Negative Economic Shocks and Militant Formation

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Do poor economic conditions cause militant campaigns? Conventional wisdom suggests negative economic shocks should increase the likelihood of rebel campaigns and civil conflict, but existing research finds little to no support for this claim. This paper suggests these results arise for two reasons. First, scholars conflate when campaigns form and when campaigns escalate to war. Second, scholars tend to ignore militant campaigns that never intensify into civil conflicts. I argue negative economic shocks increase the probability militant campaigns initially form, but these effects dissipate before a campaign ever transitions to civil war. Using original data on the timing of 944 militant campaigns between 1970 and 2007, I estimate the effect of export commodity price shocks on the probability of formation. I test the underlying mechanisms by seeing (1) how labor and oil market shocks affect the probability different campaigns form and (2) how these shocks affect campaign dynamics over time. The results show shocks increase the probability of formation due, in part, to hampering the state's repressive capacity. However, the lag time between formation and civil conflict reduces the long-term effect of these events. These findings advance understanding about the causes of militancy and risks of economic shocks.

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1 Introduction

Do poor economic conditions increase the likelihood of militant campaigns? The evidence is decidedly mixed. In some cases, weak states breed opportunities for militant campaigns and civil conflict due to poverty and weak repressive apparatuses.[1] In other cases, poor economic development is relatively uncorrelated with militant conflict (Abadie 2006; Krueger and Laitin 2008; Piazza 2006).

These findings couch a larger debate about whether worsening economic conditions precipitate militancy. Scholars argue negative economic shocks should increase the probability of these violent campaigns because shocks lower the opportunity costs to fighting. As evidence, scholars show negative shocks increase the likelihood of terrorist and guerrilla violence (Piazza 2006; Dube and Vargas 2013). However, other research has found little to no empirical support for the shock-conflict link, raising doubts about this relationship (Djankov and Reynal-Querol 2010; Bazzi and Blattman 2014). The perpetrators behind these terrorist, insurgent, and rebel campaigns – armed groups – are often one and the same. So what explains these conflicting results?

This paper shows these results arise for two reasons. First, there is a selection bias in existing results. By focusing on civil conflict as the outcome variable, scholars overlook the multitude of militant campaigns that never escalate into full-blown civil conflicts. Second, scholars fail to disentangle different stages of militant campaign activity. Armed groups often organize for years before civil wars erupt, but existing research typically studies their resulting militant campaigns once civil wars begin.[2] Militant campaigns evolve through distinct phases, punctuated by the intensity of violent activities at each stage. If scholars conflate campaign formation with the transition to civil, they mask the different underlying mechanisms precipitating each stage of conflict.

I argue that negative shocks increase the probability of formation, but have little to on

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[1]See, for example, Fearon and Laitin (2003), Hegre and Sambanis (2006), and Blattman and Miguel (2010)

[2]Lewis (2016) and Larson and Lewis (2018) are two notable exceptions that disentangle militant campaign dynamics.

effect on the trajectory of these campaigns, including whether or not they escalate to civil war. Building on existing research, shocks increase the probability of formation because they reduce the opportunity costs to fighting, can provide a focal point for mobilization, and impair the state's ability to detect and respond to emerging militant threats.[3]

At the same time, shocks may not directly increase the risk of civil war onset for two reasons. First, an armed group requires a certain amount of capabilities to intensify its campaign violence to the point of civil war, but acquiring this strength often takes time. The transitory nature of an economic shock makes it difficult for a armed group to amass the capabilities to intensify its campaign activities to civil war before the shock's effect dissipates. Second, shocks may reduce the entry barriers to form, but have little effect on the transition to low-intensity conflict or civil war. In order to understand these later transitions, scholars must instead consider the strategic interactions between a particular armed group and the state it faces (Malone 2019).

Using original data on the timing of 944 militant campaigns between 1970 and 2012 and variation in export commodity price shocks, I estimate how negative price shocks affect the transition to different stages of militant campaigns. I show that negative price shocks increase the probability of militant campaign formation, but there is no consistent effect of economic shocks on the transition to civil conflict.

I test the underlying mechanism through two additional analyses. First, I explore the opportunity cost mechanism by estimating whether labor bases mobilize militant campaigns in response to labor market shocks at a significantly higher rate than non-labor bases. Second, I trace the evolution of different armed groups in Nigeria in the late 1990s to examine the long-term effects of shocks on campaign dynamics. The results provide little support for the opportunity cost mechanism. Rather, shocks increase the probability of militant campaigns by reducing the state capacity's to deter formation. At the same time, these effects tend to dissipate before militant campaigns ever escalate to civil war.

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[3]See, for example, Miguel, Satyanath, and Sergenti (2004), Chassang and Miquel (2009), and Dube and Vargas (2013).

These findings make two contributions to economic development and civil war research. First, the findings identify an under-appreciated source of variation in conflict research between campaign formation and escalation. Conflating militant formation and civil war onset creates a potential temporal mismatch between theory and empirics. Scholars risk underestimating the indirect causes of civil conflict that arise through formation. By analytically decoupling these stages, scholars can develop new theories to better understand what factors precipitate different stages of militant campaigns. Second, the findings demonstrate the need to better examine the strategic interactions between militants and the state. Cross-national conditions can explain where conflicts are most likely to form, but theoretical understanding of how and why these conditions affect militant-state behavior is ripe for development. Greater attention to the incentives and strategies of armed groups and state actors can push scholarly understanding of civil war to new depths.

2   Conceptual Framework of Militant Campaigns

Most armed groups operate violent campaigns for years before transitioning to civil war highlights a key source of variation in the evolution of militant campaigns: formation is generally distinct from the transition to civil war onset. What scholars traditionally deem civil war 'onset' is not the start of a new conflict, but a shift in the intensity of an ongoing campaign.

Using original data collected on pre-war phases of militant campaigns, I find that militant campaigns that eventually surpass the 25-battle death threshold for civil war spend an average of 6.96 years conducting low-intensity violent attacks before the transition to war.[4] Militant campaigns that eventually surpass the 1000-battle death threshold for civil conflict spend an average of 5.41 years in this pre-war phase.

While some militant campaigns conduct violent attacks for years before escalating, most

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[4]This statistic comes from data recorded on the timing of militant campaigns in the Armed Group Dataset (Malone 2020).

campaigns never evolve into larger civil conflicts. By focusing on civil conflict as the primary dependent variable to test the shock-conflict question, scholars limit their analysis to a small subset of cases. This selection bias can explain, in part, the lack of consistent findings in the literature.[5]

A failure to disentangle different campaign stages can bias model estimates about the causes of civil conflict. For example, delayed effects can arise when risk factors affect the probability of an earlier campaign stage, but dissipate over time. If models do not examine the causes of earlier campaign stages, then they will underestimate the effect of variables that *indirectly* cause civil conflict.

A more precise conceptualization envisions militant campaigns as encompassing three distinct phases of operations from formation to abatement. I differentiate what stage an campaign is in by whether its armed group perpetrators are acting as conspirators, bandits, or rebels. Conspirators are non-violent and clandestine, bandits engage in low-level violent militant attacks, and rebels engage in civil war levels of violence with the state.

Transitioning between these phases often requires amassing enough capabilities to intensify violent operations against the state (Figure 1). As an armed group's relative strength increases, it is able to stage more violent attacks. The magnitude of these violent attacks correspond to a shift in campaign operations.

This conceptualization has several implications for theories of militancy and political violence. Formation likely depends on the expected costs of mobilization and other entry barriers. Here, country-level conditions may better predict formation patterns because some states are better at entry deterrence than others. In contrast, campaign attacks and escalation to civil war depend more on the strategic interactions between an armed group and the state it faces.

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[5]This problem is similar to one found in interstate conflict research. A central challenge this literature has been the selection bias between which dyads are at risk for conflict and which actually escalate. Comparing escalation patterns across dyads with different propensities for conflict risks underestimating when and how these conflicts can occur. The solution was to disentangle different stages of conflict and identify what conditions made certain dyads disposed for rivalry and then what conditions made these rival dyads more likely to experience militarized disputes or interstate war (Diehl 1992; Reed 2000; Lemke and Reed 2001).

