Explaining Maoist control and level of civil conflict in Nepal

by

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Abstract: Does poverty or inequality explain the Maoist insurgency in Nepal? In contrast to previous studies we limit the analysis to the hill/mountain districts of Nepal as very few terai (plains) districts are classified as Maoist. And we conduct separate analyses for Maoist control and level of conflict. We find that income poverty and land-inequality are main determinants of Maoist influence, while the less visible income inequality is not so important. We also demonstrate that previous findings by Murshed and Gates (2005), where landlessness appears to be important, are due to two outliers that are the core Maoist districts. Without the outliers landlessness is negatively, and not positively, correlated with Maoist influence.

Keywords: civil-war, data-issues

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1. Introduction

On February 13, 1996 the Communist Party of Nepal-Maoist (CPNM) attacked a number of police stations in different districts of Nepal starting the so called People's war. The conflict escalated after November 23, 2001, when the Maoists for the first time attacked military posts. After ten years of war it appears that the Maoists realized that they will not win by military means, and in November 2005 they signed an agreement with the democratic parties, and a year later they signed a peace accord with the new democratic coalition government of the Seven Party Alliance (SPA). CPNM sees the insurgency as a struggle against feudalism and monarchy, and for political and economic change in Nepal. The insurgency can be interpreted as a violent element of a larger economic, social, and political transition, as discussed by Muni (2003), Thapa (2003), and Mishra (2007). A number of factors have contributed to the insurgency, including the historical legacy of the communist movement and previous popular uprisings, and economic inequality and poverty, as well as caste based and ethnic frictions. While scholars emphasize the complexity of the issue, political actors and commentators tend to focus on a single factor, whether it is ethnicity, poverty, or inequality. In this paper we acknowledge the complexity, but we will still make an attempt to single out the most important factors among those that may have contributed to the insurgency. We apply multivariate regression analysis.

The paper is not the first quantitative analysis of the determinants of the insurgency in Nepal, see also Murshed and Gates (2005), Do and Iyer (2007), Macours (2006), Nepal, Bohara and Gawanda (2007), and Tiwari (2007). But in contrast to the previous analyses we separate the level of Maoist control from the level of conflict[1]. As we discuss in Hatlebakk (2007) districts that the Maoists control

[1] Tiwari (2007) also studies the level of insecurity as measured by UN-Nepal. These data are not publicly available. He also includes terai districts, and has a different set of explanatory variables.

are not districts with a high level of conflict, as the Maoists tend to attack neighboring districts. There are also systematic differences in the independent variables between districts that the Maoists control, and districts they use as a fighting ground. Furthermore, previous studies have applied data from all districts of Nepal. This is problematic, as the Maoists have basically no control in the terai (plains) region of Nepal. By including a number of non-Maoist districts from a region where basically no district has been under Maoist control, one will get a biased representation of the determinants of Maoist control, as the terai region is in many ways different from the hills. We shall also see that the two core Maoist districts of Rolpa and Rukum are special cases that will change the sign of the landlessness parameter, which is the main focus of Murshed and Gates (2005). Section 2 presents the variables, including descriptive statistics, as well as the empirical methodology. Section 3 presents the findings, while section 4 concludes.

2. Data and methodology

As we argue in Hatlebakk (2007) there is no good continuous indicator of Maoist control. To make reliable comparisons between the indicators of Maoist control and the indicators of conflict level, we transform the continuous measures of conflict level into dichotomous variables by selecting a cutoff that gives approximately the same number of Maoist influenced districts. The numbers of people killed and displaced, divided by the district population, will be used as indicators of the level of conflict. We use a government classification, as well as the Maoists announcement of a People's government as indicators of Maoist control. See Hatlebakk (2007) for more details on these indicators.

