and urban inequality[36] and may thus contribute positively towards the increase in the living standards of some population groups. This links with the fact that a large fraction of all strikes that take place in Kerala are motivated by demands for increased redistribution.[37] Redistribution - represented in the model by per capita expenditure on social services -

[35] Non-stationarity happens when the mean and variance of a series are not constant over time and the value of the covariance between two time periods depends not only on the distance between the two time periods but also on the actual time at which the variance is computed (Gujarati, 2000). This will imply that a relationship between two variables is statistically significant not because the variables are related but because they share a common time trend. There are two solutions to counteract this problem: (i) if the trend variable is deterministic (i.e. if it is perfectly predictable and not variable), variables can be made stationary by including a time trend in the regression; (ii) if, on the other hand, the trend variable is stochastic (i.e. not perfectly predictable), the regression should use the variables in their difference form. All regressions in this section fall into the first category and include a time trend variable.

[36] Strikes and lockouts are typically an industrial sector phenomenon, which, in turn, is largely concentrated in urban areas. Strikes and lockouts may therefore entail higher redistributive effects for poor workers in the urban sector.

[37] See, for instance, Heller (1996, 2000).

has, in turn, had a significant positive impact on the state's level of per capita income. On the other hand, increased rioting does not necessarily contribute towards the decrease of poverty or inequality (with the exception of inequality in the rural sector). This may be related to the fact that riots in Kerala generally take place in areas inhabited by the poorest society members. Even if some riots are motivated by the demand for better living conditions, they may at the same time destroy important sources of income, depending on the level of violence of each manifestation. In addition, data on riots also encompasses recent communal violence and conflicts (concentrated mostly in rural areas) between different castes and poor landowners and their landless workers (Franke, 1992; Franke and Chasin, 1992). Increased use of police may explain to some extent the negative effect of rioting (the coefficient for this variable is negative and statistically significant).

There is one possible difficulty in the model discussed above that merits further investigation: the issue of endogeneity. It is easy to see how state income can simultaneously affect and be affected by the level of political instability in Kerala. On the one hand, the uncertainty associated to riots and strikes may reduce investment and thus economic growth. On the other hand, lower levels of state income may fuel social discontent when these imply a reduction in social policies.[38] Moreover, given the discussion in previous sections, redistributive policies are also likely to be endogeneous to Kerala's economic development. If we believe that collective actions (in the form of riots and strikes) and redistributive policies (i.e. expenditure on social services) are endogenous to changes in state income levels in Kerala, than the model estimated in the above section will not be appropriate as the estimates will be biased.[39] Endogeneity implies that the right-hand side regressors will be correlated with the disturbance term, causing the estimates of model (1) to be inconsistent. This problem can be solved by using an instrumental variable method. I have used a three-stage least squares model (3SLS). This method uses instrumental variables to construct consistent estimates that allow for the correlation of the explanatory variables with the disturbance term. It is thus a convenient method to correct for endogeneity in model (1). In stage 1, we predicted values for the instrumented variables from the regression of each of the endogenous variables (VRT, VSL and expenditure on social services) on all exogenous variables in the system. Stage 2 consisted in the estimation of the covariance matrix of the disturbances, based on the residuals of the two least-squares estimation of the structural equation (1). In stage 3, we used a generalised least-squares estimation procedure using the covariance matrix estimated in stage 2 and

[38] See Alesina et al. (1992) and Alesina and Perotti (1993).
[39] We have run Granger causality tests. The results have shown double causality between (i) state income levels and per capita expenditure on social services, (ii) state income levels and the volume of riots and (iii) state income levels and the volume of strikes and lockouts in Kerala at the 1% level of significance.

replacing the endogenous variables in model (1) by the instrumental variables estimated in stage 1 (Greene, 2000).[40]

The results on the impact of civil participation on Kerala's income are not made clearer. The results of the 3SLS estimation (column 6, table 6) show, as before, that the volume of riots (current and lagged) has a negative impact on state's level of income, whereas the impact of strikes and lockouts is positive.[41] This further strengthens the previous result that riots have a negative impact on income. As before, this may be because not only they lead to an increase in social and political instability (with all the negative consequences attached to that, including the increase of rural poverty), but also lead to the use of wasteful resources in the form of increased police forces. As before, expenditure on social services has a positive impact on state level of income. This effect is larger in the 3SLS model. The effects of social services expenditure on the reduction of poverty (mainly rural poverty) are also larger in the 3SLS model.

