Economic determinants of the Maoist Conflict in India

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Abstract

India's Maoist movement is often thought to be rooted in economic deprivation. A detailed review of the emerging literature on this topic as well as descriptive evidence from a district-level data set on Maoist conflict indicates that the relationship between underdevelopment and Maoist activity cannot be explained in simple economic terms. At the state level, Maoist conflict affected states have similar growth trends and do not score lower on development measures. In a cross-section of districts, the most robust predictor of Maoist activity is forest cover, which could reflect the importance of strategic terrain factors as well as the relevance of forest rights and forest produce. In contrast, measures of human and infrastructure development do not consistently predict the intensity and extent of Maoist violence. Taking these findings together, which are admittedly correlations as opposed to causal relationships, we argue that choosing the appropriate level of analysis is important for understanding the economic determinants of the Maoist movement.

Key words: Maoism, Naxalism, Economics of conflict, Natural resources

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1 Introduction

It was more than a decade ago that India's Naxalite movement was famously characterized by the then Prime Minister Manmohan Singh as "the single biggest internal security challenge ever faced by our country".[1] The conflict continues, having claimed more than 7,000 lives between 2005 and 2017.[2] Both the Maoist rebels and the security forces seem engaged in a cycle of violence, with ordinary citizens caught in the middle, suffering losses of lives, livelihoods, and living in an atmosphere of fear and intimidation. The continued violence highlights the challenge of balancing development and security-driven responses to the centre of the public debate. It is widely accepted that the Maoist affected regions are trapped by a vicious circle in which economic hardship and conflict reinforce each other (Planning Commission, 2008). Development programmes undertaken by the Centre and the affected States hold the promise of breaking this circle. But a number of key questions can be raised: are economic factors among the root causes of the Naxalite movement? Does Naxalite activity weigh on the economic performance of the affected States? Which development outcomes and economic sectors should be targeted? What is the economic logic of violence that development efforts need to take into account?

This paper presents a snapshot of how economic factors interact with the Maoist movement at the state and district level. These findings are somewhat at odds with recent studies that show the relevance of rural incomes and mining revenues for changes in the intensity of Maoist conflict. We note that Naxalite activity does not correlate robustly with certain key measures of socio-economic underdevelopment, with the exception of forest cover. We use this observation as a starting point for an in-depth discussion of the existing economic literature on the Maoist movement.

As detailed data on the Maoist conflict have gradually become available, an emerging empirical literature has attempted to shed light on the questions around the conflict. In the last five years, economists and quantitative political scientists have written more than 20 articles and working papers on the Maoist conflict. Research on this topic is an ongoing effort, but important conclusions can already be drawn. First, Naxalite activity does not correlate robustly with certain key

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[1] This paper will use the terms "Maoism" and "Naxalism" interchangeably..

[2] SATP (2017); www.satp.org/satporgtp/countries/india/maoist/data_sheets/fatalitiesnaxal05-11.htm

measures of socio-economic underdevelopment, such as literacy. Second, patterns of Naxalite violence suggest a strong vulnerability of the affected population to shocks to agricultural and forestal output. Third, Naxalite activity is closely related to the *tendu* leaf trade and to mining activity. Fourth, development programs hold promises and dangers in Maoist affected areas.

The findings of the existing literature may appear at odds with the correlations that give no clear role to measures of underdevelopment. We argue that the level of analysis is important for understanding the role of economic determinants. In particular, within-district inequalities could account for patterns that are consistent with severe underdevelopment in Maoist-affected pockets within each district even if there are few signs of underdevelopment at the district level.

We want to address one limitation of our current article and the literature it relies on upfront. Most of the empirical studies on India's Maoist movement use statistics that are directly on indirectly provided by the Government. As a result, this body of research cannot investigate police brutality against civilians explicitly, in spite of descriptive work that confirms its importance (e.g. Human Rights Watch, 2012). The relative lack of attention to this side of the conflict from the economic literature should not be interpreted as an implicit statement about its importance. To the contrary, it is an area in which other disciplines can complement the work of economists.

The structure of the paper is as follows. First, we show how Maoist affected states fare relative to non-affected states in terms of aggregate development outcomes. We then move to the district level to investigate the role of socio-economic and environmental characteristics in more detail. Then, we use this descriptive analysis as a starting point for a review of recent work in economics and politi- cal science. Finally, we will discuss priorities for future research on this topic and summarize the lessons learned for policy-makers.

2   Data description

To review the dimensions of the Naxalite movement that have been studied in the literature, we summarize what can be learned from glancing at what sets Naxalite districts apart. We first identify the Naxalite-affected districts based on the incident records of the South Asia Terrorism Portal (SATP).[3] The SATP collects newspaper

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[3] www.satp.org, accessed in January 2011.

reports from local and national English speaking press and summarizes these into daily records. These records describe the district in which the incident took place and the number of deaths on each side of the conflict (whether civilians, Maoists or security forces). One concern common to all work on civil conflict is that there may be reporting bias. We will rely mainly on the discrete measures of whether a region suffered any fatalities in the conflict between 2005 and 2010 – which should limit the sensitivity of findings to misreporting.