Table 1. Maoist-controlled districts according to different indicators

People's government	Government classification	Displacement high	Killings high
Achham	Achham		Achham
	Arghakhanchi	Arghakhanchi	Arghakhanchi
	Baglung		
		Baitadi	
Bajura		Bajura	Bajura
		Banke	Banke
	Bardiya*	Bardiya*	Bardiya*
			Bhojpur
		Dadheldhura	Dadheldhura
Dailekha	Dailekha	Dailekha	Dailekha
	Dang*		Dang*
Dhading	Dhading		
Dolakha	Dolakha		Dolakha
	Dolpa	Dolpa	Dolpa
		Doti	Doti
Gorkha	Gorkha	Gorkha	Gorkha
Gulmi	Gulmi		
		Humla	Humla
Jajarkot	Jajarkot	Jajarkot	Jajarkot
Jumla	Jumla	Jumla	Jumla
		Kailali*	
Kalikot	Kalikot	Kalikot	Kalikot
		Kapilbastu*	
	Kavrepalanchoc	Kavrepalanchoc	Kavrepalanchoc
	Khotang		
	Lalitpur		
Lamjung	Lamjung	Lamjung	Lamjung
	Makwanpur		
		Mugu	Mugu
			Myagdi
Nuwakot	Nuwakot		
	Okhaldhunga	Okhaldhunga	Okhaldhunga
Palpa			
		Panchtar	
Parbat	Parbat		
	Pyuthan		
Ramechhap	Ramechhap	Ramechhap	Ramechhap
Rasuwa			
Rolpa	Rolpa	Rolpa	Rolpa
Rukum	Rukum	Rukum	Rukum
Salyan	Salyan	Salyan	Salyan
Shankuwasabha			Shankuwasabha
Sindhuli	Sindhuli	Sindhuli	Sindhuli
Sindhupalchok	Sindhupalchok		Sindhupalchok
		Solukhumbu	Solukhumbu
	Surkhet	Surkhet	Surkhet
Tanahu	Tanahu		
		Taplejung	Taplejung
Tehratum		Tehratum	
	Udayapur		

*Terai districts

As we can see from Table 1 most Maoist districts are in the hills and mountains, only Bardiya and Dang are in (mid-western) terai. We may bias the findings by including terai in the analysis as the terai districts may be quite different from both the Maoist controlled districts, and the non-Maoist hill/mountain districts. By including terai districts we may thus not know whether the difference between Maoist and non-Maoist districts is due to a difference between Maoist and non-Maoist hill/mountain districts, or whether it is due to a difference between hill/mountain and terai districts more in general[2]. We thus only include hill/mountain districts in our analysis. As we find no systematic difference between hill and mountain districts we pool these in the analysis. As the dependent variables are dichotomous we estimate a probit model.

We apply data from the Nepal Living Standard Survey, NLSS (1996), which was collected in 1995/96 before the civil war started, to construct the independent variables. In principle we avoid the problem of reversed causality by measuring the independent variables prior to the conflict. This is not a perfect strategy as Maoist control during the conflict may reflect Maoist, or, more in general, communist influence prior to the conflict. Early communist influence may thus affect not only the level of Maoist control during the conflict, but also the explanatory variables, in particular the economic variables. We can thus not exclude the possibility of reverse causality, and the reported findings may be interpreted as correlations rather than causal effects. The economic explanatory variables are listed in Table 2 with separate descriptive statistics for Maoist and non-Maoist districts. As the Maoists are not able to control urban areas, we only use the rural sample from NLSS.

[2] In particular there is no People's government in the terai. Including terai districts thus only means to increase the control group with districts that are very different from the Maoist controlled hill and mountain districts. That is, if we include the terai districts the findings would change in particular for the landless and mean income variables, which is explained by the higher mean incomes in the hills, and the larger proportion of landless people in the terai.

