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Oil and the Probability of Rebel Participation Among Youths in the Niger Delta of Nigeria*

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This article attempts to explain the determinants of the probability of willingness to join rebel groups by youths in the Niger Delta region of Nigeria, using primary data from a sample of 1,337 individuals drawn from 18 communities. A cardinal objective is to test the theoretical explanations of the motivation for rebellion in resource-based societies and to examine the kind of factors that present rebel opportunity. Fifteen variables are used to reflect motives and opportunity for rebellion, and a logit regression model is employed to estimate the probability of willingness to participate. While grievance appears to be pervasive among individuals- and is systemically explained by the data, it is not seen to have high statistical effect on the probability of having a disposition to rebel participation. Rather, individual- and community-level factors that reduce the opportunity cost and risk of participation, or increase the perceived benefits, appear to be more important. The findings suggest that strategies to achieve long-lasting civil peace in Nigeria's Delta must go beyond grievance to address individual-level factors that determine the opportunity cost of participation in violence, such as low income level and low educational attainment, and community-level factors that create an opportunity to profit from extreme forms of civil disobedience, such as low infrastructure. Some of these strategies choices are found also to have the potential to address grievance.

Introduction

Empirical studies have established a causal link between natural resource abundance and civil conflict. Collier & Hoeffler (1998) and de Soysa (2002) show, for example, that natural resource availability/abundance considerably increases the chances of civil conflict in a country. Addison, Le Billon & Murshed (2003) and Ross (2004b) also observe that countries with 'point resources', such as minerals, have a high propensity for

conflict, while Fearon & Laitin (2003) and Fearon (2005) argue that the risk of civil war is limited to oil. In general, oil-dependent countries have been shown to have a high risk of secessionist civil wars (Collier & Hoeffler, 2002b; Ross 2003b, 2004b).

There are reasons why oil dependence is particularly risky. Oil generates large location-specific rents for the states or groups that can control the territory where it is located. Dependence on such rents leads to exposure to shocks arising from world price volatility,

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errors are solely mine. The data used in the article and an appendix containing the questionnaire and related information can be found at <http://www.prio.no/jpr/> datasets. The data analyses employed Intercooled Stata 8.0. Correspondence may be sent to aderojuoyefusi@yahoo.com.

discoveries and exhaustion. These create multiple routes that link to civil conflict (Collier & Hoeffler, 2005).¹

According to Ross (2003a), the Niger Delta region of Nigeria² contains the key ingredients for a mineral-based conflict. It accounts for over 90% of the nation's oil revenue, and its gas reserves are now touted as the next great potential revenue-earner for the nation. But the region is populated by minority ethnic groups that have borne a disproportionate share of the cost of oil extraction for which they believe they have not been adequately compensated, and they have also suffered a high share of government repression. Unemployment and poverty levels are believed to be higher than the national average,³ while social services are abysmally low. Its swampy terrain also makes the region the most difficult and expensive to develop, while the dispersion of oil installations and infrastructure across the region increases the ease with which the processing and transportation of oil can be interrupted by locals (Ross, 2003b).

There have been attempts at secession in the Niger Delta. In early 1967, oil-related disputes motivated an insurrection by the Ijaw ethnic group.⁴ Less than a year later, the

country experienced a civil war (1967–70) that was remotely linked to oil. More recently, in the latter part of 2004, the Niger Delta People's Volunteer Force (NDPVF), an organization of Ijaw youths (officially tagged a 'rebel army' by the Nigerian government), engaged the Nigerian military forces in combat. At the same time, the federal government declared it had identified 16 ethnic militias in the region and discovered evidence linking some of the groups to external and internal collaborators.

There are many sides to oil and civil conflict in Nigeria (see Oyefusi, 2007, for example). This article concentrates on just one: what factors determine the probability that young adults in the Niger Delta will be willing to join rebel groups? To investigate this, I conducted a survey of 1,337 individual youths, questioning them about various factors proposed to be relevant for such a choice. This article reports the results of analyzing this dataset. The next section reviews related literature on the factors that motivate individuals to initiate or participate in rebellion, and, indeed, when rebellion may be expected to occur. A theoretical framework is then developed to predict the probability of willingness to participate as a function of individual- and community-level characteristics. I then test these predictions and draw some conclusions.

Greed, Grievance and Opportunity

Theoretical explanations of the link between natural resources and civil conflict have typically followed two approaches. 'Relative deprivation theories' link rebellion to atypical severe grievances arising from high levels of inequality, government repression and lack of political rights, or ethnic and religious divisions (Borjas, 1992; Goodhand, 2003; Cramer, 1999).

Rationalist theories, however, focus on the economic opportunities for rebellion that

¹ Ross (2004a) and Humphreys (2005) provide a detailed treatment of these mechanisms. Becker & Mauro (2006) show that commodity price shocks and volatility are important for developing countries.

² The Niger Delta is a wetland of about 70,000 sq km spread over a number of ecological zones along the Gulf of Guinea, and the third largest wetland in the world. Officially, it is made up of nine states (Abia, Akwa-Ibom, Bayelsa, Cross River, Delta, Edo, Imo, Ondo and Rivers) and has an estimated population of about 26.7 million. Six of these states (excludes Abia and Imo and Ondo) form the South-South geopolitical zone (SSZ) of Nigeria, an area where there are several minority ethnic groups. Some authors refer to these states as the 'geographical Niger Delta' in contrast to the official Niger Delta.

³ The household survey, conducted by the Federal Office of Statistics (FOS, 1996) Nigeria, puts poverty in the South-South region at 58.2%, the highest rate in the country.

⁴ The reference is to the 'rebellion' led by Issac Boro and some youths of Ijaw ethnic extraction in February 1967.

arise from availability of resources. These models are similar to Becker's (1968) economic model of crime and draw heavily on Grossman (1995) and Hirshleifer (1995). Rebellion can be modelled as an outcome of kleptocratic rivalry, an industry that generates profits from looting (Grossman, 1999) or a quasi-criminal activity (Collier, 2000). In these models, rebellion is motivated by greed and is assumed to occur only when rebels can profit from it.