Figure 1: **Three Stages of Militant Campaign**. An armed group evolves through several distinct stages of activity as its relative strength changes. Armed groups in the incipient stage are relatively weaker than the state. Armed groups in the civil war stage ('rebels') engage in more violent attacks than armed groups in the low-level violence stage ('bandits') and those in the non-violent latent stage ('conspirators').
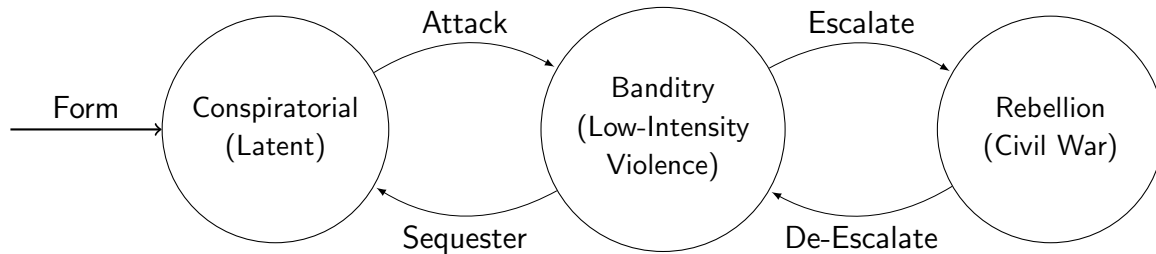
I build on a growing set of research to suggest these early campaign events are a distinct, but important, part of understanding militancy.[6] When a militant campaign initially forms, its organizers are often weak and susceptible to destruction if discovered. In order to survive, armed groups in this stage are often conspiratorial. They have incentives to avoid state detection and refrain from the use of violence while they secretly mobilize support for their cause. The time it takes to acquire resources and attract supporters while avoiding state detection often creates a lag in when a militant campaign first emerges and when its conducts enough violent attacks to meet the criteria for civil war. This carves out a pre-war campaign stage where conditions can shift, changing the probability of civil war onset.

In some cases, an armed group might skip a campaign stage. If an armed group initiates violence immediately upon formation, then it skips the latency stage of its campaign. If a conspiratorial campaign prepares long enough, then its members might accumulate sufficient capabilities to immediately transition to civil war.

In other cases, armed groups never transition their campaigns out of a particular stage. Civil war is a relatively rare occurrence, but low-level political violence is not. Most campaigns never transition to the rebel stage, but instead remain in the bandit stage of operations. Some campaigns cycle back and forth between non-violent and low-level violent

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[6]See, for example, Findley and Young (2012), Lewis (2016), Larson and Lewis (2018), and Bartusevicius and Gleditsch (2019).

operations.

Conceptualizing formation as analytically distinct from civil war onset is important to further understanding the causes of these conflicts. The following sections illustrate how disentangling these two stages can better illuminate the causes of militant campaigns. It can also help differentiate between the short-term and long-term risks of economic shocks.

3 Economic Shocks, Formation, and Civil War

The lag between formation and civil conflict generates a concern that existing models of militant campaigns erroneously discount time-varying factors, like economic or political shocks. These factors could affect earlier stages of a militant campaign like formation, but dissipate long before civil war erupts. Conversely, these conditions could affect the transition to civil war, but have relatively little effect on when or why a militant campaigns forms. This section theorizes why these disparate effects might arise in the context of negative economic shocks.

I argue worsening economic conditions could catalyze militant campaign formation by lowering the opportunity costs to formation, weakening the state's capacity to immediately deter a new campaign, and providing a focal point for mobilization. However, it may not lead to a concurrent increase in the probability of war because the shock's effect dissipate before an armed group amasses the capability to transition to civil war.

I build on existing research that the mechanisms underlying the shock-civil conflict relationship can also explain why militant campaigns form. If negative economic shocks lower the opportunity costs to launch a rebellion, then they should also lower the opportunity costs sufficiently to form any militant group. Shocks could precipitate militant formation by lowering the opportunity costs to formation.[7]

The opportunity cost mechanism argues worsening economic conditions increase the

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[7]In the rest of this section, I develop these explanations in the context of negative economic shocks, but the logic could also be extrapolated to explain the impact of political shocks on militant campaign dynamics.

probability of formation because it lowers the opportunity costs to fighting (Miguel, Satyanath, and Sergenti 2004; Besley and Persson 2008; Chassang and Miquel 2009). Negative shocks lower the export revenue from a given commodity, sparking a drop in disposable income. The loss lowers the perceived opportunity costs to fighting because individuals have less to sacrifice if they take up arms. Shocks mobilize individuals to support militant campaigns, increasing an armed group's capabilities, and enabling the group to overcome the initial entry barriers to formation.

Similarly, shocks can serve as a focal point that helps individuals overcome the collective action problem in deciding whether or not to mobilize (Kuran 1991; Lichbach 1998). This can make coordination efforts easier, enabling individuals to assemble.

In contrast, the state capacity mechanism argues that negative economic shocks undermine the state's counterterrorism and counterinsurgency effectiveness (Fearon and Laitin 2003; Ross 2006). States rely on key detection, monitoring, and policing capabilities to deter and respond effectively to emerging militant threats. Poor economic conditions cause the state to lose tax revenues on export flows. This loss in revenue hampers the state's ability to collect intelligence, equip security forces, and deter new armed groups from materializing.

Negative economic shocks may also affect a state's ability to deter militant campaigns from forming. Since the negative consequences of a shock dissipate over time, the state cannot credibly agree to accommodate potential militant demands in order to deter formation because the armed group fears the state will repress it once the state recovers (Fearon 2004; Dal Bo and Powell 2009). This shock creates a commitment problem that increases the risk of militant formation.

Concurrently, shocks may not directly increase the risk of civil conflict for two reasons. First, the decision to form a group is much less costly than the decision to initiate violence and transition to civil war. An armed group requires a certain amount of capabilities to launch an insurgency and transition to civil war, but acquiring these capabilities often takes time. The transitory nature of an economic shock can make it difficult for an armed group

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to surpass this organizational threshold within a given window of opportunity. Amassing capabilities often takes time, but armed groups face detection and destruction by state forces the longer they operate. For example, hit-and-run guerrilla attacks against military posts can help an armed group accumulate weapons to fight, but these attacks can also reveal information about its existence making its campaign vulnerable to counterterrorism and counterinsurgency operations.

Second, states often have incentives to deter and confront armed groups when they first emerge. If the state believes militant campaigns will evolve into stronger threats in the future, then the state may allocate counterterrorism and policing resources to weaken – and potentially destroy – militant campaigns shortly after formation. These efforts can degrade a campaign's strength and delay its likelihood of escalating.

For example, after the Arab Spring unleashed a wave of conflict in Syria and Libya, it was thought political instability in these countries could spur demonstration effects in other countries. It did. Shia militant groups in Bahrain – like Saraya al-Ashtar Saraya Mukhtar, Saraya al-Kasar, Saraya Waad Allah, Saraya al-Muqawama al-Shabiya, formed in 2012 and 2013, demanding the same goals of regime change as others throughout the Middle East. Concurrently, shocks in neighboring countries also incentivized states like Bahrain to increase policing and repression efforts to stabilize its own rule. These activities made it harder for Shia militants to grow strong enough to spark a civil war the way militants in other countries had done.

Similarly, the state may be able to recover from a shock and eventually allocate resources to respond to a militant campaign. If an armed group cannot accumulate enough capabilities to survive the state's response by the time the shock dissipates, then the campaign may be destroyed before ever transitioning to civil war.

Collectively, these challenges can explain why a lag often arises between when an militant campaign forms and when, if ever, it transitions to civil war. Even if a shock catalyzes militant formation, its effect may dissipate or be overcome by other events affecting the risk

of civil war.

4   Empirics

This section tests how negative economic shocks affect the likelihood of campaign formation relative to civil war onset. If models do not separately examine when campaigns form, then they will erroneously discount the effect of time-varying factors on militancy. This lagged effect would then explain why empirical evidence for the economic shock-civil conflict relationship is mixed.

I assess these intuitions by examining whether economic shocks have differential effects on the evolution of armed group campaigns. The outcome variable is based on when a militant campaign forms. For comparison, I also replicate existing work by examining when a militant campaign escalates to civil war (Malone 2020). The population of armed groups and their campaigns come from the Armed Group Dataset (AGD), which records organizational information about the activities of 1,202 armed groups operating in 127 countries between 1970 and 2012. An armed group is defined as an organized and independent group of non-state actors that justify their use of violence in the pursuit of political control against the state.[8] It is included in the dataset if it commits at least one act of political violence during this timeframe.