Although the model in columns (1) to (5) in table 6 does not show any relationship between the party in power and the level of state income, poverty and inequality in Kerala, the results of the 3SLS model suggest that the presence of the CPI-M party is associated with lower levels of rural and urban inequality in Kerala. These have decreased sharply in the state between 1993-94 and 1999-2000, while this party was in power.

5.3. ECONOMIC EFFECTS OF CONFLICT IN INDIA

This section investigates the relationship between collective action and economic growth in India for the period between 1973 and 1999, using a panel of 14 major Indian states (Andhra Pradesh, Assam, Biharm Gujarat, Karnataka, Kerala, Madhya Pradesh, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal)[42] over six years: 1973-74, 1977-78, 1983, 1987-88, 1993-94 and 1999-2000.[43] The main objective is to examine the differences between Kerala's development strategy and that of other Indian states and how particular was the importance of collective action to Kerala. By examining the impact of

[40] Greene (2000) provides the formal derivation of the model.
[41] Now both current and lagged coefficients are positive although only the lagged coefficient is statistically significant.
[42] 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 political terms. These 14 states represent 93.3% of the total Indian population in 1999-2000.
[43] 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

collective action on economic growth in other states, we expect to get a better understanding of the importance of collective action in development and whether Kerala could have avoided the shortcomings of labour activism.

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

$$Y_{it} = bX_{it} + e_{it} \quad (1)$$

with the error term $e_{it} = v_i + h_{it}$, where v_i represents all individual effects and h_{it} is assumed to be normally distributed with zero mean and constant variance, uncorrelated with the explanatory variables X_{it} and uncorrelated with the individual effects term. The error term of equation (1) is thus divided into two parts: (i) v_i varies across individuals but is constant across time, whereas (ii) h_{it} varies unsystematically across time and individuals. This captures the notion that two observations from the same individual will be more like each other than two observations from two different individuals (Greene, 2000). Model (1) can be estimated in two different ways, depending on the assumption we take regarding the correlation between the individual effects and the vector of explanatory variables. If we assume the two to be uncorrelated, model (1) becomes a random effects model. We can also use a fixed effects model if we assume the individual effects to be correlated with X_{it}.

We have tested the correlation between the individual effects and the vector of independent explanatory variables using the Breusch-Pagan Lagrange multiplier test for random effects and a Hausman specification test, which tests for random effects by comparing the results obtained using both random effects and fixed effects models. This procedure tests whether the omission of fixed effects in the random effects model has any effect on the consistency of the random effects estimates (Greene, 2000). The tests suggested (for all models estimated) that the random effects model would be the most appropriate.[44]

The random effects model has been estimated using feasible generalised least squares (FGLS), with a specified heteroskedastic error structure and no cross-sectional correlation (see Greene, 2000).[45] The model estimated was the following:

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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.

[44] Note, however, that even when the random effects model is valid, the fixed-effects model will still provide consistent estimators (Greene, 2000).

[45] The uncorrected model showed signs of heteroskedasticity.

$$Y_{it} = b_1 + b_2 Y_{it-1} + b_3 VRT_{it} + b_4 VRT_{it-1} + b_5 VSL_{it} + b_6 VSL_{it-1} + b_7 TP_{it} + b_8 UNION_{it} + b_9 RD_{it} + b_{10} UNEMP_{it} + b_{11} EDUC_{it} + b_{12} OPEN_{it} + e_{it} \quad (2)$$

with i = 1, ..., 14, where *i* indicates the state and *t* the period when the observation was collected. e_{it} is the error term discussed above with $e_{it} = v_i + h_{it}$. All variables are the same as in model (1). The results for the estimation of the model above are presented in tables 7 and 8. Table 7 includes the results of the estimation of model (2) across the panel of 14 major Indian states, whereas table 8 repeats the estimation across the panel excluding the state of Kerala. These tables present the results for the estimation of the random effects model and a two-stage least squares model adapted to panel data developed by Baltagi (1995, chapter 7). This method allows the estimation of a single equation (economic growth equation) from a system of equations whose functional form does not need to be estimated. It is thus a convenient method to allow endogeneity without having to establish the true specification form of the endogenous variables.[46]