There is now a consensus, however, that the greed–grievance dichotomy is limited in explaining the link between natural resources and civil war (Ballentine & Sherman, 2003; Collier & Hoeffler, 2002a; Collier et al., 2003: 89). Greed and grievance are symbiotic. Rebellion needs grievance to mobilize and overcome the severe constraints on entry (Collier, 2000). It also needs an adequate and continuous flow of revenue to finance its activities, a consideration that may make greed desirable or even necessary. Natural resource availability, particularly when the resource is 'lootable' and/or 'obstructable' (Ross, 2003b), provides a unique opportunity for rebellion irrespective of its motive (justice or loot-seeking) (Collier & Hoeffler, 2002a; de Soysa, 2002).

Collier & Hoeffler (2002a) and Fearon & Laitin (2003) provide two recent empirical investigations of the rational choice theories that explain rebellion as the outcome of rational decisionmaking, subject to the constraint of the labour market. The risk of rebellion increases as per capita income, educational level of the citizens and economic growth decline. This is attributable to the declining opportunity cost of violence (and the accompanying reduction in the supply of potential rebels, as in Collier & Hoeffler, 2002a) or to declining state capacity (as in Fearon & Laitin, 2003). According to Fearon & Laitin (2003), the supply of rebels increases if the state is 'weak' and cannot effectively

police its territory.⁵ On the other hand, higher income and higher educational attainment reduce the risk of political violence by encouraging political participation and channelling conflicts through institutional pathways rather than violence (Collier & Hoeffler, 2002a).

In the section that follows, I build upon these thoughts to develop a theoretical framework for the empirical analysis in the fourth section.

Theoretical Issues

This section draws upon the literature to provide a theoretical examination of the factors that are likely to determine youths' stated willingness to join a rebel group. It begins with a discussion of the rebel agenda in the Niger Delta region. It then predicts individuals' willingness to participate, as a choice that flows from consideration of expected benefits from rebel activities vis-à-vis the benefits from productive (legitimate) enterprise.

Rebel movements are traditionally thought of as fighting for either self-determination or state capture. However, the experience of the Niger Delta shows that the rebel agenda is not necessarily limited to these. Agendas may also change with time and even become unclear. For example, since the 1990s, civil conflict in the Niger Delta has not only been accompanied by increased violence, it has sent confusing signals (sometimes it is self-determination, at other times it is political recognition or 'resource control'). In spite of these, many believe that the rebel agenda in the region is to achieve measurable control by local communities over oil wealth and the extraction and production processes.

⁵ Other studies highlight the political dysfunctions of resource-dependent states (Ross, 1999; Karl, 1997; Mahdavy, 1970) or the geographical characteristics of the regions where resources are located (Gates, 2002) as contributory factors to the risk of civil war.

The risk of an armed struggle in the Niger Delta reached an all-time high in the first half of the present decade. The transition to democratic governance in 1999, the continuous call for a 'sovereign national conference' in the few years that followed and the prospects of a political reform conference in 2005 increased the agitations and militarized the struggle for local self-determination. Ethnic militias proliferated, and youth restiveness in the region became a national concern. It is believed that many of these armed groups established training camps in the creeks of the Delta, and it is feared that an increasing number of youths are joining these armed movements.

If rebel activities offer some benefits, and individuals can allocate their labour endowments either to productive activities or to rebellion,⁶ it can be assumed that the decision to join a rebel army by an individual would be based on a consideration of the expected benefits and costs. The benefits from joining a rebel group may consist of both pecuniary and non-pecuniary rewards (Gates, 2002). Pecuniary rewards would include wages and other tangible rewards paid from revenue from rebel activities, while non-pecuniary benefits relate to the satisfaction that flows from identifying with a given cause. Potential recruits may derive some psychological benefits from being seen as 'fighting for the cause of their people'. These benefits will tend to increase in personal grievance, which may be affected by a lack of gainful occupation; lack of personal economic and social access; environmental damages imposed by oil extraction and production activities on an individual's source of livelihood; physical, monetary and psychological costs imposed as a result of past experiences of violent conflicts; and other

traumatic experiences encountered by an individual or his community.⁷

Personal grievance may also be influenced by corporate or group grievance. For example, the absence of any government establishment or very low levels of social infrastructure in an individual's community of residence may create a feeling of corporate exclusion, which feeds into individual grievance. Also, an Ijaw may feel more personally aggrieved in relation to the sharing of the nation's oil wealth, since his ethnic group accounts for the largest share of Nigeria's oil production.

In the case of the Niger Delta, greater control over oil rents (in the event of rebel success) and revenues from looting and obstructing oil extraction, production and transportation processes, as well as kidnap ransoms in the course of executing rebellion, appear to be the main potential pecuniary benefits from rebel participation. These expected benefits may be assumed to increase if oil stocks are greater. It may also be assumed that an Ijaw may be more highly motivated by this expected benefit (since the ethnic group, by virtue of its relative size, stands to benefit the most from a successful rebellion in the region).

While some benefits accrue in the short period, a larger part may be conditioned on rebel success, in which case the value to the individual would depend on his estimation of the probability of rebel success and his subjective discount rate (attitude to risk). A projected high probability of victory raises the value of the benefit, while a strong risk aversion reduces its value to the individual. The probability of rebel success, on the other hand, will be influenced by such factors as the community's public good endowment and the size and effectiveness of government forces. A higher endowment of public goods

⁶ I assume, for simplicity, that rebellion and productive enterprise are full-time employments and are mutually exclusive.

⁷ Of course, the conflict history of a community may affect the disposition to armed rebellion through channels other than grievance: for example, by building up conflict capital or by creating a disincentive for further conflicts.

or infrastructure will reduce the probability of success or increase the risk of rebel participation, by making it more difficult for rebel forces to hide from government forces, and by increasing extractive firms' and communities' ability to take preventive measures against rebels' efforts to raise revenue through looting, obstruction of oil-related activities, etc. The risk will be reduced, however, when there is little or no government presence in a community, and/or when the community is distant from the state capital and has poor infrastructure, especially access roads.