The dataset records key information about when an armed group forms, when it initiates violence, and when – if ever – its campaign activities intensify enough to surpass the violence threshold demarcating civil conflict. A group often forms when it first organizes as an independent organization. This often takes the form of initial political meetings, signing manifestos, or other proclamations denoting the group's existence. In cases where this information is missing, the dataset records a group's formation based on the date it first initiates violence. As a robustness check, I recode formation based solely on when a group

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[8]In practical terms, this means we do not examine the conflict propensity of state-sponsored militias, criminal organizations, or apolitical organizations.

initiates violence and find nearly identical results.

In order to measure different phases of a militant campaign, I focus on when an militant campaign forms and when a militant campaign first surpasses the 25-battle death threshold. I use data on armed groups between 1970-207 from the AGD and the Uppsala Armed Conflict Dataset to identify a set of 944 relevant militant campaigns. I collapse this group-level information to the country-level by creating a binary variable for whether any militant campaign forms or transitions to civil war in a given country-year . The correlation between formation and civil war is 0.26. Approximately 28% of the 944 militant campaigns eventually escalate to civil war (Malone 2019).

Figure 2 shows the mean occurrence of militant campaign formation at the country-year. If militant campaign formation is driven by time-varying factors like shocks, then we might expect to see a relatively low mean occurrence. A singular shock causes a large number of campaign within a country to form. If campaign formation occurs under more idiosyncratic conditions, then we might expect to see a relatively larger rate of occurrence.

The mean frequency of militant group formation varies substantially across countries. Throughout Asia, the Middle East, and Sub-Saharan Africa, militant groups tend to occur relatively infrequently. This would suggest groups emerge in sudden or short-wave bursts of activity. In cases with a high proportion of militant group formation, ongoing conflicts create permissive conditions for militant campaigns to form across multiple years. Militant formation occurs more frequently in states with long-standing historical conflicts like the Northern Ireland conflict in the United Kingdom, the Israel-Palestine conflict, or the three different civil wars in Chad.

I measure worsening economic conditions using data on export commodity price shocks.In the most robust series of tests on the shock-conflict relationship to date, Bazzi and Blattman (2014) use new data on export price shocks for 65 different commodities in 118 countries from 1957 to 2007. They find across a series of different specifications that negative economic shocks have no corresponding effect on conflict onset but weakly affect conflict duration.

Figure 2: **Distribution of Formation Variable**. The mean occurrence of militant campaign formation at the country-year level across countries that experience at least one civil war during the 1970-2012 time period with 95% confidence intervals. The dependent variable is a binary variable measuring whether any militant campaign forms in a given year. If a country never experiences militant violence, the point estimate is zero.
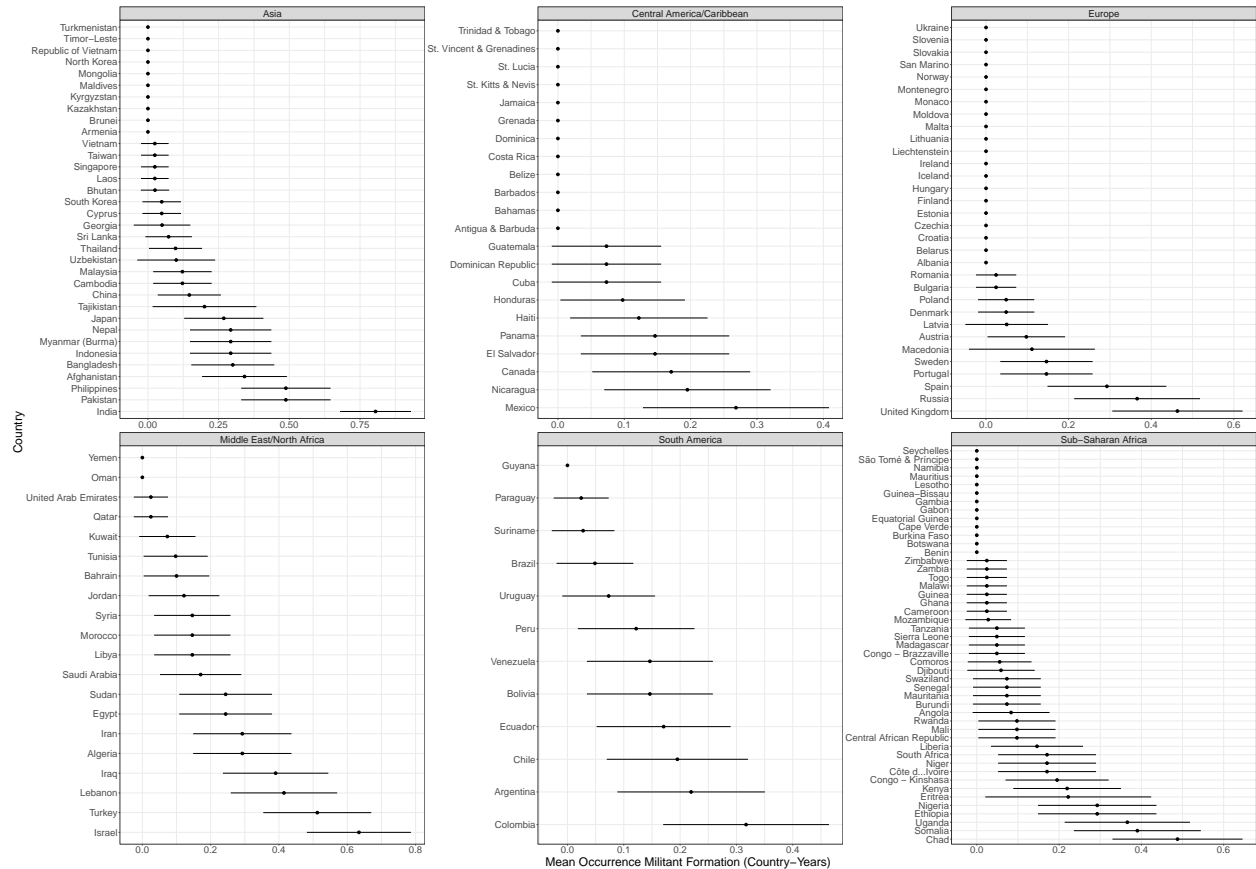
Nevertheless, commodity shocks provide a relatively exogenous source of variation to incomes within a country and are a popular instrumental variable in econometrics research (Bruckner and Ciccone 2010; Dube and Vargas 2013). The dataset records price changes for different classes of good then creates a composite measure based on the country's relative export dependence of that commodity.

The independent variable is the change in export commodity price indexes between year t and year $t - 1$. The price index is measured as a "geometric average of of all commodity

export prices weighted by lagged export shares" (Bazzi and Blattman 2014).[9] The indicator is scaled such that a negative price index change corresponds to less income for the exporting country and worsening economic conditions. Since the indicator is the first difference in pricing, the mean is zero and the standard deviation is one. In order to control for serial correlation, I include lagged versions of the independent variable that adjust for previous shocks.

An omitted variable concern is the conflict environment in which militant campaigns form or escalate to civil war. A larger number of pre-existing campaigns could decrease the risk of militant campaign formation due to inter-group competition for resources. If an existing armed group is already fighting against the government, it may be easier for individuals to join that group's campaign rather than try to build their own. More campaigns could also make it harder to transition to civil war. The outbidding logic in terrorism research suggests that groups may fight each other in order to reduce competition for resources (Crenshaw 1981). Internecine fighting undermines a campaign's ability to acquire enough resources to transition to civil war because it must compete against other groups.

Alternatively, more militant groups could increase the risk of campaign formation and civil war. If the state has a finite amount of counterinsurgency resources to expend, then as the number of pre-existing militant campaigns grow, the state can devote fewer resources to every threat. This can reduce the entry barriers to formation and enable weaker than normal groups to form independent of a shock. More militant groups can also increase the risk a campaign transitions to civil war. If the state does not allocate enough resources to repress a group, the campaign may be able to exploit this miscalculation and escalate its campaign. I include a logged count of the number of other militant campaigns operating in the country based on data in the AGD. The number of pre-existing campaigns range from 0 to 70 with a mean of 1.89. Given these variables, there is enough information to test how economic shocks affect different phases of a militant campaign.

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[9]See Bazzi and Blattman (2014) p. 7-8 for more on their data collection efforts.

4.1 Results and Discussion

I estimate the relationship between worsening economic conditions and different stages of militant campaigns using a linear probability model. The key comparison is whether disentangling militant campaign formation from the transition to civil war results in different outcomes. If economic shocks have differential effects, then we expect worsening conditions to only drive militant campaigns to form. Specifically, we expect a negative relationship between a change in the price index and the probability of group formation. There should be no discernible effect on whether a militant campaign escalates to civil war or not.

