Can financial and economic indicators explain conflict intensity?

An investigation into the link between money laundering and political violence

Evidence from Southeast Asia

Bernadette Paulyn Gostelow[1]
Department of Political Science, Columbia University

April 1, 2021

Faculty Advisor: Professor Virginia Page Fortna
Seminar Advisor: Professor Macartan N. Humphreys
Seminar Preceptor: Elena Frances Barham

Submitted to the Department of Political Science at Columbia University
in partial fulfilment of the requirements of the Departmental Honors Program

---

[1] Email: bpg2126@columbia.edu
LinkedIn: https://www.linkedin.com/in/bernadette-gostelow-54247a152/

Acknowledgements

I am indebted to Professor Virginia Page Fortna, Professor Macartan N. Humphreys, and PhD student/TA Elena Frances Barham. They helped me through countless methodological and statistical issues and were instrumental in helping me conceptualize clear and novel ways to present my substantive ideas. Through nuanced conversations about everything from political violence to narcotics to econometrics, they clarified my thinking and grasp of these incredibly convoluted and complicated topics. Most importantly, these conversations refined the way I synthesize and present new information, a skill that I'm sure will be useful in many hopeful decades to come. Having the unique background of attending three universities—the National University of Singapore, Georgetown University, and Columbia University—this thesis is the culmination of the incredible amount of wisdom and insight I've garnered from a countless number of faculty and peers across a range of departments.

I dedicate this thesis to the countless individuals and families who have suffered from political violence worldwide. Although my thesis only considers non-state actors, I also acknowledge that state actors can inflict massive political instability, as evinced by the 2021 military coup in Myanmar. I appreciate the privilege I have to be writing this thesis comfortably in Singapore while countless others in the world are suffering from the effects of poor COVID-19 public policies and political instability.

Lastly but no less importantly, I thank my parents for always believing and supporting me in my endeavors. They have always valued education and sacrificed to afford to send me to a school like Columbia—for this, I will be forever grateful.

Abstract

How does money laundering affect civil wars? In the thesis, the author argues that there are considerable synergies between the two. Within money laundering, there are precise indicators but little data on the true scale of money laundering because of the sensitivity of the data. Within political violence, there is data on conflict intensity but few precise indicators that explain variation. By considering how civil war organizations use money laundering, this thesis demonstrates that money laundering indicators are more consistent predictors of political violence than those traditionally used in political violence studies. This thesis surveys civil war violence in Myanmar, Malaysia, the Philippines, Thailand, and Indonesia from 1997 to 2019.

Keywords: Money laundering, AML/CFT, trade misinvoicing, Walker model, natural resources, terrorist financing, terrorism, insurgency, civil war, and Southeast Asia.

<u>Table of contents</u>

1. Introduction and motivation

1.1 Why should conflict scholars care about money laundering?

The United Nations Office of Drugs and Crime (UNODC) estimates that approximately 2-5% of the world's GDP, or $800 billion to $2.5 trillion, is laundered annually[i]. If this statistic is not shocking enough, the annual amount of money laundered is equivalent to somewhere between the gross domestic product (GDP) of Switzerland and the United Kingdom. For armed organizations, this underground economy is an opportunity to not only raise and hide funds from the state but to also purchase weapons and other equipment necessary from criminals to launch future attacks. For perspective, the Institute for Economics and Peace estimates that while the September 11 attack cost approximately $400,000-500,000; the 2007 London, UK, car bombs that killed fifty-six only cost $10,000. Failed attacks such as the 2006 Cologne, Germany, commuter attack only cost $500[ii]. Insurgent tactics are likely to cost substantially more with less variation because of the need to maintain entire armies.

Organizations engaged in civil wars have used a blend of insurgent and terrorist tactics. Large transnational organizations have similar revenue streams to mid-sized multinational companies with Ernst & Young estimating that the Islamic State of Iraq and the Levant (ISIL) earned approximately $970-1,890 million in revenue in 2014 though estimated revenue decreased to $520-870 million in 2016[iii]. These funds are thought to be scattered and deposited in various regional *hawala* or informal value transfer systems.

Despite this formidable public policy and security challenge, there is a dearth of literature that explicitly ties money laundering to conflict intensity. This thesis has three main aims: (A) To test the correlation between money laundering and conflict intensity; (B) To investigate whether organizations operating in varying anti-money laundering/counter (the) financing of terrorism (AML/CFT) environments have different levels of reliance on money laundering; (C) To determine if an organization's reliance on money laundering is a good predictor of its preference for terrorism or insurgency.

<u>1.1 Thematic context: Contemporary money laundering and bank secrecy concerns</u>

Automation and other financial trends aimed at streamlining deposit and investing processes pose additional security risks. For example, in 2017, the New York State Department of Financial Services (DFS) and the Organized Crime and Corruption Reporting Project (OCCRP) found Deutsche Bank's Moscow office to be allegedly complicit in using mirror trading to aid Russian actors launder more than $10 billion to offshore locations[iv]. Mirror trading is a trading strategy that allows traders to automatically 'mirror' the trades executed in the trader's brokerage account. In this particular context, the Russian equities desk would allegedly sell a quantity of blue-chip stock while an offshore company would call the same equities desk and sell an equivalent amount of the same stock bought by the Russian company that is ultimately owned by the person or entity buying the blue-chip stock. In reality, however, there is nothing inherently illegal about this alleged arrangement and designating it as 'money laundering' is arguably a stretch. From a security perspective, however, this evasion of capital and money laundering controls is risky considering that the beneficial owners of these offshore companies could potentially be nefarious actors. The Deutsche Bank Moscow incident indicates that organizations may not simply exploit activities that can be clearly designated as money laundering and emphasizes the need to evaluate countries' macro-level vulnerability.

For years, authorities and activists globally have attempted to stem the flow of money laundering. Besides authorities like DFS, activists like the International Consortium of Investigative Journalists (ICIJ), have systematically exposed institutions and individuals responsible for the continued abuse of the world's financial system. Notably, in 2020, the ICIJ released the third leak of the US Financial Crimes Enforcement Network (FinCEN) files[v], revealing that multinational banks transferred more than $2 trillion worth of funds to suspicious clients between 1999 and 2017.

Money laundering, however, is an umbrella term. Theoretically, it is attractive to a whole host of actors from criminal gangs to armed organizations looking to fund violence. While the source of funds 'washed' for criminals are illegal, they are not necessarily so for armed organizations. As evidenced by the infamous Khun Sa of the Shan State Army in Myanmar[vi], it is possible for an armed organization to run legitimate businesses such as construction and to plausibly use the profits derived to fund violence. While these businesses are legitimate, this sort of funding still broadly falls under the umbrella of money laundering legislation in most jurisdictions (though it

more accurately should be labeled as AFT). Hence, as a general rule, money laundering occurs when the money concerned is illegal either in its origins or its intended purposes.