The benefit derived from not joining a rebel force (i.e. engaging in productive labour) would be a function of the wage rate and the cost imposed by rebel activities on an individual's community of residence.⁸ For any individual, wage from productive labour would depend on the stock of human capital and/or physical capital and the economy's growth rate or the level of economic activities in the community of residence.

In general, income from productive work will be lower for individuals with smaller endowments of human and/or physical capital. Thus, for low levels of these endowments and abysmally low levels of income, potential benefits from rebel participation would exceed the benefits from productive work, in which case the agent will prefer to allocate the whole of his labour to rebellion. In contrast, a higher endowment of human and/or physical capital and a higher income level are likely to increase the individual's opportunity cost of rebel participation and make it optimal to employ labour in productive enterprise (Figure 1). In addition, some other non-monetary factors, such as marital or parental commitment, studentship or ongoing vocational training or apprenticeship,

and asset immobility, may increase the opportunity cost of rebel participation and thus reduce the probability that an individual will be willing to participate.

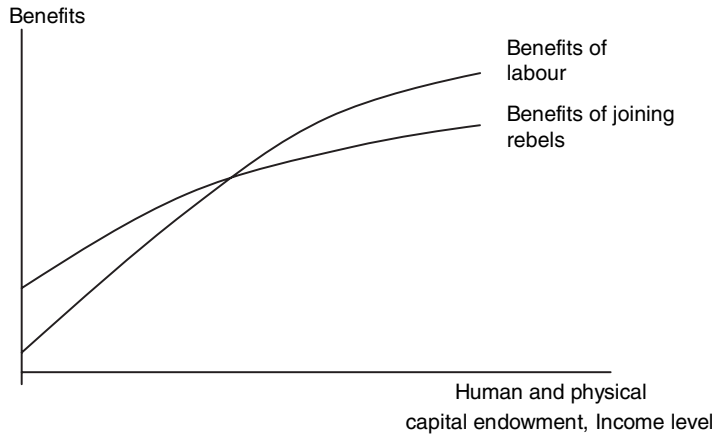
It is also possible for a potential rebel leader to employ pecuniary enticements, mobilize common collective identities or exploit personal grievances, thus manipulating the cost-benefit structure faced by an individual in a manner that makes participation the most highly valued option (Keen, 2000; Weinstein, 2005).⁹ Similarly, the government can raise the opportunity cost of rebel participation by adopting policies that stimulate and sustain growth or provide goods and services to the segment of the population that has the tendency to rebel. For example, in 2001, the Nigerian government launched the Niger Delta Development Commission (NDDC) with the sole objective of creating and executing a master plan for the overall development of the region. Again, in an attempt to defuse tension and secessionist tendencies, it introduced a system that transferred 13% of federally collected oil revenue to the oil-producing states.

When and where possible, the potential rebel leader could also employ 'terror' or 'punishment' as a disincentive to non-participation, while the government can introduce stiff penalties against civil disobedience and employ highly effective counter-insurgency measures to raise the cost of participation. Militias in the Niger Delta have often attempted to boost public perception of their military capabilities and ability to kidnap, terrorize or kill with impunity. As a measure of counter-insurgency however, the Nigerian government maintains

⁸ There are direct and indirect costs of rebel activities on individuals and communities. These include increased insecurity, reduced economic opportunities, reduced socio-economic activities as a result of increased military presence, etc.

⁹ For example, rebel participation in the Niger Delta region may be alluring. 'Oil bunkering' (stealing of oil) and kidnapping for ransom have been booming businesses in the region for some time. According to a report (Collier & Hoeffler, 2005), organized groups earn up to US \$1 billion per year from large-scale 'bunkering' in Nigeria, a situation the Nigerian government has only recently begun to address. Genuine grievances have also been exploited by various groups that are often antagonistic to each other.

Figure 1. Benefit and Cost of Rebel Participation for Given Human and Physical Capital Endowment



a military presence in the region (especially in Bayelsa, Delta and Rivers states) and has often employed the tools of repression. It also arrested the leaders of the NDVPF; its rival, Niger Delta Vigilante (NDV); and the Movement for the Actualization of the Sovereign State of Biafra (MASSOB).¹⁰

Empirical Analyses

The theoretical considerations above suggest that the probability of an individual being willing to participate in rebellion is a function of some individual-level characteristics, community-level factors and the extent of personal grievance. In this section, I provide a test of these assertions.

Survey Design and Data-Collection Methods

I focus on three states in the Niger Delta region: Bayelsa, Delta and Rivers. Taken together, these states account for the bulk of Nigeria's oil production. The incidences of violent conflict have also been especially concentrated in these areas in the last six to eight

years. Despite these common characteristics, there are some notable differences in ethnic compositions or patterns and local politics in the three states. For example, while Bayelsa and Rivers states are dominated by the Ijaws, Delta state is more ethnically polarized, with the Urobos having a larger representation than any other ethnic group. Again, since democratization in 1999, Rivers state, particularly, has experienced recurrent and large-scale violence linked to the activities of rival cult groups that are alleged to be sponsored and employed by local politicians (see Human Rights Watch, 2005). Bayelsa and Rivers states, especially, have become notorious for kidnapping and other oil-related violence while, until very recently, Delta state has been identified with ethnic violence over land ownership (recurrent violent clashes between the major ethnic groups in the state: the Urobos, Istekiris and Ijaws) and, hence, rights to royalties and oil rents.

Twenty-three communities were selected for the study from 12 local government areas (LGAs) drawn from the three states. The first phase of the field study involved a preliminary investigation of the selected communities and conducting focused group discussions (FGDs) and personal interviews with

¹⁰ These persons have been recently released on bail.

individuals and selected nongovernmental organizations (NGOs).¹¹ Only 18 (6 from each state) of the communities earlier selected were chosen for the second phase (see Appendix III). This phase involved administering 1,500 structured questionnaires to selected individuals using a systematic sampling technique. First, we selected some 'catchment areas' where youths could easily be found (e.g. community halls, car parks). Second, we determined the number of streets (or major streets) in the community and allocated a fixed number of questionnaires to each street. We then determined the residential houses/business premises to be visited using a simple formula $j = N/n$, where N is the number of residential houses/business premises in the street and n is the number of questionnaires to be administered in the street. In each of the places visited, a male of not less than 15 years old was interviewed.¹² Only one individual was selected from each premises.