Consider a model of the following form (Baltagi, 1995):

$$Y_{it} = dZ_{it} + v_i + h_{it} \quad (1)$$

with Z_{it} = [Y_{it} X_{it}], where X_{1it} is an 1 x k_1 vector of exogenous variables included a covariates, Y_{it} is an 1 x g_2 vector of g_2 endogenous variables included as covariates and assumed to be correlated with h_{it}. The error term h_{it} is assumed to be uncorrelated with the exogenous variables X_{it} and has zero mean. Given the existence of Y_{it} exogenous variables, in order to estimate (1) 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 (1) can now be estimated using the usual panel data modelling techniques. The fixed-effects model will give the within-estimator after eliminating v_i by removing the panel level means from each variable. The random-effects estimator, presented in table 5, treats v_i as random independent variables identically distributed over the panels.[47]

[46] The panel showed signs of double causality between state income and expenditure on social services but not between state income and level of conflict (VRT or VSL).

[47] I have tested the correlation between the individual effects and the vector of independent explanatory variables using the Breusch-Pagan Lagrange multiplier test for random effects and a Hausman specification test, which tests for random effects by comparing the results obtained using both random effects and fixed effects models. This

Table 7 shows quite interesting results. The first is the fact that current levels of rioting are associated with the increase of state income. If we allow for long-term effects of conflict in the model, we find however that past levels of rioting in fact reduce state income. This is a significant result as it shows that forms of social and political conflict can bring about economic benefits (see section 2). However, in the longer run, those benefits may be written off by the impact of social and political instability on increased use of police, higher risk of investment, possible lower productivity and ultimately economic growth. The coefficients for current and lagged volume of strikes and lockouts are similar though not statistically significant. This may, however, be because the effect of strikes and lockouts is captured better by the coefficient for no. of workers' unions (negative and statistically significant).

These results differ to a certain extent from those obtained for Kerala. In Kerala, both current and lagged volume of riots have been associated with lower levels of state income, suggesting perhaps that forms of rioting have been more violent or more frequent in Kerala than on average across the 14 major Indian states (recall that Kerala has registered some of the highest volumes of riots per capita in India both in 1973 and 1999 – see table 5). In fact, when Kerala is removed from the panel (table 8), the coefficient that represents the effects of past volume of rioting on state per capita income decreases and becomes statistically insignificant.

On the other hand, while the volume of strikes and lockouts has a positive effect on Kerala's per capita income, the lagged effect of the variable across all states is negative even if not statistically significant (it is statistically significant in the random effects regression). This may be related to the impact of strikes and lockouts on the reduction of poverty and (long-term) inequality in Kerala. This effect is not felt across the panel of states, which seems to suggest that labour activism has a more efficient contribution towards the reduction of poverty and inequality in Kerala than in anywhere else in India. These effects do not get significantly affected by the removal of Kerala from the panel.

The results discussed above suggest that high levels of rioting in Kerala may have created financially unsustainable levels of socio-political instability that, allied to Kerala's economic difficulties may have, in turn, created serious constraints to Kerala's redistributive model. The negative impact of rioting in Kerala is, in absolute values, larger than the positive impact of strikes and lockouts on state income. This

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procedure tests whether the omission of fixed effects in the random effects model has any effect on the consistency of the random effects estimates (Greene, 2000). The tests suggested (for all models estimated) that the random effects model would be the most appropriate. The fixed-effects estimation produces, however, almost identical results. Due to space constraints in this paper, these results are available upon request from the author.

result seems to support the hypothesis that socio-political instability can to some extent be blamed for Kerala's poor economic performance in the last three decades. Rioting has also affected negatively the incomes of the poor, despite the overall decrease in poverty in Kerala between 1972-73 and 1999-2000. Reductions of poverty and inequality may, however, have had more to do with increase economic liberalisation in India than with Kerala's model of development. The results indicate, however, that despite the negative effects of some forms of collective action on aggregate income, public participation in policy decisions in the form of labour activism, for instance, may have valuable effects on the reduction of poverty and inequality in poor economies, in particular in the initial stages of its development process. The comparison of Kerala with the rest of India showed that, when controlling for economic liberalisation which is constant across all Indian states, poverty and inequality reduction have benefited from the presence of more active labour organisations and louder demands for better living and worker conditions. There are, however, states where the positive effects of political participation have been felt without the negative effects. These are Maharastra, where both riots and strikes and lockouts have positive statistically significant effects on per capita state income and Tamil Nadu, where riots have an immediate negative effect on income but the long-term effects are positive and statistically significant (table 9).