With a plethora of actors and methods involved, money laundering is a moving policy target. Adding to this difficulty, controlling money laundering is often at odds with the government's other objective of attracting investment. It is an open secret that jurisdictions such as Singapore, Switzerland, the Netherlands, and the Cayman Islands are tax havens. The term 'tax haven', however, is a misnomer since the term encapsulates many regulatory aspects from low taxes to financial secrecy to allowing behavior that effectively aids individuals dodge taxes through base erosion and profit shifting (BEPS) tactics. BEPS tactics, such as the infamous Double Irish arrangement, exploit gaps and mismatches in tax rules and are commonly used by the likes of Apple, Google, and Microsoft.

The flip side of their tax haven reputation is their heightened vulnerability to money laundering. For instance, the ICIJ reported that Singapore received approximately two-thirds more incoming money laundering ($2.9 billion vs $1.8 billion) than the United States from 1999 and 2017 despite its economy being less than 2% of the United States'[vii]. It must be noted, however, that the ICIJ predominantly published FinCEN transactions linked to major US banks throwing the representativeness of the data into question.

Paradoxically, jurisdictions known for their tax haven status have been at the forefront of the development of AML/CFT standards. The Basel Committee on Banking Supervision, for example, is arguably the most recognized global banking watchdog, covering everything from AML/CFT standards to risk management. However, tax havens, bank secrecy, and money laundering are by no means exclusive policy challenges for wealthy jurisdictions. In particular, popular culture's focus on tax policies obscures the fact that these onshore tax havens often have relatively decent AML/CFT regimes. This helps separate 'harmless' legal tax reduction strategies that predominantly aid wealthy individuals and corporations from financing related to criminal networks. Admittedly, the effectiveness of this filter is questionable in light of events like the aforementioned 2017 Deutsche Bank Moscow incident.

According to the 2019 Basel AML Index[viii], Singapore scored 4.98 on a scale from 1 to 10 with 10 being the worst; Switzerland, 4.96; Netherlands 4.86; the Cayman Islands was not rated. In comparison, relatively poorer jurisdictions have significantly weaker AML/CFT regimes. The

five lowest-rated countries are Mozambique at 8.22; Laos at 8.21; Myanmar at 7.83; Afghanistan at 7.76; Liberia at 7.35. While these jurisdictions may not be as attractive to wealthy entities looking to dodge taxes, they are potentially more attractive to illicit organizations looking to maximize their 'hiddenness' from authorities. Adding to these jurisdictions' vulnerability, countries with weak AML/CFT regimes often suffer from pre-existing political conflict. With the exception of Laos, the countries listed above were all experiencing at least one civil war in 2021. Despite this, there has been little literature that investigates how weak AML/CFT regimes in countries with high instability exacerbate conflict.

While fields such as law and criminology offer rich literature on the history and development of AML/CFT standards and policies, AML/CFT literature remains largely absent from political science. Related valuable literature within political science have focused on terrorist financing and exogenous asset price changes. Terrorist financing literature analyzes organization-level dynamics through either estimating the potential financial resources organizations have or through developing game-theoretic models of how organizations choose between launching terror attacks and other activities. Much literature also aims to disentangle political violent networks from criminal ones. Asset price literature deploys macroeconomic principles to investigate how variations in the exogenous price of capital-intensive and labor-intensive assets affect civil wars. Hence, while terrorist financing literature is limited because of the level of analysis, asset price literature is limited because it indirectly measures the amount of funds organizations potentially have through investigating labor market effects. Moreover, this literature tends to focus on a few assets that are often not representative of an organization's total revenue stream. Hence, this thesis hopes to meld approaches in criminology and conflict economics to quantitatively merge AML/CFT discussions with conflict intensity.

This thesis offers a novel model that explains and predicts future conflict intensity based on financial and economic indicators. To caveat, this model is intended for states that have some pre-existing level of civil war. For example, it would be inappropriate to apply this model to Singapore which has not had a civil war in its history. Furthermore, because of the limitations of this thesis, the model's accuracy in explaining and predicting conflict outside of Southeast Asia is unknown.

I specifically investigate Myanmar, Thailand, Malaysia, the Philippines, and Indonesia. I exclude Singapore and Brunei because both countries have extremely low to no political violence.

Similarly, while Cambodia experienced notable political instability in the aftermath of the Cambodian Civil War in 1975, political violence levels have plummeted since the 1990s. Moreover, political violence in Laos has been largely restricted to violence exacted by the government on civilians. Cases of political violence in Vietnam have similarly been comparatively low in the past twenty years. For emphasis, I do not argue that political violence and AML/CFT weaknesses are not a threat in Singapore, Brunei, Cambodia, Laos, and Vietnam. Rather, I posit that these countries are less salient for exploring the relationship between money laundering and conflict since conflict simply barely exists.

Lastly, I train a random forest model for predicting conflict intensity in the region. I argue that increasingly popular machine learning approaches are unsuited for money laundering and conflict data.

1.2 Institutional context: Money laundering concerns in Southeast Asia

Southeast Asia is an economically diverse and dynamic region. Across the countries of interest, the average year-on-year GDP growth rate averages around five percent except for Thailand where GDP growth hovers around three percent[ix]. Despite this, more than fifty percent of Southeast Asian residents are unbanked and rely on informal value transfer systems for their financial needs. Informal value transfer systems are networks that help individuals transfer money while avoiding mandatory reporting legislation and at times, unfavorable exchange rates and taxes. These systems pose substantial AML/CFT risks because of the lack of robust reporting and record-keeping mechanisms. Despite relatively high growth rates, AML/CFT institutions remain shaky. As mentioned, Myanmar has one of the weakest AML/CFT systems globally at 7.86, Thailand was rated 6.01, Philippines, 5.67, Malaysia 5.25, and Indonesia 4.62 by the Basel AML Index in 2019[x].

Without the requisite institutional resilience, economic growth serves as a threat multiplier since a growing amount of capital flows through weak regulatory gatekeepers. While many have praised the so-called digital payment revolution in Southeast Asia, this FinTech-led financialization leads to unique challenges. Financialization broadly refers to the increasing importance of the financial sector to the economy. In this context, it refers to the increasing number of individuals who maintain bank accounts. According to the World Bank, from 2014 to 2017, the percentage of individuals above the age of 15 maintaining bank accounts[xi] increased

from 36% to 49% in Indonesia, 81% to 85% in Malaysia, 23% to 26% in Myanmar, 31% to 34% in the Philippines, 73% to 82% in Thailand.