¹¹ The first phase of the field survey was carried out over a period of two and a half months (February to early April, 2005), while the second phase covered a period of three and a half months from June 2005. Coincidentally, the country held a political reform conference during this period. In line with standard practice, research assistants were employed and trained for both phases before the actual survey. Questionnaires were used in both phases of the survey. However, the questionnaire used in the first phase served only as a guide. The questionnaire employed in the second phase was pre-tested on 25 respondents randomly selected from two communities in Delta state, after which some slight changes were made. For example, questions 11 and 13 in the questionnaire were introduced after the pre-testing. The two questionnaires, however, contain more information than is used in this study (not all the questions are represented by the variables in this section). Copies of the questionnaires, a list of organizations that participated in the first phase of the survey and a list of communities surveyed are posted along with the dataset as appendixes and can be downloaded at <http://www.prio.no/jpr/datasets>.

¹² While females (women) have been involved in oil protests in the Niger Delta in recent times, young males remain the best recruits for armed struggle (Collier, 2000; Elbadawi & Sambanis, 2000). The upper age limit set for an individual to qualify for selection is 50 years. Since the respondent's age could only be known accurately in the course of an interview, however, initial selection was by observation.

A percentage share of not more than 30 of the questionnaires assigned to each community were administered in the 'catchment areas'. In addition, 5 of the 18 communities surveyed in the second phase each had two cluster points.¹³ (These yielded a total of 23 'catchment areas'.) In order to avoid any bias arising from group influence, selected individuals in these areas were interviewed separately. At the end of the field survey, a total of 163 poorly completed questionnaires were rejected, leaving a functional sample size of 1,337. Table I provides a descriptive analysis of the sample.

Definition of Dependent Variable

The dependent variable (*rebel_participation*) is a dummy showing that the respondent indicated willingness to participate in an armed struggle for local resource control (see Question 21 in Questionnaire, Appendix IV).

Definition of Independent (Individual-Level) Variables

Ethnic A dummy which takes the value of 1 if the respondent is an Ijaw and 0 otherwise. The Ijaws constitute the largest ethnic group in the Niger Delta and the fourth-largest ethnic group in Nigeria.

Unemployment A dummy measuring the state of unemployment. It takes the value of 1 if the individual is currently unemployed and is not a full-time student or apprentice, and 0 otherwise.

Studentship A dummy indicating that the respondent is currently a full-time student in a formal educational institution or an apprentice in vocational training.

Education A discrete variable that measures the level of the respondent's formal

¹³ In these cases, the questionnaires assigned for this purpose were split (not necessarily equally) between the two.

Table I. Descriptive Statistics

<i>Variable</i>	<i>Mean</i>	<i>Std. dev.</i>
Rebel_participation	0.36	0.48
Education	1.52	0.75
Income	0.99	1.41
Asset	0.67	0.47
Asset immobility	0.58	0.49
Studentship	0.35	0.48
Marriage	0.63	0.48
Oilsize	9.67	10.34
Oilsizesqd	198.47	274.68
Ethnic	0.39	0.49
Government	0.39	0.76
Distance	8.23	9.21
Access	3.67	1.94
Unemployment	0.28	0.45
Grievance	1.76	0.53
Infrastructure	8.31	5.049
Farmoil	0.26	0.44
Conflict	1.61	1.46

educational attainment. The variable takes a value of 3 if the respondent completed tertiary education, 2 if the respondent completed secondary but not tertiary education, 1 if the respondent completed primary but not secondary education and 0 if the respondent has no formal education.

Marriage A dummy which takes on the value of 1 if the respondent is married and 0 otherwise.¹⁴

Asset A dummy that takes on the value of 1 if the respondent has a physical asset and 0 otherwise. Three types of assets are considered: landed properties and farmlands, motor vehicles and motor bikes, and machinery that could be used to generate income.

Asset immobility A dummy that indicates that the asset possessed is highly immobile.

Only two types of asset (landed properties and farmlands) are thus classified.

Farmoil A dummy whose value is 1 if the asset possessed is farmland and the respondent's community is endowed with oil.

Income The respondent's average monthly income if employed. The variable takes discrete values ranging from 1 to 7 depending on the respondent's income bracket. It takes a value of 1 if income is below N7,000 (about US\$58), 2 if within the range of N7,000 to N15,000 (about US\$116) ... and 7 if above N90,000 (about US\$750). The purpose of measuring income level by groups rather than absolute values is to avoid having a very large standard deviation for the variable relative to others (Long, 1997: 54).

Access A measure of the respondent's personal socio-economic access. It is a discrete variable derived by summing values on some measures, which include access to three basic amenities: pipe-borne water, modern toilet facilities and electricity. Others are access to

¹⁴ It is possible to make further distinctions, such as if divorced or separated, if married with children, etc. However, I assume that the distinction between married and unmarried is adequate for this study.

education (if respondent is of school age) or access to employment (by type), and access of children or siblings to secondary or primary education. The variable takes on values from 0 to 11.

Personal grievance A discrete variable measuring the extent to which the respondent feels personally aggrieved towards the Nigerian state or its institutions. The variable takes on a value of 0 if the respondent exhibits no personal grievance, 1 if the respondent shows a moderate grievance and 2 if the respondent exhibits a high grievance.

Independent (Community-Level) Variables

Oilsize Measures the size of oil endowment in the respondent's community of residence. The value is determined by the number of oil wells in the community and ranges from 0 to 31.

Oilsize² The square of *oilsize*.

Infrastructure A discrete variable that measures the extent to which the individual's community of residence is endowed with physical (social) infrastructure. The value is derived by summing up available tarred (paved) roads (measured in kilometres and scaled down by the minimum number of kilometres of tarred road in the communities covered), the number of functional public schools and hospitals, and other public projects such as town halls or recreational sites available in the community. It ranges from 2 to 22.

Government A discrete variable denoting the government's presence in the community. This is measured by the number of state or federal government establishments. Its value ranges from 0 to 2.