Indicators of poverty, inequality and level of income may explain the variation in Maoist control. We use expenditures, which were calculated by the Central Bureau of Statistics in collaboration with the World Bank and reported in NLSS (2005), as an indicator of household income. We use mean income for each district as the income indicator, the ratio of income at the 25 percentile to the 75 percentile as an indicator of inequality, and the headcount using the NLSS (2005) poverty classification, as the poverty indicator[3]. Since it is generally difficult to get a correct measure for income in poor countries, we also add land-value as an indicator, that is, we add the 25 percentile to 75 percentile ratio for land-value as an additional inequality measure, and the share of landless people as a poverty indicator. In addition we add the share of different castes and ethnic groups and a dummy for the western part of the country as an indicator that may reflect the stronger communist legacy in this part of the country, as described by de Sales (2000). The probability of a district being Maoist dominated is $Pr = P(F(X))$, where the P-function is a Probit function, and the F-function is linear in the parameters and with a residual that is normal distributed, and where the vector X includes the explanatory variables discussed. If we suppress the caste and regional variables, the F-function can be written

$$F = \beta_0 + \beta_1(\sum y_i)/N + \beta_2(\sum(\bar{y} - y_i)^0)/N + \beta_3 y_{25}/y_{75} + \beta_4 z_{25}/z_{75} + \beta_5 N_0/N, \quad (1)$$

where all variables are measured at the district level, N is the number of respondents, N_0 is the number of landless households, z_{25}/z_{75} is the 75 percentile divided by the 25 percentile for land value, y_{25}/y_{75} is the corresponding ratio for household

[3] We use weighted estimates (except for the percentile command), where we take into account that weights vary between PSUs within districts.

income, y_i is per capita income, and $\bar{y}$ is the poverty line, which implies that the second term is the poverty head-count. Note that for the inequality measures a larger number implies less inequality.

Note that a proportional income growth will not change income inequality, but reduce income poverty, and increase average income. If the change in income leads to a change in wealth, then one may imagine that some households change the status from landless to land-holders. In that case N_0 may change, and also the inequality measure for land holdings. A non-proportional change in income may of course also change income inequality. As savings behavior may vary between districts, we note that the two inequality measures do not measure exactly the same, so we can use all indicators as explanatory variables. Table 2 gives the descriptive statistics for the explanatory variables for the Maoist and non-Maoist hill and mountain districts.

Table 2. Descriptive statistics, hill and mountain districts

	Poverty (%)	Landless (%)	Income (rs)	25/75 income ratio	25/75 land value ratio	N
Mao-gov	41	4	7200	0.53	0.21	29
Not	40	4	7600	0.52	0.23	21
Mao-self	45	5	7100	0.53	0.20	23
Not	37	3	7600	0.52	0.23	27
Killings	49	3	6600	0.53	0.23	28
Low	32**	6**	8300**	0.52	0.20	22
Displaced	48	3	6700	0.54	0.23	25
Low	34*	5	8000	0.51	0.21	24

** Significantly different from Maoist districts at the 95%-level
* Significantly different from Maoist districts at the 90%-level

As we can see the difference between Maoist influenced districts and non-Mao districts depend on the measure of Maoist influence. According to our a-priori preferred indicator, the government classification, there are only marginal, and non-significant, differences between the two groups of districts. But there are significant differences between Maoist influenced and other districts, when classified according to number of people killed, and for the poverty head-count, also when classified

according to displacements. People in Maoist influenced districts are poor, but not landless. But note that these districts are not where the Maoists have their bases, but the neighboring districts, where they attack. If we look into the detailed data, then we find that for the very poor districts, with a head-count larger than 60%, only 7 out of 14 districts are Maoist controlled, while 11 of the same 14 districts have had many people killed. The poor districts with many killings, but not defined as Maoist controlled, are Bajura, Doti, Humla, and Mugu. These are very remote districts located in the poor north-western corner of the country. We now go on to the multivariate analysis, to see whether our descriptive findings can be explained by other variables than poverty and landlessness.

3. Multivariate findings

Among the indicators discussed above, most previous studies have applied killings as the dependent variable, including the most influential paper by Murshed and Gates (2005). When it comes to the independent variables, previous authors have similar hypotheses to ours, but apply different indicators of poverty and inequality. We also believe that level of income, and wealth, as well as inequality, may explain the level of Maoist control, although not necessarily the level of conflict, which is the topic of the previous studies. We also make sure to apply a consistent set of explanatory variables, in the sense that all are based on data from NLSS. We do not use any other secondary data sources that might be of lower quality, and we do not use compiled indexes, such as the HDI, or the GINI, because we have problems interpreting the parameters for these indicators.