FinTech allows financial service providers to reach more individuals more quickly. In rural areas, the cost of installing bank outlets and automated teller machines may be unappealing to financial institutions. E-payment systems being digital allow providers to avoid such costs. Being non-face-to-face, these systems are prone to exploitation. Financialization is, of course, not necessarily a negative thing. Countries with low financialization like Myanmar would logically rely on cash and informal value transfer systems, structures that have even fewer AML/CFT controls. Adding to the complexity, some of the Southeast Asian countries surveyed have sizable remittance inflows because of the number of overseas workers. In 2019, in contrast to a world average of 0.762%, the World Bank estimated remittances as a percentage of GDP at 3.18% in Myanmar, 0.45% in Malaysia, 9.33% in the Philippines, 1.50% in Thailand, and 1.04% in Indonesia[xii].
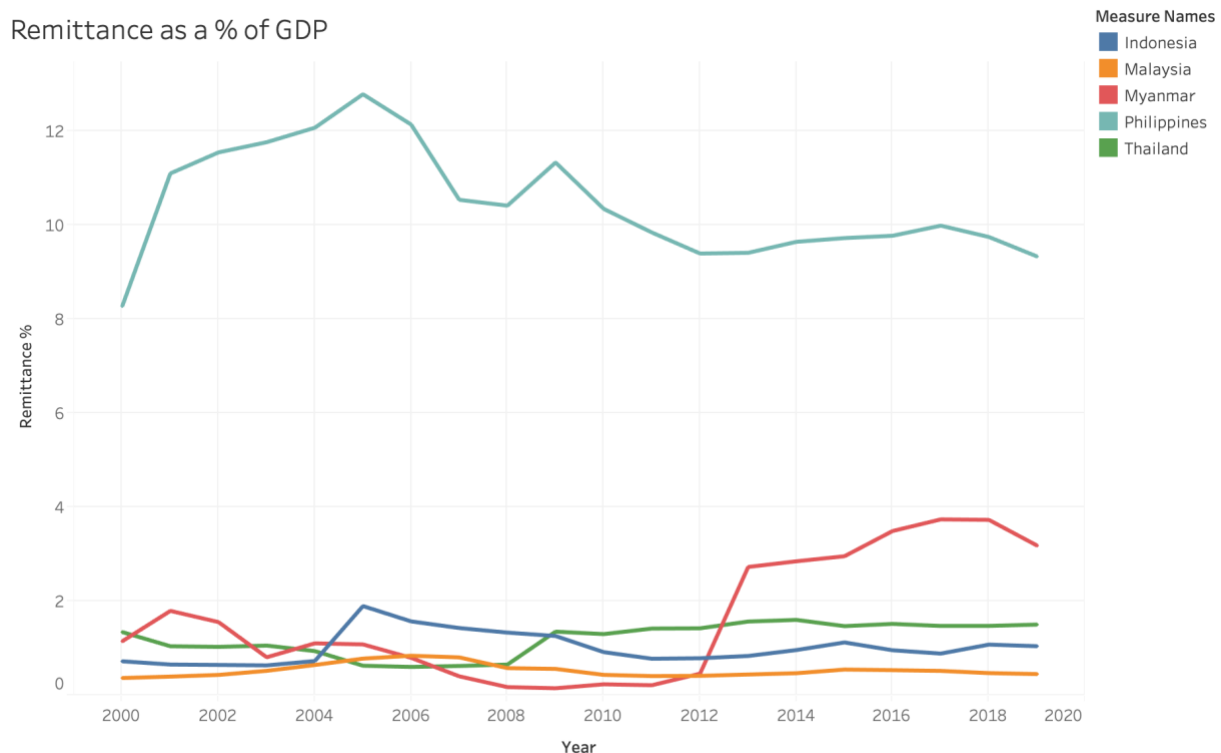
Figure 1: remittance as a percentage of GDP in Southeast Asia

While most remittance system users are genuine, the remittance system is also systematically attractive to money launderers because of its structuring capabilities that allow multiple entities

to remit money through different currencies and different intermediaries before returning to the originators. By ensuring that each remittance is just below the mandatory legal reporting threshold, actors can exploit the remittance system.

1.3 Scope of study

For the purposes of this thesis, I define political violence as organized violence committed for a political purpose. I define political purpose as aiming to change or protest the *de facto* or *de jure* state of affairs. Because of my focus on pre-existing conflict, I only focus on political violence that occurs within the context of a civil war. This importantly does not preclude cases of one-sided violence against civilians and merely delineates that organizations must have a stated political goal of changing the *de facto* or *de jure* government. In effect, I analyze cases where organizations attack governments and vice versa and where organizations attack civilians. I exclude cases where governments attack civilians since AML/CFT policies appear less relevant in explaining government-led one-sided attacks. I focus on 1997 to 2019 firstly because data on political violence pre-1997 is spotty and because the majority of AML/CFT measures were only implemented after 9/11 in Southeast Asia, although global AML/CFT discussions can be traced back to the earlier 1980s US War on Drugs.

As such, the scope of this paper is limited to civil wars in Myanmar, Thailand, the Philippines, Malaysia, and Indonesia from 1997 to 2019. Political violence has a rich literature and the debate surrounding disentangling 'insurgency', 'terrorism', and 'crime' is an important one. In this thesis, I treat these terms as tactics within the broader context of a civil war which I, in turn, treat as a state of affairs.

For the purposes of this thesis, the distinction between insurgency and terrorism is salient insofar as it illuminates the different costs of political violence. The relationship is not as simple as it seems. Intuitively, one would expect insurgent tactics to cost substantially more than terrorist tactics. However, the cost of maintaining armies for organizations already engaged in a civil war is likely to be a fixed cost. I.e., an organization would not be able to not pay its soldiers simply because no attacks were launched in a certain month. The 'tuning knob' in this mechanism is the variable cost of the different equipment needs and other expenses such as bribery, reconnaissance, etc. Moreover, armies are trained in military settings, and switching over to terrorist tactics is not necessarily easy given the need to get acclimatized to the urban environment. By applying microeconomic principles, this thesis offers possible explanations of

how money laundering relates to these variable expenditures and hence, how organizations choose between insurgency and terrorism.

The limitations of the data hamstring a full quantitative treatment of these theories and require the author to spend considerable space estimating organizations' potential revenue gains by proxies. To estimate the size of the money laundering economy, I attempt to quantify macro indicators that attract and deter potential money launderers. I predominantly use the international standards set by the Financial Action Task Force (FATF) that evaluates regimes based on policy coordination, confiscation powers, potential sanctions, and preventive measures. I use FATF instead of BIS because FATF offers distinct evaluations for each jurisdiction. I also analyze bank secrecy separately to investigate how bank secrecy and AML/CFT policies interact within countries. By quantifying these push-and-pull factors, I indirectly approximate how attractive the gains from money laundering are to organizations.