Distance A variable measuring the distance between the individual's community of residence and the state capital. The value is

based on the cost of transportation from the former to the latter. Actual costs are scaled down by the minimum transportation cost in the sample. The resultant data range from 1 to 43.33.

Conflict A variable measuring the extent to which the individual's community of residence has been exposed to violent conflicts. The value is determined by the number of violent conflicts the community has experienced in the last ten years from the date of the survey. A violent conflict is defined as one involving loss of life and/or property.

Delta state A geographic dummy indicating that the respondent's community is geographically located in Delta state.

Rivers state A geographic dummy indicating that the respondent's community is geographically located in Rivers state.

Grouping of Variables and Rationale

Following the theoretical literature, I attempt to group these variables into two groups: those that I perceive reflect the motivation for rebellion, and others that reflect opportunity (Table II). The sign (in parentheses) associated with each variable indicates the theoretical expectation of the relationship between the factor and the probability of an individual being willing to join a rebel group.

Not all of the variables subsumed under motivation in the table fit the greed–grievance dichotomy. For example, *ethnic* is classified under both greed and grievance and has an expected positive relationship with the probability of observing willingness to participate in rebellion in both instances. This may make it difficult to disentangle the greed or grievance effect of this variable on rebel participation. In addition, some variables that affect the likelihood of observing willingness through motivation (specifically *oilsize* and *infrastructure*) are also assumed to influence it through opportunity. For this reason, the

Table II. Classification of Variables

<i>Classification</i>	<i>Variables</i>
1. Motivation	
Greed	oilsize (+), ethnic (+)
Grievance	unemployment (+), farmoil (+), access (-), grievance (+), infrastructure (-), conflict (+), ethnic (+)
2. Opportunity	distance (+), government (-), infrastructure (-), oilsize (+), education (-), income (-), studentship(-), marriage (-), asset (-), asset immobility (-)

regression results for these three variables appear more than once in Table III. For example, the results for *ethnic* appear under both greed and grievance, while results for *oilsize* and *infrastructure* come under both motivation and opportunity.

Data Generation and Limitation

Data for these variables were generated directly from the questionnaires based on the codes attached to the options associated with a given question and also from the information gathered in the preliminary survey of communities. There are obvious limitations with this approach. For example, the decision on what should be the basis for measuring *access* and the weights attached to each of the factors employed is arbitrary. Again, the data on *infrastructure* basically ignore the quality of existing social infrastructures. Also, the *asset* dummy ignores the number or quantity of assets an individual may possess (e.g. an individual with one residential building is treated in the same way as one with two or more residential buildings) and the variation in the quality of each type of asset, while data on *oilsize* assume that a larger number of oil wells translates to a larger endowment of oil. In addition, the figures on the number of oil wells and data on *conflict* are taken as given by community leaders, with verification only where possible. It is also assumed that higher conflict episodes translate to higher physical,

monetary and psychological costs to individuals. These limitations stem from the absence (or inaccessibility) of official data on these variables. In spite of these limitations, I consider the dataset to be fairly adequate and reliable for the study.

Estimation Results: Determinants of Rebel Participation

Table III presents the estimated coefficients of the explanatory variables and the associated standard errors for the *logit model* on rebel participation. Since, theoretically, we are more likely to observe a larger propensity to rebel participation among respondents drawn from the cluster points, I used clustered analysis to obtain robust standard errors.

The diagnostic tests show that we can reject the hypothesis that none of the regressors determine the probability of observing a willingness on the part of an individual to join a rebel group. The final results (Model 9) reveal six individual- and four community-level characteristics that determine the probability of observing a willingness to participate. At the individual level, *income*, *education*, *marriage* and *asset immobility* reduce the probability of observing a disposition to rebel participation, while, contrary to theoretical expectations, *access* is found to increase this probability. The likelihood of observing willingness to participate also increases in *ethnic*.

Table III. Logit Regression on *rebel_participation*

<i>Explanatory variables</i>	<i>Versions</i>								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<i>Motivation: Greed</i>									
Oilsize	0.18 (0.041)	0.18 (0.041)	0.18 (0.040)	0.18 (0.040)	0.18 (0.040)	0.18 (0.043)	0.16 (0.047)	0.17 (0.046)	0.17 (0.046)
Oilsizesq	-0.0078 (0.0014)	-0.0078 (0.0014)	-0.0078 (0.0014)	-0.0079 (0.0014)	-0.0079 (0.0014)	-0.0079 (0.0014)	-0.0068 (0.0016)	-0.0067 (0.0015)	-0.0067 (0.0015)
Ethnic	1.056 (0.15)	1.056 (0.15)	1.062 (0.15)	1.064 (0.15)	1.063 (0.15)	1.063 (0.15)	1.08 (0.16)	0.81 (0.22)	0.84 (0.22)
<i>Motivation: Grievance</i>									
Unemployment	0.0017 (0.29)								
Farmoil	0.12 (0.29)	0.12 (0.27)	0.12 (0.27)						
Access	0.051 (0.027)	0.51 (0.027)	0.52 (0.027)	0.52 (0.027)	0.054 (0.026)	0.072 (0.027)	0.066 (0.028)	0.060 (0.028)	0.053 (0.026)
Personal grievance	0.22 (0.11)	0.22 (0.11)	0.22 (0.11)	0.27 (0.11)	0.23 (0.011)	0.21 (0.10)	0.20 (0.10)	0.20 (0.10)	
Infrastructure	-0.078 (0.024)	-0.78 (0.024)	-0.080 (0.023)	-0.080 (0.023)	-0.080 (0.024)	-0.076 (0.025)	-0.070 (0.027)	-0.073 (0.028)	-0.076 (0.027)
Conflict	0.018 (0.053)	0.018 (0.053)							
Ethnic	1.056 (0.15)	1.056 (0.15)	1.062 (0.15)	1.062 (0.15)	1.063 (0.15)	1.063 (0.15)	1.08 (0.16)	0.81 (0.22)	0.84 (0.22)
<i>Opportunity</i>									
Distance	0.039 (0.013)	0.039 (0.012)	0.038 (0.012)	0.038 (0.012)	0.039 (0.011)	0.039 (0.11)	0.042 (0.011)	0.044 (0.010)	0.044 (0.010)
Government	-0.23 (0.18)	-0.23 (0.18)	-0.23 (0.18)	-0.23 (0.18)	-0.23 (0.18)	-0.21 (0.17)			
Infrastructure	-0.078 (0.024)	-0.078 (0.024)	-0.080 (0.023)	-0.080 (0.023)	-0.080 (0.024)	-0.076 (0.025)	-0.070 (0.027)	-0.073 (0.028)	-0.076 (0.027)