6. CONCLUSIONS

This paper analysed the impact of public participation in the form of labour activism and of collective action in the form of rioting on the economic development of the south Indian state of Kerala over the last three decades. Although public participation in the decision-making process is not necessarily limited to the actions of labour unions (which exclude forms of collective action taken by those not employed in the industries and sectors covered by labour unions) and organised riots, the empirical results showed that organised collective actions, in the form of riots and strikes and lockouts, have had a complex impact on Kerala's economic development. On the one hand, rioting has created an element of uncertainty and led to decreases in economic growth, likely to result from lower incentives for investment and lower labour productivity. On the other hand, strikes and lockouts seemed to have impacted positively on the state's level of income, possibly due to decreases in poverty.

Kerala's experience illustrates thus how collective action can result in demands for unreasonably high wages, increased risk of disruption and consequent discouragement of private investment. This will eventually result in lower rates of economic growth which, in turn, will reduce the economy's capacity to

sustain increases in redistribution. In the longer term there is the danger that continuous decreases in income may affect poverty and foment further social discontent.

Kerala's development story illustrates also, however, the importance of political participation and collective action on the development of disadvantaged population groups. Participation assures the protection of rights and facilitates the disclosure of particular needs and relevant facts about population groups. The participation of vulnerable groups in the national decision-making process will help to address problems of persistent poverty and exclusion amongst those groups typically excluded from fundamental social, economic and political institutions. These gains will not be entirely material but will also affect the dignity, self-worth and feeling of integration and participation of vulnerable groups in social, political and economic decisions that have important consequences on their lives. There is, nonetheless, a fine line between public participation and financially unsustainable socio-political instability, as demonstrated by the story of Kerala. Avoiding the dominance of the second effect requires the establishment of well-functioning bargaining processes between the state, industry and civil organisations, as well as the promotion of actions that encourage civil responsibility from all actors.

TABLE 1 - QUALITY OF LIFE INDICATORS

Indicator	Kerala	India	Low-income countries	United States
Birth rate (per 1000) (1995)	18.0	28.3	39.8	[2]22.8
Rural	18.1	30.0	-	-
Urban	17.7	22.7	-	-
Death rate (per 1000) (1995)	6.0	9.0	9.0	[2]5.9
Rural	6.0	9.8	-	-
Urban	6.0	6.6	-	-
Infant mortality rate (per 1000) (1996)	13.0	72.0	[1]69.0	[1]6.0
Rural	13.0	78.0	-	-
Urban	13.0	46.0	-	-
Life expectancy (1989-93)	72.0	59.4	[1]63.0	[3]77.0
Male	68.8	59.0	[1]62.0	[3]73.0
Female	74.7	59.7	[1]64.0	[3]79.0
Literacy rate (%) (1991)	89.8	52.2	41.0	>95.0
Male	93.6	64.1	46.0	>95.0
Female	86.2	39.3	35.0	>95.0

Source: CSO (1998), Selected Indicators of India, 1996-97; GOK (1998), Kerala's Economic Survey 1995-96; World Development Report, 1997 and 1999-2000; Human Development Report 1997.
Notes: 1. Refers to 1997. 2. Refers to 1994. 3. Refers to 1999.

