# Online Appendix: Killing Two Birds with One Stone? Examining the Diffusion Effect of Leadership Decapitation*

## Contents

This online appendix introduces the literature review on the leadership decapitation that has to be removed for the limited space and summary statistics for the variables used in the regression analysis and the lists of militant organizations that are focused on this research.

## 1. Measurement Issues and Case Selection

The indeterminacy in the findings of previous studies has been due, in part, to their measurement of variables and data collection. This section briefly review those problems.

### 1.1 Measurements

The estimation of the impact of decapitation can vary depending on how scholars measure the variables. Specifically, it is important to clarify what the concept of "decapitation" is composed of and what the "success" of decapitation means.

The decapitation strategy is composed of the assassinations and arrests of militant group leaders. Arresting leaders has an advantage in that police can withdraw information from the leaders about the groups and prevent those leaders from becoming martyrs who rally the other members (Cronin 2009). However, one disadvantage of arresting militant leaders is that it keeps alive the scarce human resource, as it relates to militant operations (Byman 2006). One problem of measuring the effect of decapitation is deciding to whom it is directed. While Jordan (2009) has defined leadership as "either the top leader of an organization or any member of the upper echelon who holds a position of authority within the organization," Hafez and Hatfield (2006), Mannes (2008) and Cronin (2009) have included the assassination or the removal of both military commanders and political leaders in this definition. Johnston (2012) and Price (2012), meanwhile, have restricted their definition to the

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top leaders, excluding other high-rank members in the group. This difference may be more significant than it appears. If the removal of the top leader has a significant effect on the group's activity but the removal of other high-rank members, including any member of the upper echelon, does not, it may hide the true effect of the decapitation of the top leader. In fact, whereas Jordan (2009) has concluded that decapitation does not increase the likelihood of group collapse, Johnston (2012) and Price (2012) have found some effectiveness of such a strategy [1]

The other problem in measuring the variables lies in defining the success or failure of the dependent variable. In previous studies, mainly three types of measurements have been employed: (1) a simple binary variable, which indicates whether the militant groups collapse after decapitation (Jordan (2009); Johnston (2012)); (2) a hazard rate that estimates changes in organizational duration after decapitation (Price (2012); Daxecker and Hess (2013); Blomberg et al. (2011); and (3) the changes in the number of attacks or intensity (Mannes 2008; Jordan 2009; Johnston 2012) .

In the binary coding, Jordan (2009) has coded the decapitation as a success, if an organization remains inactive for two years following the decapitation, and a failure, if otherwise. On the other hand, Johnston (2012) has coded termination as 1, when the campaign drops below a minimal threshold of violence in a given campaign year; otherwise, it has been coded as 0. These two researches are evidently different in how they define the "inactivity" of militant groups and how they determine the expected duration of the changes in militant activity to measure the effect of decapitation. Clearly, the definition of "inactivity" and time periods may lead to different sample numbers and different estimation results. The hazard rate or mortality rate is considered as the number of days or years from the start time of the groups until the groups cease to exist (Price 2012; Blomberg et al. 2011). however, similar to the definition of inactivity, the time around which the group is considered to start and the way in which the group's "inactivity" is defined require further clarification. Price (2012) has defined the start time as the day of the first attack and the end as the fulfillment of two years of inactivity following a decapitation. Compared with the previous two cases, this type of measurement is less sensitive to the authors' manipulation of data, since it simply observes changes in the number or intensity of the attacks. One thing to note is that, contrary to the first two cases, the third case estimates the deterrence effect rather than the impact of decapitation on disruption.

### 1.2 Case Selections and Data Collection

Three factors that need to be addressed with caution when interpreting the results of articles are case selection, the target population of data collection, and the replicability of the result.

Studies of decapitation have mainly been conducted with the use of case studies, which have

[1] Daxecker and Hess (2013) have represented decapitation with repression using Political Terror Scale data (PTS). However, the data do not necessarily point out whether the state takes harsh repression to a militant group, but measures instead the overall harshness of the government to its population and society. Therefore, it is difficult to clearly estimate the impact of the decapitation strategy.

predominantly focused on decapitation by the governments of Israel and the UK towards Palestinian violence and the Irish Republican Army (IRA), respectively (Hafez and Hatfield 2006; LaFree et al. 2009; Peroff and Hewitt 1980; Soule 1989; Campbell and Connelly 2003; Brophy-Baermann and Conybeare 1994; Kaplan et al. 2005). Other research has focused on the decapitation of some specific countries or comparative case studies (Wilner 2010; Collins 2004; Enders and Sandler 1993; Cronin 2009; Langdon et al. 2004). Case studies are advantageous for scholars in tracing the processes of how stimuli or interventions can lead to the result (George and Bennett (2005)). However, one disadvantage is that the findings cannot be generalized and extrapolated to other cases, as Carvin (2012, 542) has warned. In other words, as LaFree et al. (2009, 37) "we do not know whether government countering strategies have had similar effects in other regions of the world, on different groups or individuals, or even in this region of the world during different time periods."