Lastly, I investigate whether these security risks associated with money laundering occur as a threat multiplier or in competition with the possible misappropriation risks associated with licit and illicit assets. As mentioned, resource models investigate how exogenous changes in the price of assets affect levels of violence. By comparing and interacting such models with this money laundering model, I discern whether organizations are likely to attempt to store proceeds from misappropriation in the banking system, or whether the decision to accrue proceeds using physical assets or through the banking system presents a resource allocation problem to organizations. In this thesis, I analyze steel, natural gas, crude oil, coal, and narcotics data. I only apply narcotics data to Myanmar. While narcotics production and trafficking are a problem across Southeast Asia, I focus on Myanmar because of the explicit links between Myanmese organizations and the narcotics trade. I evaluate all models at both the country- and organization-level.

2. Literature review

The challenge of merging literature from AML/CFT and political violence is a daunting one since little connection has been hitherto established. The corpora are also massive in and of themselves. To structure this review, I focus on three guiding questions: (A) What are the major AML/CFT institutions and relevant models? (B) What are the substantive differences between crime, insurgency, and terrorism, and associated counterinsurgency and counterterrorism

strategies? (C) What are the economic differences between insurgency and terrorism, and associated counterinsurgency and counterterrorism strategies?

2.1 AML/CFT institutions and relevant models

In *Money-laundering in Southeast Asia: liberalism and governmentality at work[xiii]*, Wong contends that FATF is not just the major AML/CFT organization globally, in that it actively assesses the strength of organizations globally. But also, because the standards outlined by FATF are uptaken regionally through diffusion. In effect, like most international organizations, FATF 'governs' by expert opinion without having the necessary sovereign power to enforce standards. As such, adherence to AML/CFT standards is measured through "mutual evaluations" and through 'naming and shaming' particularly egregious offenders. Wong notes the existence of FATF-style Regional Bodies (FSRBs), such as the Asia/Pacific Group on Money Laundering (APG), is evidence that global compliance is enforced not simply through 'naming and shaming', but also by furnishing compliant regimes with approval because "governments dread the signs of backwardness and therefore eagerly adopt policy innovations". Wong contends that FATF standards are hence not mere window dressing because of both carrot and stick mechanisms. For example, both the Philippines and Indonesia amended their AML/CFT after being placed on the FATF blacklist, the Non-Cooperative Countries and Territories (NCCT), from which they were only removed in 2005.

Substantively, Wong notes, as I have done, that Southeast Asia is a hub for money laundering through criminal profits laundered through "casinos, huge investment flows, remittance and the business linkages between local diasporic communities in the 'west'". In addition to the APG, the ASEAN +3 (APT) requires member organizations to provide economic and financial information to analyze important indicators, though the focus on indicators like short-term capital flows indicates that APT is more primed towards monitoring macroeconomic stability than enforcing AML/CFT standards. Additionally, Wong notes that some countries have Financial Intelligence Units (FIUs) as recommended by the Egmont Group, an international organization that facilitates cooperation and intelligence sharing, that serves as a center for suspicious activity reporting (SAR) and other information sharing on money laundering and predicate offenses. FIUs are also crucial for interoperability by coordinating the efforts of different government agencies. Lastly, Wong contends that corruption, lack of transparency, the informal economy, and the dominance of cash in the short-term further hamstrings enforcement and limits the effectiveness of regulation.

Walker and Unger quantitatively argue[xiv] that among other factors, bank secrecy, corruption, and technical AML/CFT capabilities, can directly predict the amount of trade-based money laundering globally. Trade-based money laundering specifically targets the import and export of goods and abuses trade finance products.

Walker and Unger were motivated by expanding the "case-oriented" nature of AML/CFT scholarship at the time and aimed to create a methodology that could predict country-level money laundering. Walker and Unger first problematized the assumption that more robust AML/CFT regulations necessarily lead to less money laundering. In particular, they cite Kugler, Verdier, and Zenou[xv], and conceptualized that criminal organizations operating in oligopolistic conditions are likely to compete by corrupting public officials and acquiring market power in illegal markets. In these market conditions, oligopolistic criminal organizations detract from the Becker hypothesis[xvi] that deterrence works to deter crime.

Furthermore, Walker and Unger problematize the traditional linear conception that increased policing necessarily leads to less crime. Instead, in response to harsher punishment, organized crime can "feudalize" the state--paradoxically, Walker and Unger note that stricter punishments can lead to increased organized crime and more corruption. In an effort to conceptualize a more nuanced model, Walker first proposed the "Walker Model" in 1995 that was supposedly deemed as the "leading model for measuring international global money laundering".

The Walker model is theoretically underpinned by Newton's Law of Gravitation and the Tinbergen model which states that the amount of bilateral trade is dependent on the economic 'mass' of two countries and the distance between them. Walker and Unger also highlight that the theoretical framework has synergies with the Heckscher-Ohlin model that predicts international trade from factor endowments. The Walker model, in turn, predicts that the amount of money laundering is a factor of GNP, bank secrecy, government attitude towards money laundering, SWIFT membership, conflict, corruption, and distance between countries. Despite offering evidence for the model's empirical validity, later studies such as Ferwerda et al[xvii] of which Unger was a co-submitter suggest that the original Walker model equation's functional form needs to modified to include multiplicative variables in specific subsets of money laundering data--in this case trade-based money laundering data from Zdanowicz. In yet another paper,

Ferwerda et al[xviii] find that other variables such as common language, religion, and colonial background also affect money laundering.

2.2 Substantive differences between crime, terrorism and insurgency

Relating the literature on anti-money laundering back to political violence, Ruggiero expounds on the crime-terror nexus[xix] and argues that the actor and not the crime differentiates organized violence from political violence. Importantly, Ruggiero first differentiates organized crime from crime in general by the scale and time span of activities, and the fact that the incarceration of a few members of organized crime does not stop the activities of the group. Furthermore, organized crime members are "professional" because of their "full-time involvement in illegality" and acquisition of the requisite skills for "career advancement". Crucially, Ruggiero notes that this notion of professionalization is at seeming odds with the perception that criminal markets are flexible ones.