TABLE 2 - PER CAPITA STATE DOMESTIC PRODUCT AT FACTOR COST, AT 1980-81 CONSTANT PRICES, IN SELECTED INDIAN STATES

(Rupees)

	Kerala	Maharashtra	Tamil Nadu	West Bengal	India[1]
1970	1325	1836	1317	1488	1387
1980	1508	2435	1498	1773	1579
1990	1815	3483	2237	2145	2112
1995	2233	4686	2879	2745	2493
1996	2312	4818	2993	2887	2619
1997	2400	4933	3201	3082	2684
1998	2509	5003	3291	3251	2761
1999	2591	5386	3488	3443	2876
Av. growth 70s	0.4	2.8	1.9	0.2	0.6
Av. growth 80s	1.5	3.9	3.9	1.9	3.1
Av. growth 90s	4.1	5.1	5.1	5.4	3.2

Source: India National Accounts.
Note: 1. Refers to the average values for the 14 major Indian states represented in the table.

TABLE 3 – INCOME POVERTY AND INEQUALITY IN KERALA AND INDIA, 1973-2000

	Headcount index				Gini coefficient			
	Rural		Urban		Rural		Urban	
	Kerala	India	Kerala	India	Kerala	India	Kerala	India
1973-1974	62.06	55.72	62.72	47.96	0.320	0.285	0.376	0.308
1977-1978	52.66	50.60	56.05	40.50	0.359	0.309	0.404	0.347
1983	43.70	45.31	44.72	35.65	0.339	0.301	0.394	0.341
1987-1988	34.67	39.23	38.02	36.02	0.317	0.301	0.364	0.356
1993-1994	31.07	36.66	23.07	30.51	0.301	0.286	0.343	0.343
1999-2000	9.40	26.80	19.80	24.10	0.270	0.258	0.324	0.341

Source: 1973-74 to 1993-94 data from Özler, Datt and Ravallion (1996), World Bank. 1999-2000 headcount indices from Deaton (2001). 1999-2000 Gini coefficients from National Human Development Report 2001, Planning Commission, Government of India.

TABLE 4 – ANNUAL PER CAPITA EXPENDITURE ON SOCIAL SERVICES AND EDUCATION ENROLMENTS IN SELECTED INDIA STATES, 1973 AND 1999

	Real per capita expenditure on social services		Per capita education enrolments	
	1973	1999	1973	1999
Andhra Pradesh	85.7	151.8	0.11	0.18
Assam	203.7	31.6	0.15	0.24
Bihar	56.2	145.0	0.10	0.15
Gujarat	106.6	227.8	0.16	0.09
Karnataka	153.0	194.1	0.18	0.23
Kerala	227.0	184.0	0.22	0.16
Madhya Pradesh	81.4	52.2	0.13	0.21
Maharashtra	183.2	285.5	0.17	0.24
Orissa	113.9	50.3	0.12	0.19
Punjab	137.2	66.3	0.16	0.17
Rajasthan	105.0	129.3	0.10	0.22
Tamil Nadu	166.5	226.0	0.17	0.24
Uttar Pradesh	77.9	31.3	0.16	0.14
West Bengal	101.6	215.3	0.15	0.18
All-India	128.5	142.2	0.11	0.12

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.

Notes: Per capita expenditure on social services is in rupees at constant 1980-81 prices.