We illustrate the role of a limited set of variables, each of which summarizes a key dimension of the economic environment. From the 2001 census data, we use information on population density, the size of the tribal population, the size of the scheduled caste population, and literacy. Data on mineral output were obtained from the ministry of Labour and Employment (coal, 2001) and the Ministry of Mines (Bauxite and Iron ore, 2000-2001), and concern three key minerals: iron, bauxite, and coal. We use a dummy variable for the presence of these minerals rather than actual production figures to allay concerns that Maoist activity may depress mineral output. Furthermore, we collect forest cover information and area data from the Ministry of Environment and Forest.[4] Our set of variables is de- liberately limited, and proxy for the broad economic dimensions studied by the in-depth work we will discuss next.

3   Descriptive results

3.1   State Level

While the Maoist movement is active in a contiguous set of states, the extent to which the states are affected varies starkly. While Maoist violence has affected almost all districts of Chhattisgarh and Jharkhand and has claimed a large number of lives even in proportion to the total state population, other states, like Tamil Nadu, Madhya Pradesh, and Uttar Pradesh have seen a very small number of incidents in a very limited number of districts.

The State level is the lowest administrative level at which the (erstwhile) Planning Commission reports GDP figures,[5] which makes this the natural unit of analysis for assessing the relationship between the Maoist movement and

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[4] Ministry of Environment and Forest, Govt. of India., "District-Wise Forest Cover", 2005. For the consistency of this measure, we merge Dhamtari and Raipur, as well as Hyderabad and Rangareddy.

[5] GDP is normalized by population in 2001, but is not adjusted for population growth. Constant 1999 prices are used, and series were merged in 2006-2007.

Table 1: **Affected States**

	Total deaths (2005-2010)	Total deaths per 100,000 (2005-2010)	Affected districts (at least one death)	Total districts	Author's Classification
	(1)	(2)	(3)	(4)	(5)
Andhra Pradesh	625	0.82	20	23	Severe
Bihar	424	0.51	23	37	Severe
Chhattisgarh	1679	8.06	12	16	Severe
Jharkhand	840	3.12	16	18	Severe
Karnataka	29	0.05	5	27	Marginal
Madhya Pradesh	1	<0.01	1	45	Marginal
Maharashtra	256	0.26	3	35	Marginal
Orissa	383	1.04	17	30	Severe
Tamil Nadu	1	<0.01	1	29	Marginal
UP	13	<0.01	4	70	Marginal
West Bengal	683	0.85	11	18	Severe

Notes: Based on SATP Timelines as described in the text. The classification in column (5) is based on the share of casualties in the population, using a threshold of 0.51 per 100,000 (which is the median for the affected states).

economic growth. In figure 1, we compare growth trends between affected and non-affected states. While the states that are most severely affected by Maoist activity are clearly poorer, the growth patterns are remarkably similar. At the state-level, there is no evidence that the Maoist-affected regions have been "left out" of India's growth experience.

Still, to make any progress in understanding any causal connection between the Naxalite movement and economic conditions in the relevant regions, one must define a counter-factual for the growth path for Naxalite affected states. To construct an alternative counterfactual, we can compare the growth of Naxalite-affected states before and after the 2004 merger of the main far-Left parties (the Maoist Communist Centre and the People's War Group) to form the CPI-Maoist party. The timing is indicated by a red line in figure 1. The similarity of the growth paths before 2004 adds credibility to the interpretation that changes in the relative growth of Naxalite affected states after 2004 could be due to the establishment of the CPI-Maoist. However, in spite of the intensification of the conflict (Kujur, 2008), the growth patterns of the affected States do not seem to have suffered relative to those of other states.

In a recent contribution, Nilakantan and Singhal (2013) explicitly formulate an alternative growth counterfactual. They use Andhra Pradesh's police efforts to develop such a counter-factual. Relying on a synthetic control approach, in which they compare Andhra Pradesh to a control state that is constructed on the basis of observable characteristics, these authors argue that Andhra Pradesh's specialized anti-Naxalite force (the Greyhounds) contributed to higher economic growth in the state. Using this approach, the authors estimate that the economic cost of the Maoist movement is close to 12% of the State GDP. Sill, more research is needed to assess the magnitude of this cost beyond Andhra Pradesh.

In general, any estimate of the causal effect of Maoist activity on state-level economic growth will rely on particular assumptions about counterfactual growth patterns and will be restricted by the small number of affected states.

Returning to our current descriptive analysis, the absence of a distinct growth pattern is confirmed in figure 2: there is evidence of slightly higher growth in districts with a higher number of Maoist affected districts, but the pattern is not very pronounced. Figure 3 confirms that affected districts are characterized by lower