Ruggiero notes that seminal thinkers such as Cesare Beccaria and Jeremy Bentham defined political violence from the lens of social contract theory--i.e. That political violence occurs as a non-state response to "excessive state violence". While organized criminal groups "imply the alliance between highly heterogeneous groups and individuals", "terrorist networks...require a substantial degree of homogeneity among participants". This collective identity and "imagined finalism" differentiate the two. Furthermore, while organized crime uses violence as one of many tools to secure and navigate markets, political groups use violence to signal their opposition to systems. Citing Makarenko[xx], Grabosky, and Stohl[xxi], Ruggiero argues that the activities of both groups have become increasingly similar, especially when they do business transactions together such as "exchanging drugs for weapons". The division between the two is porous because of the possible "politicization of ordinary criminals who eventually join terrorist groups" and "individuals turning from fighters into criminals" in exchange for some benefit.

In *The illicit drug trade, counternarcotics strategies and terrorism[xxii]*, Piazza finds that drug production, and opiate and cocaine wholesale prices, are significant positive predictors of terrorism while crop eradication and drug interdiction are significant negative predictors. In theory, narcotics financing is crucial for helping organizations acquire more funds to fund future attacks. This study was among the first to empirically argue that conventional counternarcotics policies have benefits for counterterrorism. In *Systems for Countering Terrorism Financing*,

Norton and Chadderton[xxiii] survey relevant counterterrorism international law such as the 1963 Terrorism Financing Convention, UNSCR 1267 (1999), 1373 (2001), and 2178 (2014) which mandate states to take measures to actively prevent terrorist activities.

Counterterrorism policies are, of course, not the same as counterinsurgency policies though overlaps certainly exist. In *Do counterterrorism (CT) and counterinsurgency (COIN) go together[xxiv]?* Boyle argues that in the context of low-intensity civil wars, like the so-called 'War on Terror' in Afghanistan, counterterrorism and counterinsurgency can work in opposition to one another. Crucially, COIN model focuses on direct (coercion) and indirect ('hearts and minds') tactics of increasingly separating insurgents from the population. In contrast, CT models focus on "sporadic but ruthless use of force against terrorist operatives to degrade their capabilities". Hence, while COIN uses coercion "sparingly" and focuses more on "using violence to shape the preference of the local population", CT is "kinetic" and faster-paced. Furthermore, citing Kilcullen's concept of the 'accidental guerilla', terrorist organizations do not necessarily have deep roots in communities and can even be "parasitic". Organizations targeted using COIN have strong roots with the population. Lastly, CT approaches do not traditionally involve state-building or political components whereas COIN ones do.

2.3 Economic differences between terrorism and insurgency

Despite these differences in military strategies, there is a paucity of literature that directly compares the economic dimension of counterterrorism and counterinsurgency policies. Many civil war scholars, however, have incorporated economics by analyzing the effects of asset prices. In the seminal paper *Commodity Price Shocks and Civil Conflict: Evidence from Colombia[xxv]*, Dube and Vargas show that price shocks to labor-intensive industries disproportionately reduce labor hours. The "opportunity cost effect" causes violence to increase as income shocks decrease the opportunity cost of joining armed groups. On the other hand, increases in the price of capital-intensive goods intensify conflict in the regions producing that good due to a "rapacity effect" because of rent-seeking behavior. Since then, other studies have had contradictory results. In *Do Commodity Price Shocks Cause Armed Conflict? A Meta-Analysis of Natural Experiments[xxvi]*, Blair, Christensen, and Rudkin conduct a meta-analysis of three-hundred-and-fifty quantitative studies that link price shocks with conflict. They find that on average, commodity prices do not affect conflict. However, there is evidence, contra Dube and Vargas, "that price increases in labor-intensive (capital-intensive) commodities prevent (provoke) conflict" and that "price increases for loot-able commodities lead to conflict".

2.4 Preliminary observations

In the literature review, I explored two main buckets of analyses. The first attempts to measure money laundering but doesn't relate it to conflict or political violence. The second attempts to meld economics and political violence by analyzing the effects of asset production on civil war and terrorist violence. As mentioned, while there is no shortage of literature that compares the military differences between COIN and CT methods, there is a paucity of literature that distinguishes their economic differences. While civil war literature distinguishes between labor- and capital-intensive assets, CT literature on narcotics operates on the null hypothesis that the more potential revenue organizations receive, the more terrorism occurs. Furthermore, there has been a paucity of effort to tie the general literature on COIN and CT to AML/CFT regimes.

3. Theory

3.1 Overview: Political violence and finance

As mentioned, there are two main approaches of relating finance to political violence. The first structural bucket draws more heavily from approaches in criminology and macroeconomics. The second price-driven bucket draws more heavily from approaches in microeconomics. While the first constructs models for estimating and measuring illicit financial flows (IFFs) from and to states and regions, the second uses tests how market-level exogenous changes of resources and goods, such as narcotics, affect organizations' use of terrorism and other forms of political violence.

Though the first bucket is very useful for predicting which states are more vulnerable to money laundering, it was not designed to filter out acts of 'pure' criminal purposes. I.e., it remains untested whether the factors outlined in the Walker model are relevant to actors engaged in civil wars. On the other hand, while the second bucket has superior explanatory power in tying financing to political violence, it does not explain or predict overall political violence well because it focuses on a few assets that are not representative of organizations' entire revenue streams. Furthermore, while academically interesting, it is arguably difficult to derive suitable CT and COIN policies given that states cannot in large part control or predict exogenous price changes.

By integrating these two approaches using a novel theory of financial source formality, this thesis provides a new model that can be deployed to predict conflict intensity and craft country- and organization-specific COIN and CT policies.

3.2 Concepts and mechanisms in the literature

3.2.1 The Political in political violence: a recursive paradigm

The first course of action is the toughest: defining political violence. For this thesis, I define political violence as the use of violence to achieve a political goal. There are two main types of political violence: insurgency and terrorism. Adjacently, there is considerable debate on how crime intersects with political violence. I define terrorism as the political, deliberate, and indiscriminate use of violence on civilians; crime as an act that maximizes the perpetrator's the financial or personal gains of the; insurgency as a political uprising aimed at challenging or overthrowing the state. Comparing the three, crime is distinguishable from insurgency and terrorism because of the lack of a political motive. However, this distinction is hard to operationalize given that 'political' is in most part defined axiomatically or simply equated with civilian targeting, rendering its inclusion analytically moot.

'Political' is also sometimes used in opposition to 'economic'. A common illustration is that though bank robberies target civilians, they are not traditionally classified as terrorism because robbers do not have political motives--in the sense that they do not wish to overthrow the government or pressure the government to make a policy change. Another easily operationalizable distinction is that while criminals hide their identities from the public and the wielders of legitimate political power like the police, political actors tend to use violence to attract the attention of the broader community.