TABLE 5 – COLLECTIVE ACTION IN SELECTED INDIAN STATES, 1973-2000

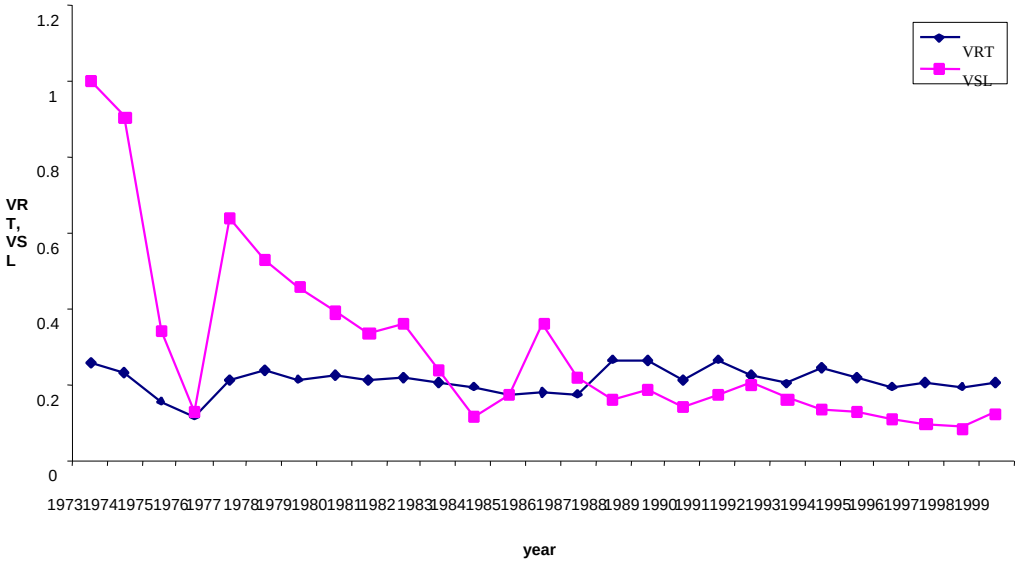
	Riots (VRT)		Strikes and lockouts (VSL)		Workers' unions		Police strength	
	1973	**1999**	**1973**	**1999**	**1973**	**1999**	**1973**	**1999**
Andhra Pradesh	0.07	0.04	0.46	0.13	5.17	27.7	0.98	0.99
Assam	0.23	0.14	0.21	0.15	3.44	6.94	1.66	2.03
Bihar	0.20	0.11	1.16	0.04	3.65	3.75	0.85	0.97
Gujarat	0.02	0.04	0.34	0.13	1.49	2.54	1.54	1.28
Karnataka	0.09	0.15	0.34	0.04	2.79	3.79	1.25	0.99
Kerala	0.26	0.21	1.00	0.14	15.0	22.2	0.96	1.18
Madhya Pradesh	0.06	0.04	0.61	0.02	3.33	0.38	1.33	1.24
Maharashtra	0.04	0.06	0.76	0.01	3.03	4.48	1.49	1.52
Orissa	0.08	0.04	0.56	0.11	4.56	2.07	1.04	0.99
Punjab	0.00	0.00	0.43	0.04	4.95	1.56	1.70	3.02
Rajasthan	0.20	0.31	0.51	0.07	8.39	7.81	1.40	1.24
Tamil Nadu	0.13	0.09	0.71	0.15	4.79	4.79	1.00	1.30
Uttar Pradesh	0.15	0.04	0.55	0.05	4.43	3.49	1.47	0.99
West Bengal	0.21	0.06	0.48	0.21	7.58	9.90	1.44	1.99
India	0.12	0.10	0.61	0.10	4.29	2.80	1.34	1.37

Source: Data on riots and police strength from the Government of India, National Crime Records Bureau, Crime in India, various issues. Data on strikes and lockouts and workers' unions from Government of India, Ministry of Labour, Annual Report (various years); Government of India, Ministry of Labour, Indian Labour Yearbook (various years); Government of India, Ministry of Labour, Indian Labour Statistics (various years).

Note 1: Riots = volume of riots per 100000 people; strikes and lockouts = volume of strikes and lockouts per 1000 factory workers; Workers unions = no. of workers' unions per 1000 factory workers; Police strength = No. of police per 100000 people.

Note 2: In order to include only politically motivated riots, these data is net of juvenile delinquency.

Graph 1 - Volume of Riots and Strikes and Lockouts in Kerala, 1973-1999



Source: As above.

TABLE 6 – ECONOMETRIC RESULTS (TIME-SERIES)