Figure 1: Economic growth
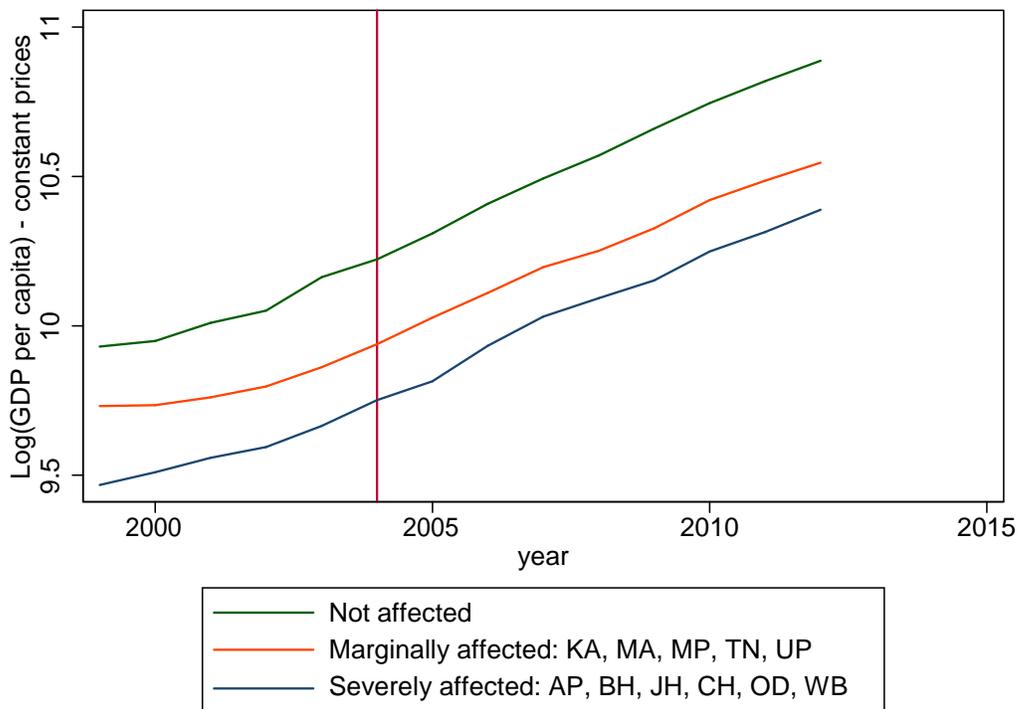
Notes: Based on State Gross Domestic Product figures from the Planning Commission, for constant 1999-2001 prices and normalized by the 2001 population.

levels of GDP per capita at the start of our period of analysis (2005), but the patterns is again not clearly marked. In figure 4, we show the correlation between the share of Maoist affected districts and the index of state-level underdevelopment from the Rajan raport (GOI, 2013). In line with the relationship for the state GDP, a higher share of Maoist affected districts is associated with higher scores on the underdevelopment measure, but the wide confidence intervals do not permit strong statements.[6] An inspection of individual states facilitates the interpretation of these results. A small number of urban areas (such as Goa and Delhi) clearly outperform all other states and Union Territories, but the plotted regression lines give less weight to these observations due to their relatively low population numbers. Importantly, there is a set of three large states that are almost not affected by the Maoist conflict but look similar to the affected states in terms of development outcomes: Madhya Pradesh, Rajasthan, Uttar Pradesh. These states offer a powerful counter-argument to the view that underdevelopment is deterministically linked to violent conflict.

In general, an analysis of state-level economic indicators appears to offer little insights into the concentration of the Maoist movement or conclusive evidence on its impacts. Hence, to understand the Maoist Movement, it is important to consider both within-state inequalities and a richer set of characteristics. We will do this in the next section, where we conduct an analysis at the district level.

3.2 District-level analysis

Tables 2, 3, and 4 offer a statistical introduction to the Naxalite-related violence at the district level. Table 2 presents summary statistics for each variable, and it compares averages in Naxalite districts and in non-Naxalite districts, both limited to the Naxalite-affected states only and for India as a whole. Table 3 presents regression results, both comparing across Naxalite-affected states (column 1) and controlling for state-fixed effects (column 2). Table 4 repeats the analysis for the intensity of the conflict, measured as the logarithm of the number of deaths per 100,000 of the population, within the subset of affected districts with at least one death.

Table 2 confirms that Maoist affected districts suffer from underdevelopment.