(continued)

Table III. (Continued)

Explanatory variables	Versions								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Oilsize	0.18 (0.041)	0.18 (0.041)	0.18 (0.040)	0.18 (0.040)	0.18 (0.040)	0.18 (0.043)	0.16 (0.047)	0.17 (0.046)	0.17 (0.046)
Education	-0.41 (0.11)	-0.41 (0.11)	-0.42 (0.11)	-0.42 (0.12)	-0.43 (0.12)	-0.44 (0.10)	-0.45 (0.11)	-0.47 (0.10)	-0.45 (0.12)
Income	-0.43 (0.075)	-0.43 (0.028)	-0.43 (0.029)	-0.42 (0.30)	-0.43 (0.031)	-0.46 (0.045)	-0.47 (0.047)	-0.46 (0.041)	-0.46 (0.044)
Studentship	0.23 (0.25)	0.22 (0.22)	0.23 (0.22)	0.24 (0.21)	0.22 (0.20)				
Marriage	-0.52 (0.17)	-0.52 (0.17)	-0.52 (0.17)	-0.51 (0.16)	-0.52 (0.16)	-0.54 (0.14)	-0.51 (0.15)	-0.51 (0.15)	-0.50 (0.15)
Asset	-0.15 (0.16)	-0.15 (0.16)	-0.15 (0.16)	-0.15 (0.16)					
Asset immobility	-0.76 (0.25)	-0.75 (0.25)	-0.75 (0.25)	-0.70 (0.15)	-0.82 (0.078)	-0.81 (0.082)	-0.83 (0.087)	-0.87 (0.084)	-0.85 (0.082)
<i>Geographic dummies</i>									
Rivers state	0.71 (0.39)	0.71 (0.41)	0.71 (0.41)	0.71 (0.40)	0.72 (0.40)	0.74 (0.42)	0.66 (0.41)		
Delta state	1.48 (0.40)	1.48 (0.40)	1.46 (0.40)	1.47 (0.39)	1.45 (0.37)	1.46 (0.38)	1.50 (0.38)	1.08 (0.34)	1.061 (0.34)
Observations	1,340	1,340	1,340	1,340	1,340	1,340	1,340	1,341	1,341
Pseudo R ²	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.26	0.26
Log pseudo-likelihood	-641.99	-641.99	-642.021	-642.15	-642.33	-643.19	-645.51	-650.49	-651.70

Robust standard errors in parenthesis. Models 2 through 9 progressively omit the least significant variable in previous model. The final model (9) contains only variables that are significant at the conventional 5% level. All regressions include an intercept. The estimates for *oilsize*, *ethnic* and *infrastructure* appear more than once to highlight that they are classified under more than one theoretical category.

At the community level, *oilsize* and *distance* increase the probability of observing a willingness to participate in rebellion, while *infrastructure* constrains willingness to participate. Though the *government* variable has the expected negative sign, it is not found to be statistically significant. While the results indicate that the probability of observing a willingness to participate would decline as *oilsize* becomes infinitely large, within the range of data used (for this sample) the probability increases monotonically with *oilsize*, but at a slightly decreasing rate. Thus, oil availability appears to have a corrupting influence on the disposition to civil peace among youths – an influence that grows with the size of endowment.

The *delta state* dummy is also significant in the final model, suggesting that institutional factors, geography, ethnic compositions or patterns, and local politics might matter for rebel participation in Nigeria's Niger Delta. It will, however, require further study to see how these factors affect the willingness of youths to join rebel groups.

From the results, *personal grievance* does not appear to explain the probability of observing a disposition to rebel participation among youths (though the variable is significant at the 10% level). To determine whether the overall dataset provides a systematic and rational explanation of grievance in the population and thereby check the validity of the data on *personal grievance*, I estimate an ordered logistic regression model with the latter as the dependent variable (McKelvey & Zavoina, 1975) (Table IV).

The results show that we can safely reject the hypothesis that none of the regressors determine *personal grievance*. The estimated thresholds (cutpoints) that distinguish between no grievance and low grievance and between low and high grievance levels are also highly significant, thus justifying the use of the model and the choice of the three

outcomes. Seven variables systematically explain *personal grievance* in the final model (Model 4). Grievance falls with *access*, *infrastructure* and *income* but increases with *farmland*, *education*, *asset* and *ethnic*. While the positive statistical influence of *access* on rebel participation in Table III raises questions, the variable appears to explain *personal grievance* well.

The positive effect of *education* on *personal grievance* is both surprising and interesting. It suggests that higher educational attainment brings increased awareness that tends to generate grievance when the factors that are capable of producing it are present. The high significance of *ethnic* also tends to lend empirical support to the close, sometimes inseparable, connection between grievance and greed in motivating rebellion, while the statistical significance of *farmland* suggests that grievance may be linked in part to the negative effects of oil exploration and production activities on individuals' farmlands. Even though the positive effect of *asset* on grievance violates theoretical expectation, this may be due to the fact that the majority of assets owned by individuals in the sampled population (over 50%) are actually farmlands.

The general results (Tables III and IV) appear to suggest that grievance is not sufficient in itself to create a disposition to rebel participation among youths in the Niger Delta. Most of the factors that explain *personal grievance*, such as *infrastructure*, *ethnic*, *education* and *income*, also influence the probability of willingness to participate in rebellion. But, from the classification in Table II and the expected theoretical relationships, they appear to determine the latter via opportunity.