	Dep var: LNSDP (1)	Dep var: Rur pov (2)	Dep var: Urb pov (3)	Dep var: Rur ineq (4)	Dep var: Urb ineq (5)	Dep var: LNSDP (3SLS) (6)	Dep var: Rur pov (3SLS) (7)	Dep var: Urb pov (3SLS) (8)	Dep var: Rur ineq (3SLS) (9)	Dep var: Urb ineq (3SLS) (10)
State income		0.163	0.152	-0.254	0.123		0.848**	-0.363	0.015	0.231**
Lagged state income	0.134	-0.154	0.289	-0.075	0.160*	-0.124	0.069	0.102	-0.001	0.158*
Volume of riots	-0.362*	0.535*	0.192	-0.147	0.221**	-0.996***	1.541***	-0.549	0.158	0.386***
Lagged volume riots	-0.222*	0.482	-0.020	-0.322*	0.305**	-0.331*	0.782***	-0.179	-0.139	0.321***
Volume SL	-0.034	-0.099	0.077	0.082**	0.027	0.055	0.003	-0.069	0.190***	0.128***
Lagged vol SL	0.069*	-0.197	-0.096	0.016	-0.114***	0.154***	-0.284***	-0.019	-0.021	-0.117***
Use of police	-0.083*	0.115	0.045	-0.025	0.072***	-0.152***	0.233***	-0.038	0.020	0.081***
Exp on social services	0.229***	-0.202	-0.157	-0.001	-0.116***	0.353***	-0.500***	0.149	-0.059	-0.079
Education	0.194	-0.091	-0.233	-0.054	-0.033	0.068	-0.104	-0.196	-0.044	-0.047
Unemployment	0.201	0.394	-0.480	0.005	-0.097	0.198	0.233	-0.145	0.027	-0.062
Union membership	-0.003**	0.003	0.000	-0.001	0.000	-0.002	0.001**	-0.001	0.0002	0.0003
Election results	0.006	-0.005	0.009	-0.016	-0.004	0.004	-0.026	0.023	-0.028***	-0.015***
Openness	0.260***	0.009	-0.199	0.067	-0.102*	0.273***	-0.219**	-0.033	-0.022	-0.135***
Trend variable (year)	0.001	-0.026**	-0.005	0.004	-0.001	0.008*	-0.028***	-0.065	0.002	-0.001
Constant	-3.204	53.052**	12.755	-6.036	3.351	-15.025*	57. 123***	15.628	-3.911	3.581
R-squared	0.930	0.955	0.983	0.910	0.984	0.665[1]	0.903[1]	0.918[1]	0.569[1]	0.773[1]
No. observations	24	24	24	24	24	24	24	24	24	24

Note: ***significant at 1%; **significant at 5%; *significant at 10%. 1. This is not the 'true' R-squared. The R-squared reported in 3SLS models is determined using the actual values of the structural model for LNSDP and not the instruments of the endogenous variables in the right-hand side of the equation.

TABLE 7 – ECONOMETRIC RESULTS (PANEL WITH KERALA)

	Dep var: LNSDP (1)	Dep var: Rur pov (2)	Dep var: Urb pov (3)	Dep var: Rur ineq (4)	Dep var: Urb ineq (5)	Dep var: LNSDP (2SLS) (6)	Dep var: Rur pov (3SLS) (7)	Dep var: Urb pov (3SLS) (8)	Dep var: Rur ineq (3SLS) (9)	Dep var: Urb ineq (3SLS) (10)
State income		0.030	-0.056	0.048	-0.013		-0.241*	-0.060	0.072	-0.006
Lagged state income	1.157***	-0.164	-0.079	-0.037	0.050*	1.133***	-0.257*	-0.031	-0.037	0.019
Volume of riots	0.480**	0.469	-0.260*	0.041	-0.041	0.524**	-0.230	-0.158	0.089	-0.109
Lagged volume riots	-0.345	-0.515	-0.115	-0.006	0.002	-0.475*	-0.716**	-0.091	-0.060	0.0007
Volume SL	0.066	0.021	-0.012	0.025	-0.016**	0.061	-0.011	-0.028	0.054**	-0.007
Lagged vol SL	-0.081**	0.074	0.036	-0.016	0.018**	-0.052	0.006	0.019	-0.026	0.016
Use of police	-0.067***	0.015	-0.108***	-0.017	-0.029***	-0.056*	0.080*	-0.083***	0.002	-0.031***
Exp on social services	0.003	0.005	0.003	0.003**	0.003***	0.004	0.010*	0.002	0.002	0.003**
Education	-0.440**	0.270	0.150	0.029	0.069*	-0.481**	-0.142	0.112	0.090	0.065
Unemployment	1.081*	0.053	-0.534	-0.041	0.353***	1.385**	-1.370	-0.813*	-0.281	0.338
Union membership	-0.005*	-0.006**	-0.001	-0.0001	-0.001***	-0.006**	-0.005	-0.050	0.001	-0.001
Openness	0.046***	-0.725***	-0.065***	-0.031***	-0.018***	0.051***	0.029	-0.070***	-0.037***	-0.012**
Constant	-2.016***	3.059***	3.103***	0.936***	0.494***	-1.965***	3.426***	2.886***	0.882***	0.539***
Wald-statistic	113.46***	93.96***	424.33***	96.44***	367.66***	63.00***	109.97***	327.67***	62.97***	34.75***
No. observations	70	70	70	70	70	70	70	70	70	70