The full estimating equation includes measure of the current shocks and lagged versions of the shock in order to adjust for time-dependence and autocorrelation. I multiply the outcome variable by 100 in order to improve the interpretability of the results.

I also control for country-invariant factors that could affect the probability of civil war by including country fixed effects. I also include year fixed effects to control for common global shocks like the fall of the Soviet Union or economic recession that could overall affect the rate of campaign formation and war onset. Finally, I also include country-specific time trends. If the prevalence of civil war has been increasing over time as some data suggests, then adding a linear time trend that varies by country will adjust for this. The findings are included in Table 1.

Model 1 presents a baseline model of price shocks on the probability of campaign formation. The coefficient for a shock in the last year is negative and statistically significant indicating an inverse relationship between economic conditions and militant campaign dynamics. In other words, a one-unit index drop in commodity prices is associated with a 1.05 percentage point increase in the probability of formation. The lagged effect of a shock from two years ago is statistically significant, but the coefficient size is not substantially different.

Model 2 re-estimates the results adding a control variable for the number of pre-existing militant campaigns in the country. The principal result does not substantially change. The coefficient on the logged number of militant campaigns is negative; a 1% increase in the the

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Table 1: **Effect of Economic Shocks on Militant Campaigns**. This is linear probability model examining whether militant campaign forms or transitions to civil war in a given country year. The outcome variable is multiplied by 100 in order to ease interpretability. The independent variable is the export price shock of a given commodity measured by how much the price changes over one year and weighted by that country's export dependence on a given good.

| | Model 1 | Model 2 | Model 3 | Model 4 |
OUTCOME	PR(FORM)	PR(FORM)	PR(WAR)	PR(WAR)
PRICESHOCK$_t$	−1.05**	−1.03**	−0.08	−0.06
	(0.48)	(0.47)	(0.26)	(0.27)
PRICESHOCK$_{t-1}$	−0.53	−0.58	−0.30	−0.28
	(0.46)	(0.46)	(0.26)	(0.26)
PRICESHOCK$_{t-2}$	−1.14**	−1.16**	−0.14	−0.11
	(0.54)	(0.55)	(0.19)	(0.19)
LN(NOMILITANTS)$_{t-1}$		−4.39*		7.57***
		(2.53)		(1.62)
Country FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Country-Specific Time Trend	Y	Y	Y	Y
R^2	0.25	0.25	0.16	0.17
Adj. R ^{2}	0.20	0.20	0.10	0.11
Num. obs.	4210	4098	4210	4098
RMSE	30.65	30.74	19.69	19.76

***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. DV multiplied by 100. SE clustered by country.

number of militant campaigns is associated with a 5% decrease in the probability a new militant campaign forms the following year. This would suggest that a larger number of pre-existing militant campaigns deters new campaigns from forming and pose their own set of entry barriers.

Model 3 uses the same baseline specifications as Model 1, but changes the dependent variable to whether or not the militant campaign transitions to civil conflict in a given year. Consistent with expectations, there is no significant relationship between a price shock and the probability of civil war. Further, the point estimate is almost close to zero. An analysis of variance test between Model 1 and 3 shows statistically significant differences between the two models. Price shocks explain a larger proportion of the variation in militant campaign

formation than they do for civil conflict.

Model 4 examines whether these results are driven by an omitted variable bias by including a measure for the logged number of militant campaigns. There is again no evidence that changing economic conditions affect the probability of civil war, consistent with prior findings. The point estimate is negative, but close to zero and statistically insignificant. In contrast to Model 2, the coefficient on pre-existing militant campaigns is positive and statistically significant. As the number of pre-existing militant campaigns in a country increases, the probability at least one of them escalates their campaign to civil war is increasing. This provides suggestive evidence that the dynamics governing militant campaigns differ across stages. It also highlights the need for future research to unpack why a particular variable might have very different effects on the evolution of militant campaigns.

Overall, these results provides suggestive evidence that price shocks affect militant campaign formation, but not civil war onset. This has two consequences. First, it provide evidence that negative economic shocks might weakly affect militant formation by impeding the state's ability to detect a threat. Second, since shocks are transitory events, it suggests civil conflicts occur under different conditions than militant formation.

4.2   Alternate Explanations and Robustness Checks

I run a series of robustness checks to check against alternate explanations. These checks include alternate specifications of the formation variable and price shocks. An alternate explanation is that formation dynamics are intrinsically different from the decision to use violence. While an armed group might have broad discretion on when it chooses to form, the decision to use violence depends on how the group interacts with the state. Structural risk factors are less likely to determine when initial violence begins because there are other idiosyncratic or unobservable factors driving this decision-making.

I use an alternative measure of the dependent variable that focuses on the decision to initiate violence rather than just the decision to form. If negative price shocks make it more

likely individuals will begin to use violence, then they should also affect the decision to use violence. The results are similar to those in Table 1. Negative price shocks increase the probability a militant campaign initiates violence. However, the coefficient sign is still not largely different from the non-significant results suggesting a weak relationship at best.

Another explanation is that the results are spurious because they do not account for consumption shocks. The opportunity cost mechanism suggests negative price shocks should make consumption patterns harder to maintain because it changes the amount of disposable income consumers have on hand. If demand does not shift in response to changes in export revenues, then the result could be spurious. I include consumption shocks by interacting food and fuel price shocks with country fixed effects to allow for consumption patterns to change over time. Adjusting for consumption shocks does not change the results and, in fact, leads the coefficient for the one-year lagged economic shock on militant campaign formation to grow in magnitude.

A second competing explanation is that measurement error could drive the results. The time span here (1970-2007) is more restrictive than the time span studied in previous shock-civil war studies (1957-2007). If patterns of militancy were more sporadically tied to global shifts in commodity prices between 1957-1970, then the results in Model 1 of Table 1 could be interpreted as spurious. However, each model contains country-varying time trends to control for this issue. Further, in the appendix, I remove these time trends and find no change in the the results.

The different robustness tests here and additional ones in the Appendix all lead to a similar conclusion: negative economic shocks weakly increase the probability of militant formation. Economic shocks make it easier to initially organize militant campaigns, but are often not sufficient to precipitate full-scale civil wars.

5 Testing the Mechanisms

This section examines which mechanisms drive the shock-formation relationship. It first examines whether changing opportunity costs or changing state capacity incentivize militant campaigns to form. It then turns to examine how economic shocks affect the short-term and long-term trajectory of different militant groups.

5.1 Opportunity Costs and Labor Mobilization

The opportunity cost and state capacity mechanisms make competing predictions about what types of shock should facilitate militant formation. They also make predictions about what types of armed groups should be more likely to form in response to these shocks. I combine disaggregated commodity data with organizational data on a militant campaign's initial recruitment base to see which mechanism is at play.

The opportunity cost mechanism implicitly assumes only shocks to labor-intensive sectors, like agriculture or perennial goods, trigger this outcome because personal incomes fluctuate in response to market price changes (Dal Bo and Dal Bo 2011; Dube and Vargas 2013). Negative agricultural and perennial shocks foster mobilization. Changing opportunity costs may reduce the opportunity costs to fighting and attract more supporters, but they may not increase an armed group's relative capabilities.

The state capacity mechanism assumes shocks to highly-taxed industries like oil, natural gas, and other extractive resources should increase the risk of formation (Fearon 2005; Bazzi and Blattman 2014). Negative extractive shocks decrease the relative strength of the state, weakening their ability to deter militant campaigns from forming. I disaggregate economic shocks by whether they affect annual agricultural exports (wheat, corn, soybean), extractive exports (oil, natural gas, coal), or perennial exports (wood, coffee, cocoa) using data from Bazzi and Blattman (2014).

In addition, these shocks should have differential effects on the *types* of militant campaigns

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that form. If the opportunity cost mechanism is correct, certain social bases should be more likely to form militant campaigns in reaction to these shocks. For example, labor communities should be more sensitive to negative agricultural shocks because these sectors tend to be more labor-intensive. Youth groups may also be more sensitive to shocks that affect labor-intensive sectors (**cincotta˙security˙2003**; Urdal 2004). Shocks reduce employment opportunities for students and other youth groups, reducing their opportunity costs to mobilizing a response against the state. In contrast, if the state capacity mechanism is correct, then characteristics of the armed group are less relevant. The social base of an armed group does not determine their sensitivity to a given shock. A summary of these predictions are in Table 2.

Table 2: **Predicted Relationship between Shock Type and Militant Type** The predicted relationship between a commodity price shock and militant group type. Negative shocks to labor-intensive sectors (e.g. agriculture) should increase the probability of labor-based formation, but have no effect on other groups. Negative shocks to less labor-intensive sectors (e.g. oil and gas) should increase the probability of both labor and non-labor based formation.