In our case all variables, and thus the parameters in (1), have immediate interpretations. A significantly positive parameter for y_{25} / y_{75}, for example, means

that if we compare two districts, one with a higher income at the 25 percentile as compared to the 75 percentile, then this district is more likely Maoist influenced. With a GINI-coefficient the change in the income-distribution can happen anywhere along the Lorenz curve, which to this author has a less intuitive interpretation. We report the multivariate findings for all four dependent variables in Table 3.

Table 3. Probit estimates (weighted) for marginal change in the probability

	maogov	maoself	killingshigh	idphigh
meanexp (1000)	- 0.14	0.12	0.03	0.06
	(0.09)	(0.09)	(0.09)	(0.10)
inequal-inc	0.77	0.55	0.20	1.78*
(ratio)	(1.05)	(1.05)	(1.07)	(1.01)
poverty	- 0.94	2.19***	0.18	- 0.16
(%)	(0.79)	(0.84)	(0.85)	(0.85)
inequal-val	- 1.37	- 2.18*	0.74	1.22
(ratio)	(1.11)	(1.22)	(1.11)	(1.38)
landless	- 0.01	4.02	- 4.68*	- 4.89**
(%)	(2.30)	(2.57)	(2.71)	(2.37)
high-caste	- 0.91	0.01	- 1.96**	- 2.85***
(%)	(0.66)	(1.02)	(0.82)	(1.06)
newar	- 2.33*	1.07	- 0.66	- 3.34**
(%)	(1.21)	(1.34)	(1.15)	(1.55)
tamang-gurung	0.28	1.67	- 1.64*	- 2.27**
(%)	(0.81)	(1.08)	(0.93)	(1.02)
magar	- 0.25	0.85	- 1.40	- 1.20
(%)	(0.81)	(1.03)	(0.98)	(1.11)
rai-limbu	- 1.84**	- 0.04	- 2.43***	- 1.79*
(%)	(0.85)	(1.09)	(0.93)	(0.99)
hill-dalit	- 0.53	0.38	- 2.16**	- 1.71
(%)	(0.87)	(1.11)	(1.01)	(1.26)
west	- 0.19	0.16	0.47*	0.64**
	(0.26)	(0.27)	(0.22)	(0.18)
Prob > chi2	0.0288	0.0219	0.0163	0.0380
Pseudo R2	0.2785	0.3206	0.2821	0.3109
N	50	50	50	49

*** Significant at the 99%-level
** Significant at the 95%-level
* Significant at the 90%-level

The five first independent variables are the economic variables discussed above, and included in equation (1). The next six variables are the ethnic-composition variables, with high-caste and hill-dalit having the obvious interpretations, and the remaining four having the names of major ethnic groups. The last variable is a regional dummy.

We find that districts with more landless people are less likely to be conflict affected, as measured by killings and displacements. This is the opposite finding of Murshed and Gates (2005). The difference in findings is due to the two core Maoist districts of Rolpa and Rukum that are definitely outliers. If we replace our dummy for high levels of killings with the actual number of killings per population, and estimate a Poisson model as Murshed and Gates do, then we also get a positive sign for landlessness. But if we exclude Rolpa and Rukum, then the sign is negative, see Table 4. Figure 1 illustrates why, Rolpa and Rukum are the two districts in the upper-right corner. Note that we do not have the same set of independent variables, but still we suspect that the results in Murshed and Gates (2005) are sensitive to these two outliers.