The non-significance of unemployment in explaining either *personal grievance* or the probability of being willing to join a rebel group is somewhat surprising (this variable is, in fact, the least significant in the estimation: Model 1, Table III). However, this may be due to the strict definition of unemployment

Table IV. Ordered Logit Regression on *personal grievance*

Variables	Versions			
	(1)	(2)	(3)	(4)
Oilsize	0.011 (0.0065)	0.0084 (0.0065)		
Ethnic	0.91 (0.14)	0.90 (0.14)	0.92 (0.14)	0.91 (0.14)
Unemployment	0.22 (0.12)	0.19 (0.12)	0.18 (0.12)	
Farmoil	0.26 (0.14)	0.28 (0.14)	0.37 (0.14)	0.35 (0.14)
Access	-0.21 (0.40)	-0.21 (0.40)	-0.21 (0.40)	-0.22 (0.41)
Infrastructure	-0.10 (0.013)	-0.099 (0.012)	-0.093 (0.010)	-0.09 (0.010)
Government	0.17 (0.12)			
Education	0.50 (0.20)	0.51 (0.20)	0.51 (0.20)	0.52 (0.20)
Income	-0.15 (0.068)	-0.14 (0.067)	-0.143 (0.066)	-0.16 (0.062)
Asset	0.30 (0.12)	0.30 (0.18)	0.26 (0.12)	0.27 (0.12)
τ_1	-3.37 (0.23)	-3.43 (0.24)	-3.44 (0.25)	-3.52 (0.23)
τ_2	-1.82 (0.21)	-1.89 (0.23)	-1.90 (0.23)	-1.98 (0.22)
Observations	1,347	1,347	1,347	1,347
Pseudo R^2	0.080	0.08	0.08	0.08
Log pseudo-likelihood	-733.72	-735.029	-735.39	-735.85

The τ_i are the ancillary parameter estimates of the thresholds or cutpoints that distinguish between the various outcomes. Robust standard errors in parentheses. Columns (2) through (4) progressively omit the least significant variable in previous model. The final model (4) contains only variables that are significant at the conventional 5% level.

assumed (persons that are currently out of a job, not students, not farmers or artisans, and not enrolled as apprentices in any field). A quick look at the descriptive analysis (Table I) shows that less than 30% of the sample population fit this description. Again, the duration of unemployment may matter more than the state of unemployment for the willingness to participate in rebellion.

It is interesting to note how changes in *oilsize*, *income*, *education* and *infrastructure* individually influence the probability of having a disposition to rebel participation. In

Table V, I report standardized coefficients and odd ratios for these variables.

While a unit increase in *oilsize* (the discovery of an additional oil well), other variables remaining constant, increases the odds of being willing to join a rebel group by a factor of 1.18 (18%), a unit increase in income level (all other factors remaining the same) reduces it by 37%, while a unit increase in educational attainment reduces the odds by 36%. These compare favourably with the marginal effect of increases in infrastructural endowment in reducing the odds of willingness to

Table V. Standardized Coefficients, Odd Ratios and Disposition to Rebel Participation

Variable	β	β^{y*}	β^z	Odds
Income	-0.46	-1.70	-2.40	0.63
Education	-0.45	-1.67	-1.25	0.64
Oilsize	0.17	0.63	6.51	1.18
Infrastructure	-0.076	-0.28	-1.41	0.93

β is an unstandardized coefficient; β^{y*} is y^* standardized coefficient (where y^* is the unobserved latent variable describing the propensity to rebel participation) and β^z is a fully standardized coefficient (Scott, 1997: 128–129). Estimates are from Model 9 (Table III).

participate in rebellion (a unit increase, other factors remaining constant, reduces the odds of willingness to participate by just 7%).

Conclusion

The cardinal objectives of this article are to test the theoretical explanations of the motivation for rebellion in resource-based societies and to examine the kinds of factors that present rebel opportunity, using the Niger Delta region of Nigeria as a case study. With the exception of personal access, unemployment, studentship, conflict history and government presence, the variables used to reflect motive and opportunity are found to meet theoretical expectations and to be statistically significant in determining the probability of willingness of youths to join rebel groups.

Oil availability appears to have a corrupting influence on the disposition to civil peace, and this influence increases where oil stocks are greater. But, contrary to popular assumption, grievance, though pervasive, does not seem to have a highly statistically significant effect. Some of the factors that determine personal grievance, such as income and infrastructure, tend to explain the probability of having a disposition towards rebel participation via opportunity rather than through grievance. Also, unemployment does not appear to statistically influence grievance level nor determine the probability of observing a willingness to participate in rebellion. This

may be due, however, to the strict definition of unemployment assumed in this study and/or failure to account for the duration of unemployment. In addition, personal access (though robust in its ability to explain grievance) is found to positively influence the probability of observing a disposition to rebel participation, a result that is contrary to theoretical expectation. Asset immobility, rather than asset possession, appears to matter more for rebel participation.

While further studies using alternative datasets would be required to get a clearer understanding of how grievance and its determining factors may influence rebel participation in the Niger Delta, the findings from this article suggest that strategies to achieve long-lasting civil peace must go beyond grievance, to address individual-level factors that determine the opportunity cost of participation in violence and community-level factors that create an opportunity to profit from extreme forms of civil disobedience. Fortunately, as the analyses reveal, some of these will also help strategies to address grievance.

References

- Addison, Tony; Philippe Le Billon & Syed M. Murshed, 2003. 'Conflict in Africa: The Cost of Peaceful Behaviour', *Journal of African Economics* 11(3): 365–386.
- Ballentine, Karen & Jake Sherman, eds, 2003. *The Political Economy of Armed Conflict:*