Shock Type/Militant Type	Labor Base	Non-Labor Base
Agricultural Shock (More Labor-Intensive)	(-)	N/A
Extractive Shock (Less Labor-Intensive)	(-)	(-)

In order to test these predictions, I use additional information from the AGD on the different types of militant campaigns. Building on recent data collection efforts like the Foundations of Rebel Group Emergence dataset, the AGD codes the initial social base of each militant campaign. In many cases, militant campaigns emerge from pre-existing social networks like political parties, religious communities, student groups, or labor unions. This study focuses on groups that assemble around labor and non-labor bases. I measure whether a labor-based campaign forms based on whether it primarily recruited from labor communities, peasants, farmworkers, students, or youth groups in a given country year. I consider all other militant campaigns to be non-labor based. There are 80 country-years where a labor-based militant campaign forms and 647 country-years where a non-labor

militant campaign forms.

If the opportunity cost mechanism is correct, then we expect to see a relationship between agricultural shocks and the probability of labor-based militant formation. If the state capacity mechanism is correct, then we expect to see a relationship between extractive shocks and any militant formation. The results are in Table 3.

Table 3: **Effect of Disaggregated Commodity Shocks on Labor and Non-Labor Based Militant Formation**. This is linear probability model examining whether a militant campaign forms or transition to civil war in a given country year. The outcome variable is whether a militant campaign forms around a particular social base in a given year.

Initial Social Base	Model 1 Pr(Labor)	Model 2 Pr(Labor)	Model 3 Pr(Non-Labor)	Model 4 Pr(Non-Labor)
PRICESHOCK_AGRICULTURALGOODS$_t$	-0.37	-0.39	-1.21^{**}	-1.17^{**}
	(0.24)	(0.25)	(0.58)	(0.58)
PRICESHOCK_AGRICULTURALGOODS$_{t-1}$	-0.21	-0.23	-0.49	-0.53
	(0.20)	(0.20)	(0.56)	(0.56)
PRICESHOCK_AGRICULTURALGOODS$_{t-2}$	-0.04	-0.06	-1.66^{***}	-1.66^{***}
	(0.21)	(0.22)	(0.61)	(0.63)
PRICESHOCK_EXTRACTIVEGOODS$_t$	-0.13	-0.15	-1.37^{**}	-1.33^{*}
	(0.23)	(0.24)	(0.69)	(0.68)
PRICESHOCK_EXTRACTIVEGOODS$_{t-1}$	-0.40^{*}	-0.41^{*}	-0.28	-0.32
	(0.24)	(0.24)	(0.65)	(0.65)
PRICESHOCK_EXTRACTIVEGOODS$_{t-2}$	-0.04	-0.04	-1.66^{**}	-1.68^{**}
	(0.21)	(0.21)	(0.79)	(0.80)
PRICESHOCK_PERENNIALGOODS$_t$	0.19	0.20	-0.52	-0.46
	(0.22)	(0.23)	(0.52)	(0.54)
PRICESHOCK_PERENNIALGOODS$_{t-1}$	-0.30	-0.28	-0.22	-0.30
	(0.19)	(0.19)	(0.48)	(0.47)
PRICESHOCK_PERENNIALGOODS$_{t-2}$	-0.08	-0.05	-0.13	-0.14
	(0.13)	(0.14)	(0.57)	(0.59)
LN(NOMILITANTS)$_{t-1}$		-2.93^{***}		-1.52
		(0.99)		(2.42)
R^2	0.11	0.12	0.22	0.22
Adj. R^2	0.05	0.05	0.17	0.17
Num. obs.	4210	4098	4210	4098
RMSE	12.71	12.69	29.44	29.57
Country FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Country-Specific Time Trend	Y	Y	Y	Y

$^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$. DV multiplied by 100. SE clustered by country.

Models 1 and 2 test whether negative economic shocks affect the probability of labor-based militant formation. There is no evidence for the opportunity cost mechanism. The coefficient

on agricultural price shocks is in the expected direction, but the results are not statistically significant. Labor bases do not seem to mobilize in response to price shocks more likely to affect them. A drop in agricultural export prices may increase the probability of militant formation, but the effect size is not discernible from zero. These null results are not unexpected. Other cross-national research has found unemployment and youth bulges are relatively uncorrelated with civil war risk (Fearon 2011; Berman et al. 2011).

In contrast, Table 3 provides some support for the state capacity mechanism. The coefficient on extractive price shocks is both in the expected direction and statistically significant. When shocks hamper the state's ability to detect or respond to emerging militant groups, it enables labor bases to mobilize in response and launch a militant campaign.

For comparison, Model 3 and 4 look at the probability non-labor bases mobilize in response to economic shocks. They provide further evidence for the state capacity mechanism. A one unit drop in the price index for an export commodity like oil is associated with a 1.33 percentage point increase in the probability of militant formation.

Surprisingly, the coefficient on agricultural price shocks is also significant and statistically significant. Non-labor bases mobilize in response to price shocks less likely to directly affect them. This result could arise for two reasons. First, it is possible that there is measurement error in the social base of militant groups. While the indicator measures the primary social base which mobilizes a militant campaign, groups may recruit from other bases. Some bases are unknown. Further, if unemployment drives sensitivity to labor-intensive shocks, then other social bases with higher unemployment rates – such as refugees or returning foreign fighters – might also react to these shocks. Second, it possible that non-labor bases are indirectly affected by agricultural price shocks. In labor-rich countries, agricultural shocks could harm local economies if a loss in disposable income means other sectors within the country suffer. Further disaggregating the social bases which mobilize militant campaigns can better help explain this result.

Overall, the results consistently suggest that labor and non-labor bases mobilize in

response to oil price shocks, consistent with a state capacity mechanism. In oil rentier states, oil shocks are more likely to harm the state's capacity to field an effective counterterrorism and counterinsurgency response, reducing the barriers to formation. There is mixed evidence for the opportunity cost mechanism. The most likely candidates to mobilize in response to changing opportunity costs do not, but non-labor bases do.

5.2   Short-Term versus Long-Term Effects

While the statistical results provide suggestive evidence that negative price shocks affect formation, but not conflict onset, they cannot explain why these effects vary over time. In order to better trace these transitory effects, I turn to process-trace how one price shock affected the evolution of Nigerian armed groups in the 1990s.

If the shock-formation logic is correct in this case, then we expect to see at least two observable phenomenon arise. First, negative shocks should increase the probability of militant formation because of changes to the state's capacity. Second, economic shocks should only have a transitory effect. Even if the state's repressive capacity is temporarily hampered, the state should soon recover and be able to launch counterterrorism or counterinsurgency operations against these new militant campaigns.

I specifically examine the evolution of all militant campaigns that operated in Nigeria from 1994 to 2004 according to the Armed Group Dataset. For each campaign, I examined under what conditions they formed, how their campaigns fared, and whether, if ever, they escalated to civil war. A summary of these campaigns are in Table 4.

The table highlights a few trends about the Nigerian militant campaigns active during this period. First, although there are at least 9 unique militant campaigns, only two – Al-Sunna Wal Jamma and the Niger Delta's People Volunteer Force – ever become violent enough to reach the violence threshold to demarcate rebel campaigns or civil conflict. If scholars only looked at what groups escalate to civil conflict, then they would miss the conditions driving lower-level militant campaigns.

Table 4: **Timing of Nigerian Militant Campaigns, 1994-2004.** A summary of all militant campaigns that operated in Nigeria between 1994 and 2004. The dates of campaign transitions are demarcated by what year a militant campaign forms, when it conducts its first violent attacks, and what year it surpasses the 25-battle death threshold for civil conflict. While all militant campaigns conduct at least one attack, not all evolve into civil wars.

| | Year of Campaign Transition | | |
Group Name	Formation	First Attack	Civil Conflict
Odua People's Congress	1994	1999	
Al-Sunna Wal Jamma	1995	2003	2004
Western MEND	1997	2003	
Egbesu Boys	1998	1998	
Ijaw Youth Council	1998	1999	
Niger Delta Vigilante Force	1998	2003	
Movement for Actualization of the Sovereign State of Biafra	1999	2001	
Niger Delta's People Volunteer Force	2003	2004	2004

Second, the militant campaigns that emerge are all very similar to each other. Except for Al-Sunna Wal Jamma, a radical Islamist campaign in northern Nigeria, the main groups that form during this period are concentrated in the Niger Delta. The armed groups behind this campaign are quite similar to each other – ethnonationalist autonomy-seeking campaigns, fighting against the government to increase oil revenue-sharing and protect local rights (Watch 2005; Florquin and Berman 2005). Several groups – Western MEND, Ijaw Youth Council, and Egbesu Boys – formed around unemployed youth groups in the region. These organizational similarities suggest a particular set of structural conditions arose in the 1990s to drive this type of formation.