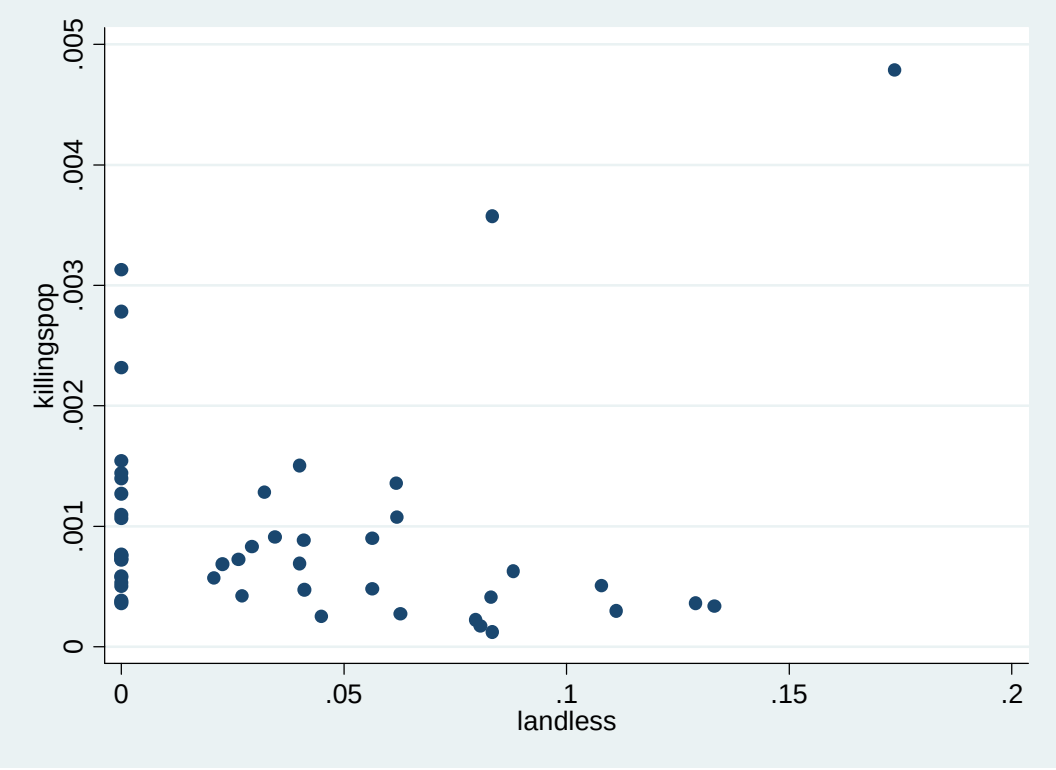

Figure 1. Rolpa and Rukum as special cases.

Table 4. Poisson estimates

	killingspop, incl Rolpa/Rukum	killingspop
meanexp (1000)	- 0.14	0.11
	(0.12)	(0.08)
inequal-inc	- 0.08	1.52
(ratio)	(1.53)	(1.38)
poverty	- 0.79	1.42**
(%)	(1.03)	(0.71)
inequal-val	2.66**	0.09
(ratio)	(1.10)	(1.04)
landless	6.70**	- 9.04***
(%)	(3.31)	(2.88)
high-caste	- 0.81	- 1.18
(%)	(0.65)	(0.73)
newar	- 2.33*	- 1.82
(%)	(1.23)	(1.22)
tamang-gurung	- 0.89	- 1.57***
(%)	(0.59)	(0.61)
magar	- 0.68	- 1.10
(%)	(0.91)	(0.70)
rai-limbu	- 1.08*	- 1.61**
(%)	(0.60)	(0.68)
hill-dalit	- 1.83	- 0.93
(%)	(1.22)	(1.14)
west	0.60	- 0.18
	(0.45)	(0.37)
constant	- 5.75***	- 7.92***
	(1.52)	(1.06)
Prob > chi2	0.0000	0.0000
N	50	48

*** Significant at the 99%-level
** Significant at the 95%-level
* Significant at the 90%-level

We thus conclude that districts with more landless people are less likely to be conflict affected, as measured by the number killings, with the exception of Rolpa and Rukum. The finding is robust to the estimation method. The opposite finding, reported by Murshed and Gates, appears not to be robust. For the other indicators we find that landlessness cannot explain why districts are controlled by the Maoists as illustrated by the two first columns of Table 3.

Our second poverty measure, the head-count, is positively correlated with the probability of having a People's government, and is also positively correlated with the level of killings in the Poisson regression (without the outliers). So there is some

indication that poverty is an underlying factor that may explain the conflict in Nepal. The average income level, on the other hand, has no explanatory effect.