Similarly, even the large-N studies that use as much available data as possible suffer from the same problem, depending on the population that the scholars are attempting to infer from the data. For example, the results from the use of the Global Terrorism Database (GTD) and the International Terrorism: Attributes of Terrorist Events (ITERATE) that scholars often rely on are not easily comparable since the latter database specifically focuses on "international" terrorism, while the former focuses on both "domestic" and "international" terrorism. To the extent that both types of terrorism differ, implications from the research based on the use of only one database are restricted. In addition, even if the database has the same population, depending on the coding criteria such as how incidents are counted as terrorism, the sample number can vary, which can lead to different estimates.

The other serious problem with the large-N studies is the availability of replication data in decapitation studies. As King (2006, 444) has pointed out, "the community of empirical political scientists needs access to the body of data necessary to replicate existing studies to understand, evaluate, and especially build on this work." Replication data is necessary to correctly evaluate how the data is collected, coded, and used without imposing the burden of collecting the same data from scratch on other researchers. However, some quantitative papers in this field have not opened their data at all or opened only part of it. It is therefore possible that the unavailability of data and the difficulty of data render the findings from the research non-credible.

## Descriptive Statistics on Variable

| | Num. Obs. | Mean | Standard Deviation |
|---|---|---|---|
| ln(frequency)*(1) | 2880 | 0.32 | 0.80 |
| Group Age (2) | 2880 | 1.09 | 1.33 |
| ln(GDP)*(3) | 6771 | 25.31 | 2.11 |
| ln(Population)*(3) | 7215 | 17.49 | 1.59 |
| ln(Military Expenditure)3) | 3621 | 24.33 | 2.89 |
| Bureaucratic Capability(4) | 4049 | 0.07 | 0.84 |
| Polity2(5) | 6826 | 4.50 | 6.64 |

*: ln() is the natural logarithm.

(1): Global Terrorism Database.

(2): Price (2013).

(3): The World Databank.

(4): Hendrix and Young (2014).

(5): Freedom House.

**Table 1: Descriptive Statistics on Variables.**

| | |
|---|---|
| 1 | 2nd of June Movement |
| 2 | Abu Sayyaf Group |
| 3 | Action Directe (Direct Action) |
| 4 | African National Congress (ANC) |
| 5 | Al-Aqsa Martyrs Brigade |
| 6 | Al-Ittihaad al-Islami (AIAI) |
| 7 | Al-Qaeda in the Arabian Peninsula (AQAP) |
| 8 | Alex Boncayao Brigade (ABB) |
| 9 | All Tripura Tiger Force (ATTF) |
| 10 | Amal Group - Islamic Amal |
| 11 | Ansar al-Islam (AI) |
| 12 | Ansar al-Sunnah (Followers of the Tradition) |
| 13 | April 19 Movement (M-19) |
| 14 | Arab Communist Organization (ACO) |
| 15 | Argentine Anti-Communist Alliance (AAA) |
| 16 | Armed Forces of National Resistance (FARN) |
| 17 | Armed Islamic Group (AIG) |
| 18 | Armed Proletarian Nuclei (NAP) |
| 19 | Armed Revolutionary Forces of Colombia (FARC) |
| 20 | Armed Revolutionary Nuclei (and former Black Order) |
| 21 | Armenian Secret Army for the Liberation of Armenia (ASALA) |
| 22 | Army of God |
| 23 | Asbat al-Ansar |
| 24 | Aum Shinrikyo |
| 25 | Baader-Meinhof Group |
| 26 | Babbar Hhalsa International (BKI) |
| 27 | Baloch Liberation Army (BLA) |
| 28 | Barisan Revolusi Nasional Melayu Pattani (BRN) |
| 29 | Basque Homeland and Freedom (ETA) |
| 30 | Black Liberation Army (BLA) |
| 31 | Black Panthers |
| 32 | Black Panthers (West Bank/Gaza) |
| 33 | Black September |
| 34 | Bodo Liberation Tigers (BLT) |
| 35 | Breton Liberation Front (FLB) |
| 36 | Cinchoneros Popular Liberation Movement MLPC |
| 37 | Committee of Solidarity with Arab and Middle East Political Prisoners (CSPPA) |
| 38 | Communist Combatant Cells (CCC) |
| 39 | Communist Party of India-Maoist (CPI-Maoist) |
| 40 | Communist Party of Nepal-Maoist (CPN-M) |
| 41 | Continuity Irish Republican Army (CIRA) |
| 42 | Corsican National Liberation Front (FLNC) |
| 43 | Dagestani Shari'ah Jamaat |
| 44 | Democratic Front for the Liberation of Palestine (DFLP, formerly PDFLP) |
| 45 | Devrimici Halk Kurtulus Cephesi (DHKP/C) |
| 46 | Dima Halam Daoga (DHD) |
| 47 | EZLN |
| 48 | Egyptian Islamic Jihad (EIJ) |
| 49 | Eritrean Liberation Front (ELF) |
| 50 | Farabundo Marti National Liberation Front (FMLN) |
| 51 | Fatah Revolutionary Council/Black June (Abu Nidal group) |
| 52 | First of October Anti-Fascist Resistance Group (GRAPO) |
| 53 | Free Aceh Movement (GAM) |
| 54 | Fuerzas Armadas de Liberacion Nacional (FALN) |
| 55 | Great Eastern Islamic Raiders Front (IBDA-C) |
| 56 | Guatemalan National Revolutionary Union (URNG) |
| 57 | Guatemalan Party of Labour (PGT) |
| 58 | Guerrilla Army of the Poor (EGP) |
| 59 | Hamas |
| 60 | Harakat ul-Mujaheddin (HuM) |