- Beyond Greed and Grievance*. Boulder, CO: Lynne Rienner, for the International Peace Academy (47–60).
- Becker, Gary S, 1968. 'Crime and Punishment: An Economic Approach', *Journal of Political Economy* 76: 169–217.
- Becker, Torbjörn & Paolo Mauro, 2006. 'Output Drops, and the Shocks That Matter', IMF Working Paper WP06172 (imf.org/external/pubs/ft/wp/2006/wp06172.pdf).
- Borjas, George, 1992. 'Ethnic Capital and Intergenerational Mobility', *Quarterly Journal of Economics* 107(1): 123–150.
- Collier, Paul, 2000. 'Rebellion as a Quasi-Criminal Activity', *Journal of Conflict Resolution* 44(6): 839–853.
- Collier, Paul; Lani Elliot, Håvard Hegre, Anke Hoeffler, Marta Reynal-Querol & Nicholas Sambanis, 2003. *Breaking the Conflict Trap: Civil War and Development Policy*. Oxford: Oxford University Press, for the World Bank.
- Collier, Paul & Anke Hoeffler, 1998. 'On Economic Causes of Civil War', *Oxford Economic Papers* 50(4): 563–573.
- Collier, Paul & Anke Hoeffler, 2002a. 'Greed and Grievance in Civil Wars', Oxford University, Centre for the Study of African Economies, WP 2002–01 (<http://www.csae.oxiac.uk/workingpaper/pdfs/2002-011ext.pdf>).
- Collier, Paul & Anke Hoeffler, 2002b. 'The Political Economy of Secession', manuscript, World Bank, 30 June (<http://www.worldbank.org/ogmc/pdfs/Paul-Collier.pdf>).
- Collier, Paul & Anke Hoeffler, 2005. 'Resource Rents, Governance, and Conflict', *Journal of Conflict Resolution* 49(4): 625–633.
- Cramer, Christopher, 1999. 'Civil War Is Not a Stupid Thing: Exploring Growth, Distribution and Conflict Linkages'. London: School of Oriental and African Studies, WP 73 (<http://mercury.soas.ac.uk/economics/workpap/adobe/wp73.pdf>).
- de Soysa, Indra, 2002. 'Paradise Is a Bazaar? Greed, Creed, and Governance in Civil War, 1989–1999', *Journal of Peace Research* 39(4): 395–416.
- Elbadawi, Ibrahim & Nicholas Sambanis, 2000. 'Why Are There So Many Civil Wars in Africa? Understanding and Preventing Violent Conflicts', *Journal of African Economies* 9(3): 244–269.
- Fearon, James D., 2005. 'Primary Commodities Exploits and Civil War', *Journal of Conflict Resolution* 49(4): 483–507.
- Fearon, James D. & David D. Laitin, 2003. 'Ethnicity, Insurgency, and Civil War', *American Political Science Review* 97(1): 75–90.
- Federal Office of Statistics (FOS), 1996. 'Annual Abstract of Statistics, 1996 Edition'. Abuja: Tonem, for Federal Office of Statistics.
- Gates, Scott, 2002. 'Recruitment and Allegiance: The Micro-Foundations of Rebellion', *Journal of Conflict Resolution* 46(1): 111–130.
- Goodhand, Jonathan, 2003. 'Enduring Disorder and Persistent Poverty: A Review of the Linkages Between War and Chronic Poverty', *World Development* 31(3): 629–646.
- Grossman, Herschel, 1995. 'Insurrection', in Keith Hartley & Tod Sandler, eds, *Handbook of Defence Economics, Vol. 1*. Amsterdam: Elsevier (199–212).
- Grossman, Herschel I., 1999. 'Kleptocracy and Revolutions', *Oxford Economic Papers* 51: 267–283.
- Hirshleifer, Jack, 1995. 'Anarchy and Its Breakdown', *Journal of Political Economy* 103(1): 26–52.
- Human Rights Watch, 2005. 'Rivers and Blood: Guns, Oil and Power in Nigeria, Rivers State', A Human Rights Watch Briefing Paper, February 2005 (<http://hrw.org/backgrounders/africa/nigeria0205/>).
- Humphreys, Macartan, 2005. 'Natural Resources, Conflict, and Conflict Resolution: Uncovering the Mechanism', *Journal of Conflict Resolution* 49(4): 508–537.
- Karl, Terry L., 1997. *The Paradox of Plenty: Oil Booms and Petrol States*. Berkeley, CA: University of California Press.
- Keen, David, 2000. 'Incentives and Disincentives for Violence', in Mats Berdal & David Malone, eds, *Greed and Grievance: Economic Agencies in Civil Wars*. Boulder, CO: Lynne Rienner (19–41).
- Long, J. Scott, 1997. *Regression Models for Categorical and Limited Dependent Variables*, Advanced Quantitative Techniques in the Social Sciences Series. London: Sage.
- McKelvey, Richard D. & William Zavoina, 1975. 'A Statistical Model for the Analysis of Ordinal Level Dependent Variables', *Journal of Mathematical Sociology* 4: 103–120.

- Mahdavy, Hossein, 1970. 'The Pattern and Problem of Economic Rentier States: The Case of Iran', in M. A. Cook, ed., *Studies in the Economic History of the Middle East*. London: Oxford University Press (428–467).
- Oyefusi, Aderoju, 2007. 'Oil-Dependence and Civil Conflict in Nigeria', Centre for the Study of African Economies, University of Oxford, WP 2007–09 (<http://www.csae.ox.ac.uk/workingpapers/pdfs/2007–09text.pdf>).
- Ross, Michael L., 1999. 'The Political Economy of the Resource Curse', *World Politics* 51(2): 297–322.
- Ross, Michael, L., 2003a. 'Nigeria's Oil Sector and the Poor', paper prepared for the UK Department for International Development (DFID) 'Nigeria: Drivers of Change' Programme (<http://www.sscnet.ucla.edu/polisci/faculty/ross/NigeriaOil.pdf>).
- Ross, Michael L., 2003b. 'Oil, Drugs and Diamonds: The Varying Role of National Reserves and Civil War', in Karen Ballentine & Jake Sherman, eds, *The Political Economy of Armed Conflict: Beyond Greed and Grievance*. Boulder, CO: Lynne Rienner (47–60).
- Ross, Michael, L., 2004a. 'How Does Natural Resource Wealth Influence Civil War? Evidence from 13 Cases', *International Organization* 58 (Winter): 35–67.
- Ross, Michael, L., 2004b. 'Mineral Wealth and Equitable Development', Background Report for the World Development Report 2006.
- Weinstein, Jeremy M., 2005. 'Resources and the Information Problem in Rebel Recruitment', *Journal of Conflict Resolution* 49(4): 598–624.

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