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

TABLE 8 – ECONOMETRIC RESULTS (PANEL WITHOUT KERALA)

	Dep var: LNSDP (1)	Dep var: Rur pov (2)	Dep var: Urb pov (3)	Dep var: Rur ineq (4)	Dep var: Urb ineq (5)	Dep var: LNSDP (2SLS) (6)	Dep var: Rur pov (3SLS) (7)	Dep var: Urb pov (3SLS) (8)	Dep var: Rur ineq (3SLS) (9)	Dep var: Urb ineq (3SLS) (10)
State income		-0.039	-0.032	0.065	-0.007		-0.259*	-0.038	0.086	0.0006
Lagged state income	1.180***	-0.03	-0.048	-0.041	0.040	1.144***	-0.322*	-0.056	-0.035	0.007
Volume of riots	0.429**	0.514	-0.390***	0.020	-0.014	0.515**	-0.278	-0.118	0.088	-0.100
Lagged volume riots	-0.200	-0.434	0.052	0.019	-0.029	-0.418	-0.777**	-0.144	-0.030	-0.015
Volume SL	0.072	0.047	0.0007	0.030*	-0.016*	0.060	-0.028	-0.032	0.059***	-0.009
Lagged vol SL	-0.041	0.089	0.055**	-0.013	0.010	-0.032	-0.004	0.007	-0.024	0.012
Use of police	-0.077***	-0.012	-0.136***	-0.005	-0.027***	-0.063*	0.102*	-0.066***	-0.004	-0.027**
Exp on social services	0.011	-0.004	-0.013*	-0.006	0.109	0.009	0.018	0.0005	-0.005	0.004
Education	-0.319*	0.433	0.175	0.086	0.086*	-0.402	-0.161	0.093	0.161	0.060
Unemployment	0.934	-0.289	-1.296***	-0.445*	0.416***	1.287	-1.295	-0.647	-0.594*	0.445
Union membership	-0.007**	-0.007**	-0.004	-0.0003	-0.001*	-0.007**	-0.004	0.0002	0.0009	-0.0008
Openness	0.051***	-0.007***	-0.070***	-0.035***	-0.019***	0.052***	0.039	-0.075***	-0.040***	-0.013**
Constant	-2.345***	2.565***	2.944***	0.961***	0.570***	-2.109***	3.765***	3.009***	0.854***	0.598***
Wald-statistic	117.37***	76.48***	389.41***	79.18***	86.16***	53.45***	99.69***	292.54***	54.69***	21.18**
No. observations	70	70	70	70	70	70	70	70	70	70

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

TABLE 9 – ECONOMETRIC RESULTS (MAHARASHTRA, TAMIL NADU AND WEST BENGAL)

	Maharastra Dep var: LNSDP (3SLS)	**Tamil Nadu** Dep var: LNSDP (3SLS)	**West Bengal** Dep var: LNSDP (3SLS)
State income	0.225	-0.028	0.910***
Lagged state income	1.338***	-0.389	4.987**
Volume of riots	0.402	-0.403*	-2.809**
Lagged volume riots	0.694***	0.248**	0.020
Volume SL	0.237***	0.042	-0.370**
Lagged volume SL	-0.025	-0.077	-0.020
Use of police	0.251	0.013	0.080
Exp on social services	1.247***	-0.168	-0.286
Education	0.508	-0.374	-0.960
Unemployment	-0.017*	0.011	-0.037*
Union membership	0.145***	0.051	-0.191
Openness	0.027***	0.040***	0.039*
Constant	-52.152***	-72.354***	-71.810*
'R-squared'	0.990	0.993	0.960
No. observations	24	24	24

Note: ***significant at 1%; **significant at 5%; *significant at 10%. The R-squared reported in 3SLS models is determined using the actual values of the structural model for LNSDP and not the instruments of the endogenous variables in the right-hand side of the equation.

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