For land-inequality there is a negative sign for the People's government regression, meaning that as the lower income levels increase as compared to the higher levels, that is, inequality declines, then the probability of having a People's government declines. This finding is there also in the descriptive statistics, although not significant, the districts with a People's government have higher land-inequality. So, there is some support for the conclusion that land-inequality explains the support for the Maoist.

For income-inequality there is a significant effect for the displacement indicator, but with an opposite sign. There is less income-inequality in districts where displacement is high. Again there is some (insignificant) support for the same conclusion in the descriptive statistics. We have summarized the findings in Table 5.

Table 5. Summary: Determinants of Maoist influence

	Maoist control	Conflict level
Land-poverty		-
Income-poverty	+	
Land-inequality	+	
Income inequality		-

So we find that districts with a Maoist declared People's government have a higher poverty rate and more unequal land distribution than other districts. But there is no difference in land-poverty, as measured by landlessness, or income inequality. This is not surprising, land inequality is more visible than income inequality, while your own low income matters for recruitment into the Maoist party, and army. Landlessness, on the other hand, is low in all districts, and probably indicates that the household have other occupations than farming. This in turn may explain why landlessness is higher in districts with low conflict levels, that is, presumingly more urban districts.

When it comes to the other control variables, we find that the east-west divide, which we hypothesized to be an indicator of the historical legacy of communism, explains differences in conflict level, but not Maoist control. We actually expect this to be a truly historical effect. The war started in the West because the far-left of the communist movement has been stronger there, and this is why killings and displacement are higher in the west. But later during the war, the Maoists have taken control in other parts of the country as well, which explains that we find no difference with respect to the two Maoist control variables.

The historical legacy has been explained by ethnicity, in particular the importance of the Magar community, see de Sales (2000). We have included the share of different ethnic groups at the district level using, again, NLSS data. The Magar population has no explanatory effect, but we find some other ethnic effects. Districts with a large Newar, or Rai-Limbu, population, like the Kathmandu valley, and the eastern hills, have a lower probability of being controlled by the Maoists. When it comes to the conflict level, we find that killings and displacements are higher in districts with a larger population of the control group, which is the group of households where ethnicity is not specified. These are in particular the districts Solukhumbu and Ramechap, which have relatively large Sherpa communities, and the districts Rukum, Salyan and Surkhet, which have relatively large non-Brahmin-Chettri high caste communities (Sanyasi and Thakuri).

4. Conclusions

It is a problem when regression analyses are conducted without a proper understanding of the data at hand. Previous regression-based studies of the civil war in Nepal have focused on the conflict level, and have to various extent interpreted the

conflict level as an indicator of Maoist control. In Nepal this is not a proper interpretation, the Maoists attacked neighboring districts, while in their own areas the conflict level was not so high (except for the core areas). Furthermore, previous studies have included the terai districts in the analysis, which do not make sense. According to all indicators very few of the terai districts were influenced by the Maoists. Finally, as illustrated here, the two core Maoist districts are outliers. Excluding these two, the effect of landlessness goes from significantly positive, as reported by Murshed and Gates (2005), to significantly negative. So a proper analysis would either omit these two special cases, or would re-specify the dependent variable, as we do, and apply a dichotomous, rather than a continuous, indicator of a high number of killings.

When we implement these methodological changes, we find that districts with many landless households are less likely to be conflict affected. But the poverty-rate, on the other hand, is positively correlated with Maoist influence. In a sense we replicate the main finding in Murshed and Gates (2005), but we show that it is not landlessness that explains the Maoist influence, but income poverty. For inequality we have to separate the effect of land- and income-inequality. Land inequality appears to explain the support for the Maoists, while income-inequality is negatively correlated with displacements due to the conflict. These findings make sense. There are few landless households in the hills, so land distribution is more important than landlessness. And the distribution of income is less observable than the distribution of land, which may explain that this is not a determinant of Maoist control. Income poverty on the other hand is an absolute measure of well-being, and we shall expect that poor people are more easily recruited into Maoist organizations, including their army.

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