**Table 2: The Lists of Militant Groups.**

| | |
|---|---|
| 61 | Harkat ul-Ansar (HUA) |
| 62 | Hector Riobe Brigade |
| 63 | Hezbollah |
| 64 | Hizb ul-Mujahideen |
| 65 | Independent Armed Revolutionary Movement (MIRA) |
| 66 | International Revolutionary Action Group (GARI) |
| 67 | Iparretarrak |
| 68 | Irish National Liberation Army (INLA) |
| 69 | Islamic Army in Iraq (IAI) |
| 70 | Islamic Movement of Uzbekistan (IMU) |
| 71 | Islamic Salvation Front (FIS) |
| 72 | Jamaat al-Fuqra |
| 73 | Jamatul Mujahedin Bangladesh (JMB) |
| 74 | Jamiat ul-Mujahidin (JuM) |
| 75 | Janatantrik Terai Mukti Morcha (JTMM) |
| 76 | Japanese Red Army |
| 77 | Jemaah Islamiya Organization (JI) |
| 78 | Jewish Defense League (JDL) |
| 79 | Justice Commandos of the Armenian Revolutionary Army |
| 80 | Kach and Kahana Chai |
| 81 | Kayin National Union (KNU) |
| 82 | Khmer Rouge |
| 83 | Kosovo Liberation Army (KLA) |
| 84 | Kurdistan Worker's Party (PKK) |
| 85 | Lashkar-e-Jhangvi (LeJ) |
| 86 | Lashkar-e-Taiba (LeT) |
| 87 | Lebanese Armed Revolutionary Faction (FARL) |
| 88 | Lebanese National Resistance Front (LNRF) |
| 89 | Lebanese Socialist Revolutionary Organization |
| 90 | Liberation Tigers of Tamil Eelam (LTTE) |
| 91 | Lord's Resistance Army |
| 92 | Lorenzo Zelaya Popular Revolutionary Forces (FPRLZ) |
| 93 | Loyalist Volunteer Force (LVF) |
| 94 | Macheteros (Boricua Popular/Popular Army) |
| 95 | Mahdi Amy |
| 96 | Manuel Rodriquez Revolutionary or Patriotic Front (FPMR) |
| 97 | Maoist Communist Center |
| 98 | Marxist-Leninist Armed Propaganda Unit |
| 99 | May 19th Communist Order (May 19th) |
| 100 | Montoneros |
| 101 | Moro Islamic Liberation Front (MILF) |
| 102 | Moro National Liberation Front (MNLF) |
| 103 | Moujahidin-e-Khalq (MEK) |
| 104 | Movement for Self Determination & Independence for the Canary Islands Archipelago (MPAIAC) |
| 105 | Movement for the Emancipation of the Niger Delta (MEND) |
| 106 | Movement of the Revolutionary Left (MIR) |
| 107 | Muttahida Qami Movement (MQM) - initially Mohajir Qaumi Movement (MQM) |
| 108 | National Democratic Front of Bodoland (NDFB) |
| 109 | National Liberation Army of Colombia (ELN) |
| 110 | National Liberation Front of Tripura (NLFT) |
| 111 | National Patriotic Front of Liberia |
| 112 | National Socialist Council of Nagaland-Isak-Muivah (NSCN-IM) |
| 113 | National Union for the Total Independence of Angola (UNITA) |
| 114 | New People's Army (NPA) |
| 115 | November 17 (also Revolutionary Organization 17 November (RO-N17)) |
| 116 | Official IRA (OIRA) |
| 117 | Omega-7 |
| 118 | Orange Volunteers (OV) |
| 119 | Palestine Liberation Front (PLF) |