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[6]In a population weighted regression with heteroskedasticity robust standard errors, the coefficient on the share of affected districts fails to gain significance.
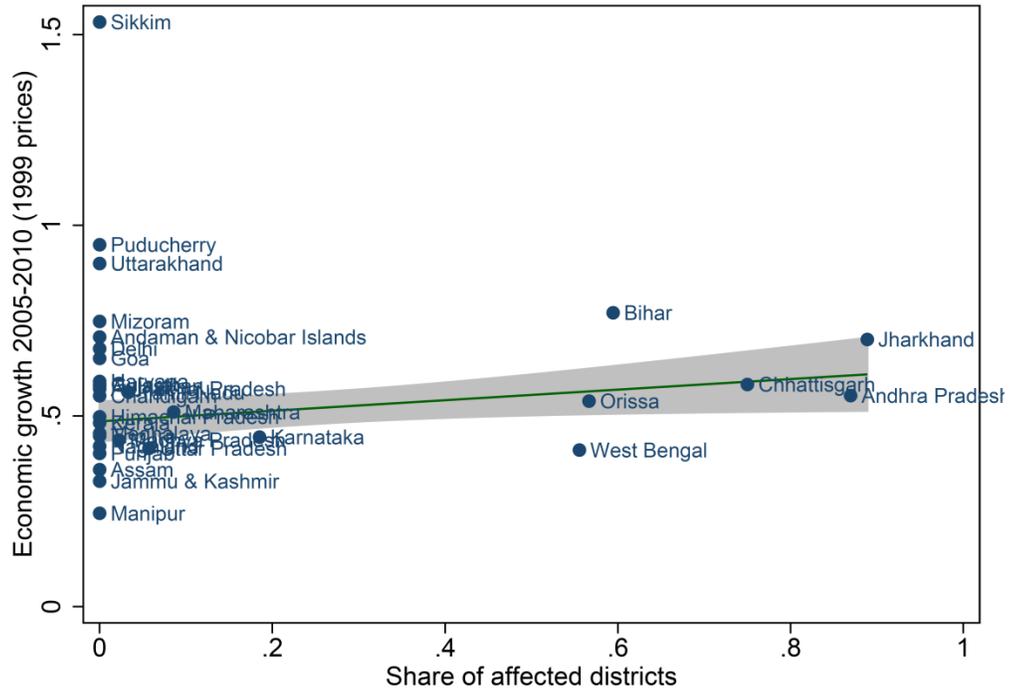
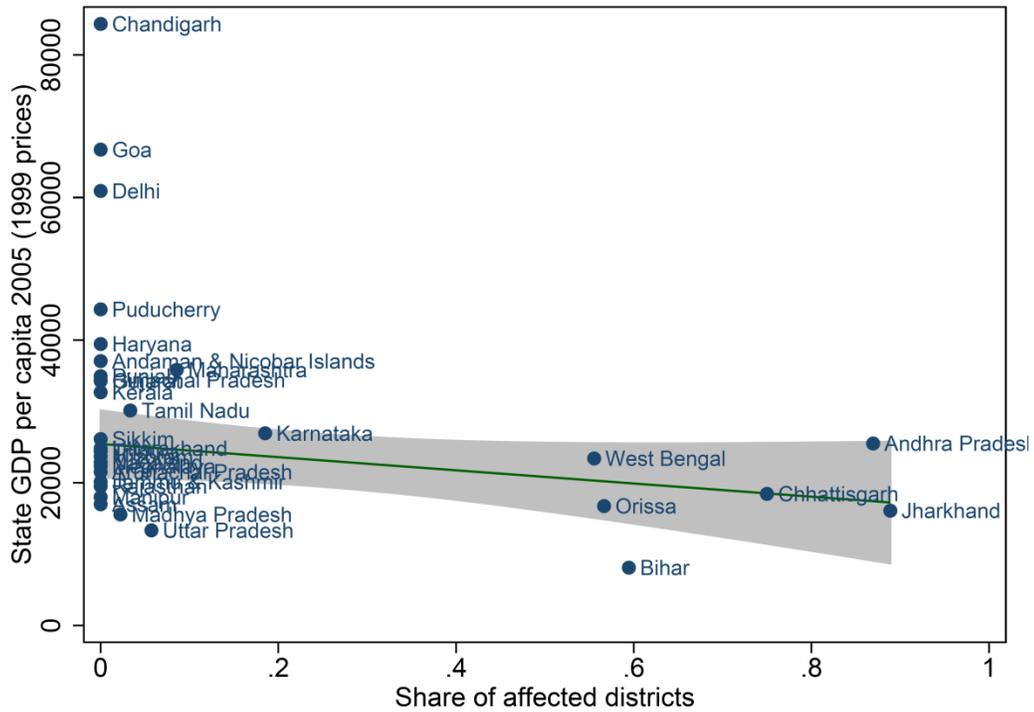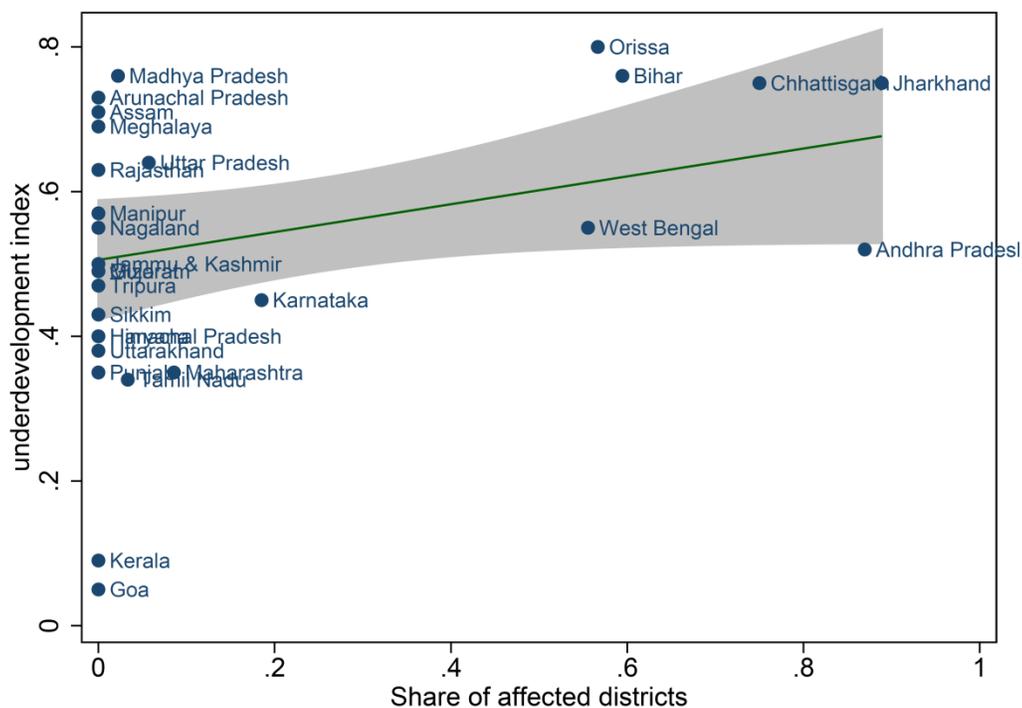Figure 2: Economic growth

Figure 3: Baseline GDP

Figure 4: Underdevelopment

Notes: Based on State Gross Domestic Product figures from the Planning Commission, for constant 1999 prices and normalized by the 2001 population. The linear fit includes weights for the state population, and shows 95% confidence intervals as a shaded area.