This illustration is somewhat contrived for two reasons. Firstly, many new threats like cybercrimes increasingly complicate this political and economic distinction. There is considerable debate on whether crimes such as hacktivism and the targeted use of distributed denial-of-service (DDoS) attacks on crucial government and public infrastructure should be classified as cyberterrorism. Secondly, organizations frequently labeled as terrorist groups such as ISIS have engaged in criminal behavior such as theft and extortion to fund their activities. The focus of this thesis, money laundering, also falls under this category. Although these

organizations are commonly designated as politically violent groups, these specific acts fall under the umbrella of criminality.

Furthermore, all organizations, regardless of their aims, require finances to operate. As such, armed organizations engaged in civil war may also commit violence akin to petty crimes for political reasons such as to accrue funds for a bombing. Thus, while the *act* of violence is either political or economic in its objective, the *goal* of the organization cannot be clearly bifurcated. This highlights the importance of differentiating act-based and organization-based definitions of political violence. While act-based definitions focus on the details of the attack, organization-based definitions abstract from an organization's perceived intended purpose. However, since goals can only be derived from reviewing manifestos and other organizational documents, even act-based treatments enter into a recursive loop when such definitions boil down to a notion of the 'political'.

The distinction between terrorism and insurgency, on the other hand, is an easier one: terrorist tactics target civilians while insurgent tactics target government and military targets. Because of the spottiness of real data, the difference between insurgent and terrorist tactics can best be conceptualized as a spectrum based on civilian deaths as a percentage of total deaths. Civilian targeting is hence a 'tuning knob' proxy that approximates whether an organization is likely to be engaging in insurgent or terrorist tactics.

	Political goals?	Civilian targeting?
Terrorism	Y	Y
Crime	N	Y
Insurgency	Y	N

Figure 2: An act-based overview of violent tactics

3.2.2 Illicit financial flows

According to Global Financial Integrity (GFI), a non-profit organization, illicit financial flows (IFFs) are illegal movements of money or capital from one country to another[xxvii]. In contrast, the World Bank defines IFFs as the cross-border movement of capital associated with illegal

activity or more explicitly: money that is illegally earned, transferred, or used, that crosses borders. The World Bank further divides IFFs[xxviii]: A) Illegal financial acts (corruption, tax evasion, etc.) B) Funds from illegal activity (narcotics, smuggling, etc.) C) Funds directed towards illegal activity (terrorist financing, nuclear financing, etc.). The Organisation for Corporation and Economic Development[xxix] (OECD) further specifies that IFFs are cross-border financial transfers that contravene national or international laws.

Like political violence, I argue that the categories stipulated by the World Bank are not mutually exclusive. I list possible combinations below. Note that the two axes are identical and that the examples exemplify 'pure' forms of IFFs if the associated axis labels are identical.

	Illegal financial act	Funds from illegal activity	Funds directed towards illegal activity
Illegal financial act	An owner of an import-export business deliberately under-declaring goods imported to evade duties and taxes	A logging company deliberately obscuring the illegal origins of its timber for a profit	A human trafficker carrying a briefcase of cash across a border without declaration to fund more trafficking operations
Funds from illegal activity	NIL	An organization generating revenue from kidnappings	An organization using trade-based money laundering techniques such as mixing legal money from the sale of legal timber with illegal money from narcotics
Funds directed towards illegal activity	NIL	NIL	An individual wiring money to an organization known

			to engage in terrorism

Figure 3: Examples of IFFs
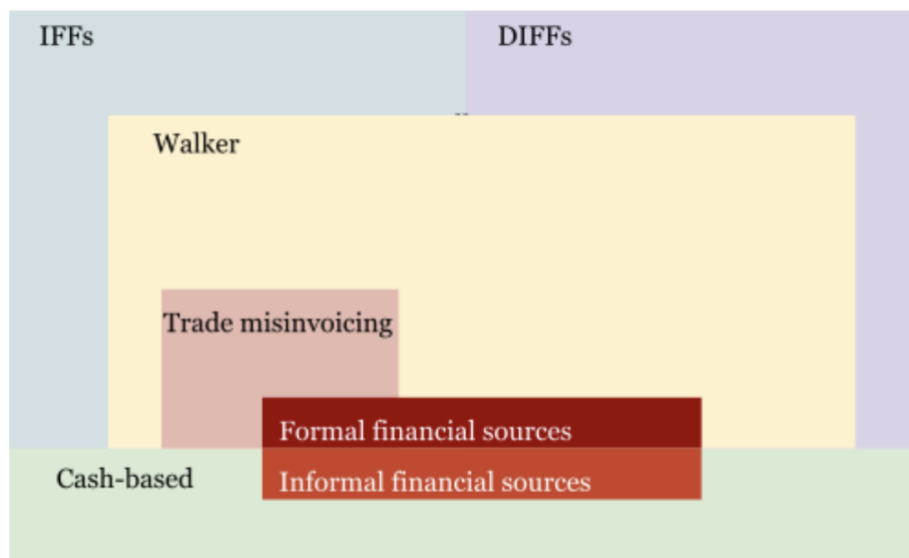
Figure 4: Visual representation of different concepts in financial flows literature (not to scale)

An example that satisfies all three categories: a corrupt official allowing a known organization that uses terrorism to establish a shell company to launder money from human trafficking to fund terrorism in the future.

As such, the three categories roughly fall into the following dimensions: source (funds from illegal activity), process (illegal act), and endpoint (funds directed towards illegal activity). For this thesis's purposes, it makes seeming sense to focus on the endpoint of money laundering. After all, while under-declaring imports is a crime, it does not necessarily imply that the culprit organization will use the profits to fund political violence. Moreover, while human trafficking is morally heinous, for example, it is not the exclusive domain of politically violent actors as many petty gangs and criminals also accrue revenue from such a source.

Given the difficulty of retrieving any kind of data on IFFs, however, these distinctions are extremely difficult to make in practice. Nevertheless, it is possible to directly estimate trade-based money laundering. The GFI, largely in line with Walker, defines trade misinvoicing as a

method for moving money illicitly across borders that involves the deliberate falsification of the value, volume, and/or type of commodity in an international commercial transaction of goods or service by at least one party to the transaction. International organizations like the UN and the World Trade Organization (WTO) compile data on bilateral trade interactions. For every country, these organizations record declared import and export values with all trade partners. By looking at the differential between what Country X declared it imported from Country Y and what Country Y declared it exported to Country X, we can estimate the value lost due to trade misinvoicing. However, it is crucial to note that trade misinvoicing is but one type of illegal financial act.