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|---|---|
| 120 | Palestine Liberation Organization (PLO) |
| 121 | Palestinian Islamic Jihad (PIJ) |
| 122 | Patriotic Morazanista Front (FPM) |
| 123 | Pattani United Liberation Organization (PULO) |
| 124 | Peasant Self-Defense Group (ACCU) |
| 125 | People Against Gangsterism and Drugs (PAGAD) |
| 126 | People's Liberation Army (India) |
| 127 | People's Liberation Forces (FPL) |
| 128 | People's Revolutionary Army (ERP) |
| 129 | People's Revolutionary Army (ERP) (El Salvador) |
| 130 | People's Revolutionary Organization (ORP) |
| 131 | People's Revolutionary Struggle (ELA) |
| 132 | People's War Group (PWG) |
| 133 | Peronist Armed Forces (FAP) |
| 134 | Polisario Front |
| 135 | Popular Forces of 25 April (FP-25) |
| 136 | Popular Front for the Liberation of Palestine (PFLP) |
| 137 | Popular Front for the Liberation of Palestine ? Gen?l Command (PFLP-GC) |
| 138 | Popular Liberation Army (EPL) |
| 139 | Popular Resistance Committees (PRC) |
| 140 | Popular Revolutionary Army |
| 141 | Prima Linea |
| 142 | Purbo Bagular Communist Party (PBCP) |
| 143 | Real IRA (RIRA) |
| 144 | Rebel Armed Forces (FAR) |
| 145 | Red Army Faction (RAF) |
| 146 | Red Brigades (BR) - Brigate Rosse |
| 147 | Red Brigades Fighting Communist Party (BR-PCC) |
| 148 | Red Flag (Bandera Roja) |
| 149 | Red Hand Defenders |
| 150 | Revolutionary Cells (RZ) |
| 151 | Revolutionary Popular Vanguard (VPR) |
| 152 | Revolutionary United Front (RUF) |
| 153 | Riyad us-Saliheyn Martyrs Brigade |
| 154 | Runda Kumpalan Kecil (RKK) |
| 155 | Salafia Jihadia |
| 156 | September 23rd Communist League |
| 157 | Shining Path |
| 158 | Sipah-e-Sahaba/Pakistan (SSP) |
| 159 | Special Purpose Islamic Regiment (SPIR) |
| 160 | Students Islamic Movement of India (SIMI) |
| 161 | Sudan People's Liberation Army (SPLA) |
| 162 | Taliban |
| 163 | Tawhid and Jihad |
| 164 | The Order |
| 165 | Tupac Amaru Revolutionary Movement (MRTA) |
| 166 | Tupac Katari Guerrilla Army (EGTK) |
| 167 | Tupamaros (National Liberation Movement) MLN |
| 168 | Turkish Communist Party/Marxist-Leninist (TKP/ML) |
| 169 | Turkish Hezbollah |
| 170 | Turkish People's Liberation Army (TPLA) |
| 171 | Turkish People's Liberation Front (TPLA-F) |
| 172 | Ulster Defence Association (UDA) / Ulster Freedom Fighters |
| 173 | Ulster Volunteer Force (UVF) |
| 174 | United Jewish Underground |
| 175 | United Liberation Front of Assam (ULFA) |
| 176 | United Self-Defense Forces of Colombia (AUC) |
| 177 | Weatherman |

**Table 2: The Lists of Militant Groups.**

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|---|---|
| 178 | Zarate Willka Armed Forces of Liberation |
| 179 | al Gama'a al-Islamiya (also Al-Jihad) |
| 180 | al-Badr |
| 181 | al-Fatah |
| 182 | al-Qaeda |
| 183 | al-Qaeda in Mesopotamia (in the Land of the Two Rivers) |
| 184 | al-QaedaOrganization in the Islamic Maghreb (formerly(GSPC)) |
| 185 | al-Umar Muhahideen (AUM) |
| 186 | al-Zulfikar |

**Table 2: The Lists of Militant Groups.**

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