Table 2: **Characteristics of Naxalite Districts**

	At least one death (2005-2010)	No casualties (affected states)	p-value (1)-(2)	No casualties (India)	p-value (1)-(3)
	(1)	(2)		(3)	
Literacy (share)	0.57	0.63	0.00	0.66	0.00
	(0.12)	(0.12)		(0.12)	
Scheduled Tribe Population (share)	0.17	0.08	0.00	0.16	0.50
	(0.20)	(0.13)		(0.27)	
Scheduled Caste Population (share)	0.16	0.17	0.07	0.14	0.10
	(0.07)	(0.07)		(0.09)	
Mining dummy (iron, bauxite, coal)	0.33	0.11	0.00	0.08	0.00
	(0.32)	(0.29)		(0.27)	
Forest cover (share)*	0.24	0.13	0.00	0.23	0.49
	(0.19)	(0.10)		(0.26)	
Population density (1000pop/km^2)	0.46	0.90	0.02	0.98	0.00
	(0.38)	(2.91)		(3.74)	
Electricity use by household (share)	0.35	0.53	0.00	0.59	0.00
	(0.25)	(0.27)		(0.26)	
Paved road to village (share)[#]	0.46	0.61	0.00	0.63	0.00
	(0.23)	(0.23)		(0.26)	
Number of observations	110	235		478	

*The number of observations for this comparison is 233 in (2) and 469 in (3); for [#] 231 in (2) and 470 in (3).

Table 3: **Characteristics of Naxalite Affected Districts (Regression)**

	Maoist Affected (Within affected states)	
	(1)	(2)
Literacy	-0.44	4.64
	(1.55)	(4.09)
Share of ST	0.22	4.85*
	(1.01)	(2.56)
Share of SC	-1.69	1.88
	(2.17)	(4.05)
Population density (1000pop/km^2)	0.37	-0.27
	(0.40)	(0.76)
Mineral dummy	1.30***	0.91
	(0.39)	(0.63)
Share of forest area	4.06***	4.60***
	(1.11)	(1.74)
Share of Households with Electricity	-3.00***	-0.00
	(1.11)	(2.60)
Percentage of Villages with Paved Road	-0.06	-1.55
	(0.78)	(1.66)
State FE	No	Yes
Observations	339	339

Note: Conditional logit regression. Standard errors are robust to state-level clustering in column (2). *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table 4: **Intensity of Maoist Violence (Regression)**

	Log(deaths/population)	
	(1)	(2)
Literacy rate	-5.50***	-4.28**
	(1.80)	(2.08)
Share of ST	-0.65	0.86
	(1.09)	(1.45)
Share of SC	-4.12	-2.45
	(2.35)	(3.23)
Population density	-1.03**	-1.28*
(1000pop/km^2)	(0.41)	(0.74)
Mineral dummy	0.34	0.17
	(0.32)	(0.36)
Share of forest area	2.25**	3.20***
	(1.01)	(1.11)
Percentage of Households with	0.002	0.01
Electricity	(0.010)	(0.01)
	-1.50	-1.45
Percentage of Villages with	(0.98)	(1.15)
Paved Road		
State FE	No	Yes
Observations	109	109

Note: OLS regression. Heteroskedasticity robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

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They are significantly less literate, have less access to electricity, and lower road connectivity. They are also more forested, less densely populated, and have a higher share of the scheduled tribe population. However, these patterns become much less stark in a multivariate regression approach. Once we control for the complete set of variables (in column 1), only literacy appears to explain the intensity of Maoist violence, and only electricity access the incidence of Maoist activity. Even in these regressions, an important concern remains the fact that we are comparing districts both within and between states. Hence, if states with higher Maoist activity have different profiles in terms of the variables we study, we could misinterpret the role of these characteristics. Therefore, we include state fixed effects in column 2 of Table 3 and 4, so that we only explore the variation in Maoist activity within each of the affected states. Under this approach, it is even harder to identify correlates of Maoist activity. Across specifications, the only robust correlate of Naxalite presence is forest cover. This descriptive analysis confirms that Naxalite districts are distinctive in terms of socio-economic characteristics, but not always in the dimensions that one would expect. If we ask the question "how different are the Maoist affected districts?", the answer depends crucially on the comparison group, and whether we are interested in the separate impact of a given characteristic or an unconditional correlation.

In the next section, we will discuss how the emerging literature has explored the mechanisms underlying these correlations.

4   Interpretation

4.1   Human development and social status

Our empirical exercise is close to Borooah (2008), who highlights that Naxalite districts have poor educational outcomes when compared to all Indian districts, and Hoeschler, Miklian, and Vadlamannati (2012), who argue that the interaction between mining resources and SC/ST is a powerful predictor of Maoist activity within a subset of affected states. However, these authors do not compare between- and within-state analyses. Poor literacy does not seem associated with increased Naxalite activity once all differences between districts at state-level are accounted for (Table 2, column 2), while the coefficient on mining activity loses its significance

once we compare districts within the same state. Hence, our analysis calls for careful consideration of the level of analysis and choice of sample. While it is clear that Naxalite districts are less literate than the average district, this is true for the Naxalite-affected states as well. However, within those states, districts with better literacy outcomes appear to be no less likely to escape Naxalite violence.