Third, the majority of groups in this time period formed in a relatively short period of time between 1997 and 1999. Three campaigns formed in a single year suggesting a common shock. Why?

I find that a major oil price shock in 1997 catalyzed the formation of Western MEND, the Egbesu Boys, Ijaw Youth Council, and Niger Delta Vigilante Force because the state reneged on its commitment to increase the Niger Delta's oil revenue allocation and invest in the region's economic development.

The main point of contention between militant campaigns in the Niger Delta and the federal government is oil. Since its discovery in 1956, the Nigerian government has become increasingly reliant on oil as its principal source of revenue. Under federal law, oil revenues are divided between oil-producing and non-oil-producing communities through a principle of derivation.

This allocation system has continuously disadvantaged oil-producing states in the Niger Delta. Even though oil-producing states in Nigeria export 90% of Nigeria's oil revenue, they only received 19.3% of the allocated revenue (Idemudia and Ite 2006, 397). This makes the Niger Delta region relatively poor. 51% of the Delta population lives on less than USD \$2/day (Newsom 2011). Conditions have also worsened over time. During the oil boom of the 1980s and 1995, the government mismanaged the increased oil revenue, reduced the Delta's revenue proportion and concentrated the oil wealth in the hands of political elites (USAID/Nigeria 2010). As economic conditions fomented discontent and relative deprivation in the Delta region, the risk of conflict began to rise. In response, the Nigerian Federal Government pledged to increase oil revenue to Niger Delta states under the Oil Mineral Producing Areas Development Commission. The government's promise was sufficient to placate potential militant campaigns from forming.

Peace did not last. Because Nigeria's economic depends on a single commodity, "the economy drifts on a sea of oil, blown by the capricious winds of international energy markets" (Lewis 2004, 99). This problem is exacerbated by government corruption, resulting in "no steps to guard against future revenue falls by investing abroad or creating an oil stabilization fund" (Manby 1999).

These conditions made Nigeria vulnerable to oil price shocks when they came to pass. The problem emerged in 1997 when OPEC countries simultaneously increased their oil production, flooding the market with cheap oil, and driving down prices (Mabro 1998). Prices fell from a peak of \$18/barrel in 1996 to a low of \$10/barrel in 1998 (Mabro 1998; Manby 1999).

Around the world, oil exporting countries saw their expected revenues drop from the shock. Nigeria was no exception. Abdulsalami Abubakr later noted the shock only resulted in 62% of the country's expected revenue, severely hampering their planned policies (Manby 1999). Since the government budget had already operated along such thin margins, there was little room to maneuver a response.

Within Nigeria, violence began to brew. As oil revenue dropped, the Nigerian government reneged on its pledge to increase revenue allocation under the Oil Mineral Producing Areas Development Commission. Instead, it began redirecting the funds to a separate Petroleum Special Trust Fund in 1997, undermining the original agreement. By 1998, the original agreement between Niger Delta states and the federal government was "moribund" (Manby 1999).

This policy change catalyzed militant formation. Starting in March 1997, youth groups seized several oil flow stations in the port town of Warri. Youth groups demanded the government address their grievances and redirect oil revenue to local development projects. Violence spread throughout the region as this group and other youth groups took up arms against the state (Watch 2005). Western MEND formed after the Warri Crisis to pursue their own militant campaign against (Florquin and Berman 2005). In late 1997 or 1998, the Egbesu Boys formed followed closely by the Niger Delta Vigilante. In 1998, a cluster of Ijaw youth assembled one of the largest opposition groups in the region, the Ijaw Youth Council (Florquin and Berman 2005).

Figure ?? plots the year-to-year changes in oil export prices relative to the number of new groups that formed in Nigeria. It demonstrates that a decline in oil prices in 1997-1998 correlated with a spike in new militant groups the following years.

Even though a large number of militant campaigns formed between 1997-1998, these militant campaigns never intensified in violence enough to lead to civil war. The historical record suggests this occurred because the effects of oil price shocks only lasted about a year.

Figure 4 shows an autocorrelation function (ACF) plot of oil price shocks over a 15-year

Figure 3: **Price Shocks and Militant Formation in Nigeria, 1990-2005.** This plot shows how changes in oil price shocks and new militant campaigns in Nigeria correlated over time.
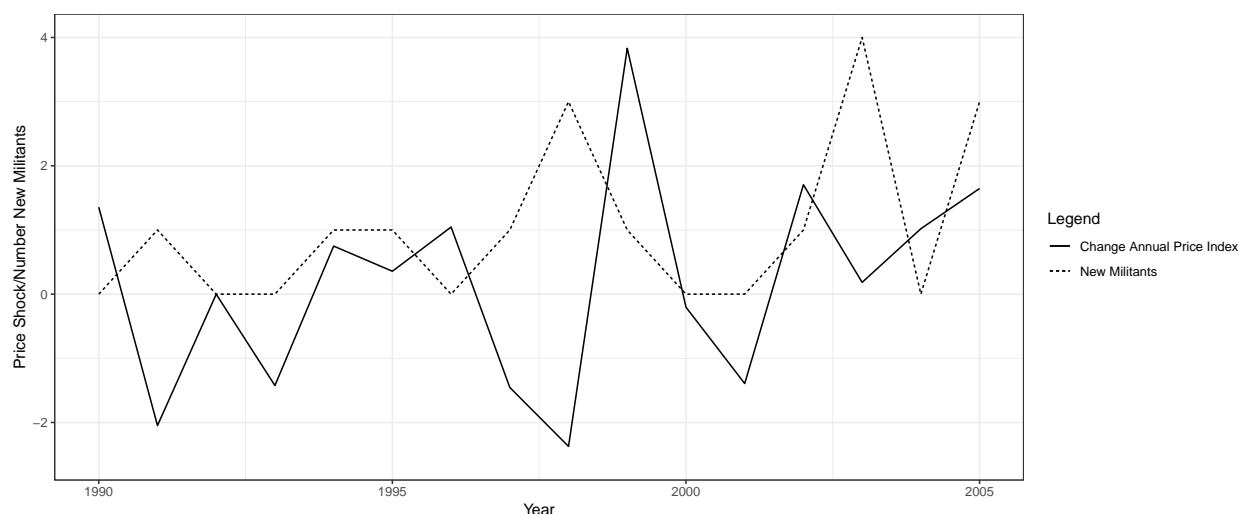

period in Nigeria. An ACF plot shows trends between price shocks in year zero and successive years. When there is strong correlation across successive periods, the ACF plot shows a large positive correlation with the year zero. This would indicate price shocks persist over time. When the data is relatively uncorrelated, the ACF plot will show a scattered or stochastic pattern between successive price shocks. A Box-Ljung test fails to reject the null hypothesis that changes in price shocks are significantly different from white noise.

Within Nigeria, there is little evidence of strong autocorrelation immediately following the price shock. Any shocks tend to dissipate or even reverse within the first two years, implying that oil-dependent economies tend to rapidly recover from these shocks. Even after the 1997-1998 price shock, Nigeria soon recovered. After reaching a low of $13/barrel in 1998, prices doubled, rebounding to $27/barrel in 2000. Concurrently, the Nigerian government began to mobilize a response to the proliferating armed groups in the Niger Delta.