3.2.3 Basic Walker model

The Walker model is an approach in criminology that estimates IFFs. The Walker model was conceptualized in 1995 as a method to approximate trade-based IFFs. That is, to estimate the percentage of outgoing money laundering flowing from Country X to Country Y. Walker loosely based his model on Walter Isard's 1954 gravity model of trade[xxx] which was in turn formulated from Isaac Newton's law of gravitation and touted as one of the most empirically validated models in macroeconomics. The logic of a gravity model is as follows: the attractive force (for money laundering in this case) is proportional to the 'mass' of the object and the inverse squared mutual distance. The 'mass' in this instance refers to factors that render a country more susceptible to money laundering. Thus, Isard's and Walker's models' respective simplified intuition is simple: States that have structural factors such as high GDP per capita or bank secrecy laws are more attractive to trade with or to launder money through, and are hence more likely to have more trade or money laundering.

Similarly, consider two countries, X and Y. The flow of funds from Country X to Country Y is dependent on both the 'attractiveness' conditions in country A and country B. These conditions are GNP per capita, corruption, conflict level, SWIFT membership, bank secrecy laws, and government attitude towards money laundering. To measure inflow from X to Y, one takes the Walker score of Y divided by the distance between the two countries, and vice versa.

I make three major modifications to repurpose the model as a proxy for money laundering in the broader context of civil wars. 1) While Walker calls for a weighted composite score, I consider all components unweighted for a finer-tuned analysis 2) I exclude SWIFT membership and conflict as factors and include Egmont membership 3) Though Walker designed the model to predict

trade-based money laundering, I repurpose the model to measure both domestic and cross-border financial flows by re-formulating and inventing novel methodologies for measuring the aforementioned factors (See "Theoretical Contributions").

As such, the original Walker model is stipulated as:

$$\text{Attractiveness} = \text{GDP per capita}.(3BS+GA+SWIFT-3\text{Conflict}-\text{Corruption} + 15)$$

Where BS=bank secrecy, GA=government attitude to money laundering, SWIFT=swift membership, Conflict=level of conflict, Corruption=level of corruption

I modify the equation as follows:

$$\text{Attractiveness} = \text{GNI per capita}.[3BS+\text{average }(GA_{technical}, GA_{treaties})+ \text{Egmont}-\text{Corruption} +3]$$

Where BS=bank secrecy, GA=government attitude to money laundering, Egmont=Egmont membership, Corruption=level of corruption

4. <u>The puzzle: Relating illicit financial flows to civil wars</u>

The puzzle relates these two incredibly rich and complicated fields by focusing on two simple interrelated questions: (A) How do illicit financial flows affect the wealth of organizations engaged in civil wars? (B) Is an organization's wealth correlated with its choice of violent tactic (insurgency vs terrorism)? I also theorize that civil war organizations engage in a two-staged model: (1) Revenue-generating: the use of crimes to accrue funds (2) Execution: the use of insurgency or terrorism to achieve pre-conceived aims. This follows the act-based definitions explored in 3.2.1.

5. <u>Theoretical contributions</u>

Chapter five contends with two unresolved topics from the previous sections. Firstly, what is the Political in political violence? As explored in 3.2.1, definitions of political violence often devolve to tautology. I argue that the notion of a political goal can be disaggregated to smaller discretionary measures. Secondly, how do civil war organizations' criminal and politically violent behavior cogently align with their overall strategy? Unlike pure criminals that rarely seek the public's attention or leave the criminal realm, civil war organizations toggle between criminal and political behavior, switching between tactics that fly under the government's radar and instances of political violence that seek the public's and government's attention. Regardless of their goals, as rational actors, organizations aim to maximize the amount of funding (profitability) that they have and minimize the risks of exposing their financial sources to authorities (security).

5.1 Contribution 1: Criminality and political violence as a two-staged business model

Instead of treating criminality and political violence as a binary, I argue that both modes of violence form a plausible two-staged business model for civil war organizations. During the first revenue generation stage, organizations use criminal methods to accrue funds. During the execution stage, organizations either fund insurgent or terrorist tactics (or choose to not attack). Civil war organizations hence exist in both the criminal and the political violence paradigms. At first blush, this appears like an ill-conceived business model. During the first stage, organizations attempt to stay as hidden as possible to prevent authorities from discovering their criminal financial sources. During the second, however, organizations aim for the opposite by deploying violence to cow governments and civilians into submission. This inherent contradiction is worsened by the anticipated government reactions. The more aggressive an organization becomes in the execution stage, the more likely a government is to retaliate with draconian measures which, in turn, risks the discovery of the organization's financial sources.

Furthermore, as the civil war progresses, organizations need an increasing amount of money to expand its armies and to purchase more weapons. To square this seeming contradiction, I develop a novel mechanism: the plowback-spend-execute tradeoff in 5.3. The contradiction

suggests that where an organization ultimately stands on this tradeoff is largely a factor of its leadership including the leaders' risk-bearing profile and vision for the organization. To encapsulate these discretionary concerns, I introduce a novel measure: the marginal propensity to attack.

5.2 Contribution 2: Theory of financial source formality

I define financial source formality as the degree to which an organization's finances are entwined with the banking system. This necessitates some form of a due diligence and know-your-customer (KYC) process hence excluding informal money lenders and other institutions that do not require or store formal documentation.

Formal financial sources do not simply include money in checking and savings accounts. Organizations are unlikely to have one massive bank account. Rather, they are likely to have a multitude of accounts in various currencies and jurisdictions to hedge the risk of being detected by AML/CFT regimes. Formal financial sources also include capital in the broader banking and financial systems, such as trade finance products, brokerage accounts, and shell companies. Informal financial sources are not necessarily cash-based. Rather, they are cash agnostic. Informal financial sources mediate and misappropriate finances through the sale of tangible assets like steel or crude oil. By bifurcating financial sources in this manner, we can also indirectly measure how much proceeds from informal sources get 'reinvested' into the formal banking system.

From a purely financial perspective, formal financial sources are more likely to be more profitable to organizations for three reasons. Firstly, formal sources are potentially multiplicative. By potentially participating in mirror trading or investing in legitimate businesses, organizations can increase their pool of funds. Secondly, formal sources are multinational and multi-currency. By having a series of accounts, organizations can receive and send donations and funds from and to operatives and sympathizers globally. Thirdly, formal sources are multi-purpose. By serving as a collection point for potential proceeds from a multitude of sources, formal sources allow organizations to execute their strategies more efficiently.

Informal financial sources are possibly more important than formal ones for nascent organizations. After all, forming links to the banking system may be less of a priority if an

organization does not have deep pockets at the get-go. Furthermore, though beyond the scope of this paper, it is possible that informal assets present diversification benefits for organizations with a high absolute amount of money in formal sources. Informal sources are not necessarily easier to set up, however. Unlike formal sources, informal sources require willing buyers and are highly sensitive to market and exchange-rate perturbations. Unfortunately, the limitations of this thesis also hamstring an investigation of this intuition.