One way to read this finding is that certain district-level characteristics such as literacy do not really capture the different conditions in communities that are directly affected by Naxalism. It is common knowledge that Naxalism is strongest among scheduled tribe communities, and several authors have presented results that point in this direction (Borooah, 2008; Planning Commission, 2008; Mukherjee 2013; and Gomes, 2012). However, the evidence is not entirely clear-cut. A higher ST share does not appear to predict Naxalite activity within the broader Naxalism-affected region, once other controls are accounted for. Yet, within each of the affected states, the share of STs is significantly related to Naxalite violence. Historians have indeed observed the deliberate effort to radicalize disadvantaged tribal communities by exploiting their economic hardship and grievances against the government (Kujur, 2008). The fact that the ST share is not significant across the contiguous region of 10 states, strongly suggests that other factors could determine where the Maoist movement became strong in the first place.

The deepest roots of the Maoist movement could in fact be a set of specific colonial institutions. Banerjee and Iyer (2008) point out that the Red Corridor tended to have revenue collection through *zamindars* during British colonial rule. While these authors do not explore this link directly, they show that landlord-based tenure had persistent negative impacts on investment in agriculture and public goods. A recent paper by Mukherjee (2015) tests this hypothesis explicitly, and concludes that both Princely States and (to a lesser extent) Zamindari land tenure (the two most important forms of indirect colonial rule) are still associated with increased Naxalite activity today. However, the legacies of Princely States are the subject of academic debate. Teitelbaum and Verghese (2015) agree with Mukherjee (2015) on the role of the Zamindari system, but unlike the latter author they argue that direct colonial rule (as opposed to Princely States) planted the seeds of the present-day Maoist conflict.[7] Regardless of the nature of these colonial

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[7]Differences in measurement and the empirical strategy used to identify this effect could account for these conflicting findings.

legacies, both papers suggest that its impacts are not limited to social and economic underdevelopment.

While the historical causes of the Maoist movement could be deep-rooted, recent work suggests a role for policies that reinforce political institutions. In Jharkhand, Pasquale (2014b) finds that reservation for Scheduled Tribes in the Gram Panchayats did contribute to a reduction in reported Maoist violence at the village level. But, decentralizing government may not help to reduce conflict in general. Nandwani (2015) finds that the 1996 "Panchayats Extension to the Scheduled Areas Act" increased conflict in tribal ("schedule 5") districts. The author argues that im- partial implementation of this act led to elite capture of economic rents and spurred conflict through this channel.

We conclude this section by noting the lack of robust effects of each single measure of social underdevelopment at the district level in our data, although there is a broad relationship between underdevelopment and Maoist activity when we focus on the unconditional correlations (as in Table 1). One way to read these results is that district-level indicators fail to tell an accurate story about the reality of the relatively small affected communities. The lack of such robust relationships indicates that development programmes aimed at reducing Naxalite violence could be mis-targeted if they focus at entire districts or states or if they use statistics at this level as the only measures of the Maoist threat.

4.2   Forest Resources and Agriculture

A clearly distinctive characteristic of Naxalite districts appears to be their high forest cover. This relationship could reflect the tactical advantages for the rebels of operating from inhospitable areas, as highlighted by Fearon and Laitin (2005) based on a large set of countries. However, in the context of the Naxalite movement, recent work by Teitelbaum, Rajan, and Sen (2013) emphasizes another dimension of forest cover. These authors find that *tendu* leaf production is associated with increased Naxalite violence. The *tendu* leaf trade could provide a source of income for Maoists and could also generate disputes between the tribal population and the Forest Department. Moreover, the tribal population in India's Naxalite belt relies heavily on forest resources and on subsistence agriculture (through slash and burn agriculture). This dependence could generate a strong link between forest

cover and Naxalite activity through two channels. Forest Department policies that limit access of the tribal population to forests may have generated grievances and economic hardship that has generated support for the Maoist movement.

Subsistence agriculture, in and outside of the region's forests, may in itself provide a fertile recruitment ground for the Naxalites. Vanden Eynde (2017) and Gawende, Kapur, and Satyanath (2017) both find that violence outcomes respond to rainfall shocks through proxies of forest resource output or agricultural production, in confirmation of this mechanism. The sensitivity of violence to rainfall shocks points at severe under-investment in agriculture. As mentioned earlier, this underinvestment could have deep colonial roots. While certain development programmes (including NREGS) should make the income of the communities in the Maoist affected areas less dependent on agricultural or forest resource shocks (Banerjee and Saha, 2010), the consistent implementation of these programmes is hard to guarantee in the affected zones. It appears that there is scope for small- scale agricultural extension efforts that address the vulnerability of agricultural techniques more directly.

The importance of climate shocks for the intensity of violence points indirectly at severe economic deprivation in Maoist-affected areas. This observation could appear in contradiction with the district and state level evidence presented above. However, these findings can easily be reconciled because the Maoist movement tends to be concentrated in particular geographical pockets within each district (and in particular districts within each state). In this context, the level of analysis is very important, and it is clear that future work would greatly benefit from efforts to measure events related to the Maoist movement at a level below the district.

4.3   Mineral Resources

A predictor of Naxalite activity that stands out in our empirical analysis is mining activity. It is strongly correlated with Maoist activity, although the variable loses its significance (but not its magnitude) in column (2) of table (2). Mining activity could affect Naxalite violence through a set of channels; (i) the increased financing opportunities for the Maoist movement, (ii) grievances stemming from displacement as a result of mining activity, (iii) and higher stakes for conflict over mining zones.