In late 1998, military forces moved in to the Bayelsa and Riverine states (Watch 1999). There, Nigerian security forces set-up a military occupation and began cracking down on militant supporters. In some cases, this provoked armed groups to fight back in response like

Figure 4: **ACF Plot of Oil Price Shocks in Nigeria, 1990-2005** An autocorrelation function plot of oil price shocks in Nigeria. The plot shows the effect of changes in oil prices do not persist over time, but tend to dissipate soon after their occurrence.
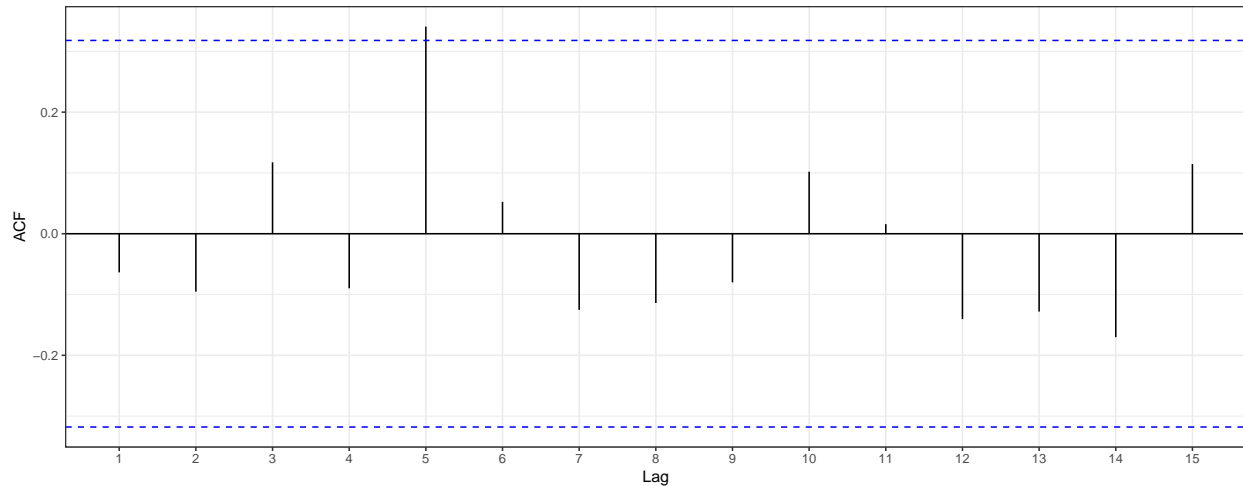
the Egbesu Boys and Ijaw Youth Council. In other cases, the Nigerian government's response severely hurt an armed group's ability to sustain a militant campaigns. For example, when the Nigerian government banned the Odua People's Congress in 1999 and began arbitrarily arresting many members, it decimating the campaign's operational capacity (Board 2005). The Nigerian government also harshly reacted to the Movement for the Actualization of the Sovereign State of Biafra (MASSOB) as reports emerged that "MASSOB meetings were repeatedly and violently broken up by police, their offices raided, and hundreds of MASSOB members arrested; many were detained without charge" (Board 2002).

Even though oil shocks can catalyze militant formation, this evidence suggests such shocks have little to no effect on the long-term trajectory of these campaigns. Militant campaigns may be subject to other resource constraints, political challenges, or other organizational barriers that limit their ability to grow and intensify its violent activities. Further, once the effects of these shocks dissipate, states can mobilize effective counterterrorism and counterinsurgency responses, which constrain the intensity of these conflicts. Worsening economic conditions can increase the likelihood militant campaigns form, but they cannot

explain when, if ever, these campaigns escalate to civil war.

6   Conclusion

Do poor economic conditions increase the likelihood of militant campaigns? Despite the fact that most armed groups operate for years before escalating their violent campaigns to civil war, few quantitative analyses have looked at when and why militant campaigns initially form. Existing studies often conflate militant formation and civil war onset which creates a concern that this either masks competing effects of certain risk factors on civil war or discounts time-varying effects that disappear before civil wars erupt. Using new data on the timing of militant campaigns, I apply a new conceptualization to distinguish between militant formation and civil war onset. I show how negative economic shocks affect two campaign stages differently and find some evidence that negative economic shocks make it easier for militant campaign to initially form. However, these conditions cannot explain war onset because these shocks dissipate before campaigns transition to form. I further show that shocks seem to increase the probability of formation by reducing the state's capacity to deter emerging militant threats rather than reducing the opportunity costs to fighting.

This has three implications. First, it suggests cross-national factors are important, but insufficient to explain the relationship between economic development and conflict dynamics. The findings here reconcile the set of mixed findings in the development literature about the shock-conflict relationship. Poor economic conditions increase the risk of militant formation, but not civil conflict. These findings highlight the need for more subnational research on development and conflict risk. Existing research generally measures civil war risk at the country-level, but conflict is an inherently dynamic process between an armed group and the state. Until scholars have better dyadic data about when and how militant campaigns emerge, scholarly understanding about civil war dynamics will remain incomplete. Future research needs to account for internal organizational dynamics and group-level variables that

affect militant growth and violence.

Second, it calls for a need to re-examine whether existing theories of civil war onset actually explain earlier campaign stages. Most armed groups have the potential to transition to civil war, but models of civil war only select on groups that eventually meet that criteria. This creates a selection bias in understanding the causes of civil conflict. Weak state capacity and political instability provide an excellent framework for understanding under what conditions civil conflict is more likely, but these mechanisms cannot distinguish when militant campaigns launch and when they transition to civil war. Scholars should start to develop more precise theories to explain when and why different stages of militancy begin. Collectively, these results suggest large theoretical and empirical opportunities for civil war scholars moving forward.

Finally, the results suggest that scholars need a new set of theories to explain when militant campaigns transition to civil war. Armed groups evolve over time. Definitional distinctions between terrorists, rebels, insurgents can bias conclusions if we only focus on armed groups at particular campaign stages. By not disentangling the evolution of these groups over time, we risk missing delayed effects between group emergence and group violence. Further, because militant formation generally precedes civil war onset, there is a temporal mismatch in scholarly understanding about the causes of civil war. That is, there are likely lagged or indirect effects that scholars miss when they focus on civil conflict as their dependent variables (e.g. Carter, Shaver, and Wright (2018)). Scholars should continue to develop new theories that account for these unaccounted factors and the timing of different campaign dynamics. In so doing, this research can further advance understanding about the causes of militant campaigns and risks of economic shocks.

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Appendix

I run a series of alternate specifications in order to assess the strength of the result. Across a battery of specifications, the results do not substantively change.

- Alternate Dependent Variable

- Remove Country-Year Fixed Effects

- Remove Linear Time Trends

- Adjust for Asymmetric Effects

- Adjust for Consumption Shocks

- Unscale the Price Shock by Export-Dependence

- Disaggregate by Commodity and Consumption Shocks

Alternate Specifications

- *Alternate Dependent Variable:* I re-examine armed groups based on when they first initiate violence. The correlation between formation and initial violence is 0.69 indicating that most groups initiate violence in the same year that they form.

Table 5: **Effect of Economic Shocks on Initial Violence**

	Model 1	Model 2	Model 3	Model 4
OUTCOME	PR(FORM)	PR(FORM)	PR(WAR)	PR(WAR)
PRICESHOCK$_t$	-1.27^{***}	-1.23^{***}	-0.08	-0.06
	(0.35)	(0.36)	(0.26)	(0.27)
PRICESHOCK$_{t-1}$	-0.19	-0.13	-0.30	-0.28
	(0.46)	(0.45)	(0.26)	(0.26)
PRICESHOCK$_{t-2}$	-0.47	-0.38	-0.14	-0.11
	(0.45)	(0.48)	(0.19)	(0.19)
LN(NOMILITANTS)$_{t-1}$		12.64^{***}		7.57^{***}
		(2.60)		(1.62)
Country FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Country-Specific Time Trend	Y	Y	Y	Y
R^2	0.25	0.26	0.16	0.17
Adj. R^2	0.20	0.21	0.10	0.11
Num. obs.	4210	4098	4210	4098
RMSE	30.53	30.43	19.69	19.76

$^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$ DV multiplied by 100. SE clustered by country.

Changing the dependent variable from formation to initial violence does not change the main results. Worsening economic conditions – operationalized by a year-to-year decrease in export commodity prices – are associated with an increase in the probability of militant formation. The sign on the indicator for the number of pre-existing armed groups changes. This indicates that the probability of new militant violence tends to increase in more fragmented conflict environments.

- *Remove Country-Year Fixed Effects:* Country-year fixed effects control for country-specific shocks. However, just controlling for global shocks with year fixed effects should recover similar effects if there are not many country-varying changes.