The capacity of mineral resource shocks to fuel violence directly has been studied in a variety of contexts (across countries, Michaels, 2013; in Colombia, Dube and Vargas, 2013). Nevertheless, the robustness of the correlation between mining activity and violence has recently been challenged by Rajan, Sen, and Teitelbaum (2013). These authors compare the Naxalite affected districts to all other Indian districts (a much larger and more diverse comparison group than the one in our empirical exercise), and conclude that the production of *tendu* leaves is a stronger predictor of Maoist violence than the production of mineral resources. Of course, the relationship between mining activity and conflict is not a deterministic one: among the heavily affected districts we can easily give examples of districts with important mining activity (e.g. Dantewada) and districts with a very small mining sector (Gaya, West Midnapore).

Analysts and policy makers alike have pointed to the mining sector as an important source of income for the Naxalites (Srivastava, 2009; Singh and Diwan, 2010): by threatening to disrupt mining activities, the Maoists are thought to attract contributions from the Mining sector. It is worth pointing out that, even if mineral resources do not cause the conflict or affect the intensity of violence directly, they could still have an important impact on the dynamics of violence through an indi- rect mechanism. As an example of such an indirect influence, Vanden Eynde (2017) finds that poor rainfall is associated with increased violence against security forces, but only in those districts that are sufficiently rich in mineral resources. This finding reflects that access to income collected from local mining activity could make it easier for the Maoist groups to mobilize support in response to local agricultural shocks.

While the mining sector could offer financial benefits to the Naxalite movement, the sector industry is also responsible for displacement of the civilian population and soil degradation (Planning Commission, 2008). Kennedy and King (2009) criticize the displacement mechanism and point towards the limited number of people affected by these displacements, although displacement and environmental degradation are hard to measure in this context. In theory, the grievances generated by the mining sector could represent a windfall to the Maoist movement that is similar to the direct financial benefits: the anger at mining activity could clearly mobilize communities against the state. The Maoist movement benefits from this environment, and is very much involved in the organization of protests against

the mining sector (Kujur, 2008). In a theoretical paper that is inspired by India's Maoist conflict, Munshi (2017) characterises an equilibrium in which a 'nexus' between government and industry actors sparks resistance from indigenous groups. Finally, mineral resource wealth could raise the stakes of the conflict from the perspective of government actors. Azam and Batia (2017) argue that state gov- ernments use their anti-Naxalite efforts to provoke violence and attract support from central forces. According to these authors, central support could facilitate the clearance of tribal lands for mining activity. Their empirical analysis reveals a positive relationship between the intensity of the conflict and mineral deposits. [8] Vanden Eynde (2015) further confirms the hypothesis that mining resources shape the way in which the state intervenes in the conflict. After the introduction of a 10% ad valorem tax on iron ore in 2009, the author observes a sharp increase in police operations in districts containing iron ore deposits, but not in other (mining
or non-mining) districts.

While the relationship between mining activity and Naxalite violence is complex, there is little doubt over the importance of the sector in shaping the strategies of the actors in the conflict. For that reason, it is striking that progress on the sharing of mining profits has bee limited. Profit sharing schemes that benefit the local community could make it harder for the Maoists to use mining activity to its benefit. In fact, one can question whether the state's development efforts and security operations will be successful as long as Maoist-related violence can be fuelled directly and indirectly by mineral resources.

4.4 Bringing development to affected communities

Observers of the Naxalite movement have long emphasized the plight of the civilian population, which is literally caught "between two sets of guns" (HRW, 2012). Civilian victims (inflicted by the Maoists) account for more than one third of all recorded fatalities related to Maoist groups (SATP), and there are no systematic data on civilian casualties inflicted by the security forces. As Maoist fighters need to be able to strike and hide, civilian co-operation is indispensable for either party to achieve its goals. Arguably, the civilian population is the most important asset in the conflict between State actors and Maoists. Patterns of Maoist violence underline

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[8]Deposits are not always associated with actual production of mineral resources, so this measure is distinct from the one applied in our current paper.

this interpretation. Vanden Eynde (2017) finds that killings of suspected police informers could respond to local economic shocks, and argues that this pattern could reflect strategic victimization.

The scale of violence against the civilian population has profound implications: any development intervention that disturbs the equilibrium between the parties holds the risk of backfiring against local communities. This possibility has been underlined by recent work on the Philippines, where eligibility for a development fund led to an intensification of violence (Crost, Felter, and Johnston, 2014). A number of recent papers take these predictions to India's Naxalite movement. First, Khanna and Zimmermann (2017) report similar findings to those in the Philippines: they argue that the introduction of NREGA has actually boosted Naxalite violence. These authors compare violence outcomes in districts that are on the margin of being selected or not in the different phases of NREGA. The mechanism through which NREGA could intensify the conflict is through the increased polarization of the civilian population between government and Maoist supporters. Based on village-level evidence, Pasquale (2014a) offers an alternative interpretation: poor implementation of rural infrastructure programs could upset the local population and make them more sympathetic to the Maoist movement. Finally Srivastava (2014) finds that NREGA increases rural wages, and he argues that these higher wages boosted conflict because it lowered the risk aversion of potential rebels.

However, the argument that development programmes like NREGA increased Maoist violence goes against the findings of Fetzer (2014). He finds that NREGA has reduced violent conflict - and reduced its sensitivity to rainfall shocks in particular. The methodology adopted is a difference-in-difference approach, in which sets of districts in the different implementation phases of NREGA are compared before and after the introduction of the programme (as in Imbert and Pape, 2014).[9] The finding that NREGA reduces violence in the Maoist affected districts is consistent with the work of Banerjee and Saha (2010). These authors report survey findings from Bastar that suggest that the Maoists do generally allow NREGA work to take place (although they consistently attempt to block road construction). In a

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[9]This identification strategy has the advantage of considering an exogenous increase in development activity. But it abstracts from an important strategic decision from the government's perspective: how to balance security and development approaches? Kumar and Chowdhury (2015) develop a theoretical framework that highlights how the initial dominance of the conflicting parties affects its response.

study along the same lines as Fetzer (2014), Das, Gawende, and Kapur (2014) highlight that the positive effects of NREGA are more pronounced in well-performing states. This heterogeneity in impacts can account for the contradictory findings on the impact of NREGA by different research teams: each methodology implicitly relies on a subsample to estimate the effect of NREGA, and causal impacts in these subsample can be different. Moreover, no empirical strategy can rule out bias. More research is needed to understand these sources of heterogeneity better and reconcile the evidence on the conflict-mitigating impact of NREGA in particular, and development programmes in general.

It seems fair to conclude that much has yet to be learned about how development programmes affect violence in Maoist affected districts. The wider economic literature has so far identified at least two contexts in which local development efforts were effective. Based on evidence from Iraq, Berman, Felter, and Shapiro (2011) find that small-scale development projects that were implemented directly by the US Army helped to reduce violence. It goes without saying that the war in Iraq is very different from Indian Maoism. Yet, if the recipe for successful develop- ment in conflict zones is one in which projects are small-scale, flexible, responsive to local needs, and implemented by or in close co-operation with local security forces, it is worth pointing out that some of most ambitious development projects undertaken in rural India are large-scale and offer limited flexibility.

One exception to this rule is the adopted Integrated Action Plan, under which smaller scale infrastructure programmes are carried out at the initiative of the District Collector. Still, it is interesting to note that relevant programmes are typically implemented at the district level (for administrative reasons), even if within-district inequalities could be very relevant for the conflict environment (as highlighted by the discussion social characteristics). This could justify a greater role for Panchay- ats, although several authors highlight the risk that the resources of local governments are captured by rebel groups (Dube and Vargas, 2013; Nandwani, 2015). A second, recent contribution to the conflict literature in which a development programme helps to reduce violence is Crost, Felter, and Johnston (2016). Relying on a randomized control trial carried out by the World Bank, these authors find that a conditional cash transfer programme helped to reduce Maoist violence in the Philippines. Again, one should be careful in extrapolating these findings to the Indian context, but the paper appears

particularly relevant given the current debate on a "universal basic income". The argument of Crost, Felter, and Johnston is that the cash transfer program helped to reduce violence in part because payments were made directly in the bank accounts of beneficiaries - which helped to limit corruption by officials and the extortion by insurgents.

5   Conclusions

Economists and political scientists have used violence data to understand the drivers and dynamics of Maoist-related violence. Their work has confirmed some of the conventional wisdom, but also challenges some of it. In this essay we provide some fresh analysis as well as review the literature to take stock of where we stand. First, we note that development indicators are less consistently correlated with Maoist activity than we might have expected. Second, recent work has linked the intensity of Maoist violence to rainfall shocks, highlighting the dependence of the affected communities on rain-fed subsistence agriculture and forest resources. Third, there is evidence that *tendu* leaves trade and mining activities both play an important role in the conflict. Mining activity could affect the strategic behaviour of Maoist groups. Finally, we emphasize that the civilian population is often caught in between in this conflict. Recent studies (in the context of the Naxalite movement) point at dangers of introducing development programmes in conflict zones, but have also identified positive effects of NREGA in particular in the context of the Naxalite movement.

We believe that these conclusions hold useful lessons for policy makers. The importance of forest cover and (to a lesser extent) the share of the scheduled tribe population suggests that the Maoist movement is operating under rigid geographical constraints. These conditions could limit the resilience of Maoism in response to targeted development efforts. At the same time, much of the existing work on the conflict highlights the economic vulnerability of the affected areas and an economic logic to the violence. From this angle, the lack of consistent correlations for development indicators at the district level and the state level, imply that the movement might find fertile economic conditions outside of its existing strongholds within the currently affected states. This factor could give the movement resilience, unless development efforts can change conditions in a wider set of districts.

The importance of economic factors in explaining changes in the intensity of the

conflict might appear at odds with the lack of robust predictors of Maoist-related violence in a cross-section of districts. To make sense of these patterns, it is worth highlighting that the literature to-date has almost exclusively worked with violence measures at the district level. Our analysis at the state and district level, and between and within state comparisons, indicate that carefully considering the level of analysis is particularly important. One reason why our analysis at the district level fails to document the underdevelopment of Maoist affected areas consistently, is that the relevant outcomes are best measured at a level below the district.

This observation has policy implications. For example, the key programme through which the Centre assists states in their stated fight against left-wing extremism (the Integrated Action Plan) is allocated at the district level, whereas the programme could be targeted better if within-district variation was taken into ac- count. There is indeed much scope for future work that offers more detailed assessments of how the conflict operates and the success of Government interventions at a micro level.

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