Table 6: **Effect of Economic Shocks With Year Fixed Effects**

| | Model 1 | Model 2 | Model 3 | Model 4 |
OUTCOME	PR(FORM)	PR(FORM)	PR(WAR)	PR(WAR)
PRICESHOCK$_t$	−1.05**	−1.03**	−0.08	−0.06
	(0.48)	(0.47)	(0.26)	(0.27)
PRICESHOCK$_{t-1}$	−0.53	−0.58	−0.30	−0.28
	(0.46)	(0.46)	(0.26)	(0.26)
PRICESHOCK$_{t-2}$	−1.14**	−1.16**	−0.14	−0.11
	(0.54)	(0.55)	(0.19)	(0.19)
LN(NOMILITANTS)$_{t-1}$		−4.39*		7.57***
		(2.53)		(1.62)
Country FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Country-Specific Time Trend	N	N	N	N
R^2	0.25	0.25	0.16	0.17
Adj. R^2	0.20	0.20	0.10	0.11
Num. obs.	4210	4098	4210	4098
RMSE	30.65	30.74	19.69	19.76

***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. DV multiplied by 100. SE clustered by country.

- *Adjust for Asymmetric Effects:* There is a concern that the base model might have an omitted variable bias because it does not include information about ongoing or historical conflicts in a country. If the non-random, geographic concentration of oil in certain countries increases the overall likelihood of conflict and historical conflicts affect oil exports, then this could bias results. I test for this by seeing whether past civil conflicts affect the relationship between price shocks and militant formation. I incorporate historical conflict data from the Uppsala Armed Conflcit Database for whether a militant campaign surpasses the 25-battle death threshold for civil conflict. I create a binary indicator measuring whether there was a rebel campaign in the previous year. Controlling for historical conflict does not change the results.

Table 7: **Effect of Economic Shocks Adjusting for Historical Conflict**

OUTCOME	Model 1 PR(FORM)	Model 2 PR(FORM)	Model 3 PR(WAR)	Model 4 PR(WAR)
PRICESHOCK$_t$	-1.06^{**}	-1.05^{**}	-0.07	-0.04
	(0.48)	(0.47)	(0.27)	(0.27)
PRICESHOCK$_{t-1}$	-0.55	-0.59	-0.30	-0.27
	(0.46)	(0.46)	(0.26)	(0.26)
PRICESHOCK$_{t-2}$	-1.15^{**}	-1.16^{**}	-0.14	-0.10
	(0.54)	(0.55)	(0.19)	(0.20)
CIVILCONFLICT$_{t-1}$	2.08	3.42	-2.21	-4.54^{**}
	(3.17)	(3.20)	(2.16)	(2.10)
LN(NOMILITANTS)$_{t-1}$		-5.06^{**}		8.46^{***}
		(2.52)		(1.66)

$^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$. DV multiplied by 100. SE clustered by country.

- *Adjust for Consumption Shocks:* The opportunity cost mechanism suggests that commodity price shocks should make consumption patterns cheaper or costlier to maintain. If commodity prices do not affect consumption shocks, then the results in Table 1 could be viewed as spurious. I follow Bazzi and Blattman by including consumption shocks by interacting food and fuel price shocks with country fixed effects to allow for consumption patterns to change over time. Adjusting for consumption shocks does not change the results and, in fact, leads the coefficient for the one-year lagged economic shock on militant formation to grow in magnitude.

Table 8: **Effect of Economic Shocks Adjusting for Consumption Shocks**

| | Model 1 | Model 2 | Model 3 | Model 4 |
OUTCOME	PR(FORM)	PR(FORM)	PR(WAR)	PR(WAR)
PRICESHOCK$_t$	-1.19^*	-1.21^*	-0.22	-0.19
	(0.62)	(0.63)	(0.33)	(0.34)
PRICESHOCK$_{t-1}$	-0.36	-0.40	-0.36	-0.33
	(0.71)	(0.71)	(0.31)	(0.32)
PRICESHOCK$_{t-2}$	-1.21^*	-1.22^*	-0.11	-0.08
	(0.67)	(0.68)	(0.20)	(0.21)
LN(NOMILITANTS)$_{t-1}$		-3.75		6.24^{***}
		(2.71)		(1.81)
Consumption Shocks	Y	Y	Y	Y
Country FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Country-Specific Time Trend	Y	Y	Y	Y
R^2	0.31	0.32	0.24	0.25
Adj. R^2	0.19	0.20	0.10	0.11
Num. obs.	4210	4098	4210	4098
RMSE	30.71	30.82	19.64	19.76

$^{***}p < 0.01$, $^{**}p < 0.05$, $^*p < 0.1$. DV multiplied by 100. SE clustered by country.

- *Unscale the Price Shock by Export-Dependence:* The price shock measure scales the size of the shock by a country's export-dependence on a particular industry, but global shocks may affect all countries uniformly. Unscaled price shocks have no consistent effect on the probability of civil war suggesting negative economic shocks have heterogenous effects across countries.

Table 9: **Effect of Economic Shocks Using Alternate Price Shock**

	Model 1	Model 2	Model 3	Model 4
OUTCOME	PR(FORM)	PR(FORM)	PR(WAR)	PR(WAR)
UNSCALEDPRICESHOCK$_t$	-0.86^*	-0.85^*	0.18	0.19
	(0.52)	(0.52)	(0.38)	(0.39)
UNSCALEDPRICESHOCK$_{t-1}$	-0.67	-0.75	-0.25	-0.24
	(0.63)	(0.62)	(0.44)	(0.45)
UNSCALEDPRICESHOCK$_{t-2}$	-1.48^{***}	-1.50^{***}	-0.45	-0.41
	(0.56)	(0.58)	(0.30)	(0.31)
LN(NOMILITANTS)$_{t-1}$		-4.39^*		7.54^{***}
		(2.55)		(1.62)
Country FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Country-Specific Time Trend	Y	Y	Y	Y
R^2	0.25	0.25	0.16	0.17
Adj. R^2	0.20	0.20	0.10	0.11
Num. obs.	4243	4130	4243	4130
RMSE	30.53	30.63	19.62	19.68

$^{***}p < 0.01$, $^{**}p < 0.05$, $^*p < 0.1$. DV multiplied by 100. SE clustered by country.

The results find that militant formation does not depend on a particular industry price shock. There is a negative and statistically significant effect of perennial shocks and extractive economic shocks on the likelihood of formation. This could be consistent with the opportunity cost mechanism. However, the result on extractive economic shocks could also suggest that negative economic shocks might hamper the state's ability to detect and immediately suppress emerging threats. This would provide partial support for the state capacity mechanism as well. The results also reveal that agricultural effects might also have a separate two to three year lagged effect on the likelihood of militant formation.

Adjust for consumption shocks by different commodity types: The final test explores where adding consumption shocks when you disaggregate by commodity affects the results from the previous table. The results for perennial and extractive goods remain for the formation model.

Table 11: **Effect of Economic Shocks Using Disaggregated Commodity Prices and Consumption Shocks**

OUTCOME	Model 1 PR(FORM)	Model 2 PR(FORM)	Model 3 PR(WAR)	Model 4 PR(WAR)
PRICESHOCK_PERENNIALGOODS$_t$	−0.37	−0.40	−0.29	−0.24
	(0.58)	(0.59)	(0.39)	(0.39)
PRICESHOCK_PERENNIALGOODS$_{t-1}$	−0.36	−0.41	−0.27	−0.27
	(0.66)	(0.66)	(0.32)	(0.32)
PRICESHOCK_PERENNIALGOODS$_{t-2}$	−0.26	−0.26	0.22	0.25
	(0.67)	(0.69)	(0.40)	(0.41)
PRICESHOCK_EXTRACTIVEGOODS$_t$	−1.72*	−1.75*	−0.22	−0.19
	(0.95)	(0.96)	(0.51)	(0.52)
PRICESHOCK_EXTRACTIVEGOODS$_{t-1}$	−0.42	−0.46	−0.33	−0.28
	(1.06)	(1.06)	(0.40)	(0.40)
PRICESHOCK_EXTRACTIVEGOODS$_{t-2}$	−1.74*	−1.76*	−0.25	−0.21
	(1.02)	(1.03)	(0.31)	(0.31)
PRICESHOCK_AGRICULTURALGOODS$_t$	−1.67**	−1.66**	−0.19	−0.20
	(0.77)	(0.78)	(0.38)	(0.39)
PRICESHOCK_AGRICULTURALGOODS$_{t-1}$	−0.50	−0.58	−0.81	−0.74
	(0.87)	(0.87)	(0.58)	(0.59)
PRICESHOCK_AGRICULTURALGOODS$_{t-2}$	−1.82**	−1.81**	−0.13	−0.08
	(0.81)	(0.83)	(0.29)	(0.31)
LN(NOMILITANTS)$_{t-1}$		−3.83		6.25***
		(2.69)		(1.83)
Consumption Shocks	Y	Y	Y	Y
Country FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Country-Specific Time Trend	Y	Y	Y	Y
R^2	0.31	0.32	0.24	0.25
Adj. R^2	0.19	0.19	0.10	0.11
Num. obs.	4210	4098	4210	4098
RMSE	30.71	30.83	19.65	19.76

***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. DV multiplied by 100. SE clustered by country.