Thus far, the theory of financial source formality relates how the type of financial sources possibly affects the amount of financing an organization has. To connect the theory with political violence, I introduce a novel mechanism of terrorism as variable cost in 5.4 that considers how the quantity of finances affects an organization's preference for insurgency or terrorism. In sum, I argue that comparing two civil war organizations, the organization with a higher proportion of formal financial sources would have a lower risk of passing the threshold where it would not be able to pay its troops. Because of this, terrorism would most likely be an inferior good for this organization and the organization would have a preference for insurgency.

Linking both political violence and the theory of financial formality, I also introduce a terrorism-insurgency mechanism in 5.5 that links formal financial sources to a preference for insurgency via the income effect.

5.3 Mechanism 1: The plowback-spend-execute tradeoff

An organization's marginal propensity to attack (MPA) is a discretionary measure that quantifies an organization's 'inner' workings. Discretionary mechanisms differ from systematic ones because they rely less on logical deduction and more on subjective decision-making processes. Discretionary is deductive while systematic is inductive.

I define an organization's MPA as follows:

$$MPA = \frac{dA}{dI}$$

Where A=attacks and I=income

MPA links the two stages of the business model. It also hints at how politically motivated an organization is. An organization firmly devoted to its cause will likely have a higher MPA than one that is more concerned with securing its revenue. If income decreases, a more politically-motivated organization is less likely to decrease its attacks. MPA hence also accounts for the possibility that organizations may suffer from mission creep and begin focusing on the first stage of the business model.

The MPA measure is particularly useful because the first-order derivative negates other contextual differences and allows for convenient cross-country comparisons. Furthermore, instead of reducing discussions of organizational goals to a tautological notion of the 'Political', MPA provides an empirical measure of an organization's strategic decision-making. I term this as 'strength of conviction'.

MPA also encapsulates long-term thinking. Like a firm, organizations face the strategic question: Is it more profitable to 'produce' more political violence now, or to plowback 'profits' to develop deeper financial sources that can potentially increase the wherewithal to launch future attacks? It is also possible for an organization's leadership to simply be more risk-averse.

Dimension	Question
Strength of conviction	Is the organization predominantly using proceeds to launch attacks or for other purposes like purchasing luxury goods?
Long-term thinking	Is the organization plowing back profits to expand its financial sources or using finances to launch attacks now?
Risk-aversion	Does the organization foresee considerable resistance to attacks now?

Figure 5: Dimensions that affect MPA

It may be empirically possible to create three separate measures though the construction of which is beyond the scope of this thesis.

5.4 Mechanism 2: Terrorism as variable cost in civil wars

This mechanism is a systematic one that illustrates that an additional unit of terrorism would cost more for a politically-motivated non-civil war organization than a civil war one. Scholars have debated whether terrorism outside and within the context of a civil war are substantively different. The literature remains divided with some[xxxi] stressing the need to differentiate the two,

while others[xxxii] argue that terrorism serves a distinct purpose in civil wars. In this context, I argue that terrorism in these two contexts is financially different. As mentioned in the Introduction, while the cost difference between insurgent and terrorist tactics appears different, this seeming differential ignores the higher fixed costs civil war organizations have.

Conceptualizing organizations as firms, organizations can be thought of as existing in an industry with a demand curve most closely resembling traditional Marshallian demand. I assume that the political violence 'industry' is a distinct market because the goods produced (i.e., terrorism and insurgency) are unique. The Marshallian demand model is particularly salient for comparisons across two classes of firms (civil war and non-civil war) as it does not assume that utility or income stays constant.

In this model, price refers to the cost of using terrorism and marginal revenue quantifies the perceived political gain from committing terrorism. Comparing an organization engaged in a civil war to one that is not, the latter will have a higher fixed cost curve than the former. Ceteris paribus, for low levels of production (i.e., low number of attacks), the marginal cost for each additional attack is higher for non-civil war organizations. Thus, notwithstanding the aforementioned contextual difference in the strategic objectives of using terrorism in a civil war and a non-civil war context, these economic differences suggest that terrorism is less costly for civil war organizations--though the differential in cost converges as attacks increase.

5.5 Mechanism 3: The insurgency-terrorism tradeoff

This mechanism is a systematic one that applies more microeconomic principles to illustrate that a civil war organization prefers insurgency to terrorism in optimal conditions. By definition, organizations engaged in civil war aim to achieve some form of change in the *de jure* or *de facto* government. This can include objectives from ethnic separatism to ideologically-driven (particularly communism) movements. To achieve this, terrorism can be conceptualized as an indirect means, relying on public spectacle and Hobbesian panic terror[xxxiii] to cow citizens into pressuring governments to accede to the organization's demands.

In contrast, insurgent tactics directly denigrate the government's capabilities and gradually degrade public support for the civil war. Hence, all else being equal, insurgent tactics are more attractive firstly because of their efficiency in helping an organization achieve its political goal.

Secondly, as mentioned, civil war organizations require armies that have a fixed cost. In comparison to an insurgent tactic that requires a large number of troops, terrorism often requires significantly less manpower, rendering a significant portion of troops 'unused'. As such, in the short-run, a rational organization would maximize gains by optimizing its use of troops. It is possible that organizations would be able to vary the size of their troops in the long-run but the permutations of this possibility are beyond the scope of this thesis.

Analyzing organizations solely engaged in civil wars, I deploy the Slutsky identity because it encapsulates both the income effect (as explored in the Marshallian model above) and the substitution effect between terrorism and insurgency.

$$\frac{\partial Xi}{\partial Pj} = \frac{\partial hi}{\partial Pj} - Xj \cdot \frac{\partial Xi}{\partial m}$$

Where i,j are terrorism and insurgency respectively and m represents income.

The income effect is represented by the second derivative on the RHS and the substitution effect by the first derivative.

Or in terms of elasticities,

$$\epsilon ij = \sigma ij - \alpha j \eta i$$

Where aij is the compensated price elasticity of terrorism with respect to the price of insurgency, aj is the budget share of insurgency, and ni is the income elasticity of terrorism.

In the short-run, fixed costs are not variable. In other words, an organization is unlikely to be able to drastically modify the size of its troops. I assume that at constant income and utility levels, an organization will have a strong preference for insurgency in the short-run. As such, I argue that only organizations that are under substantial financial pressure would take drastic measures including not paying or even dismissing troops, despite the negative ramifications on the broader community's support of the organization and its cause. During this process of contraction, an organization would lose a sizable portion of its strength and size. Such a process is very hard to reverse in the short-run because those let go would not readily 'trust' that the organization will be able to employ them in the future. As such, I consider the two classes of actors separately, with separate preferences and logics.

For an organization that has not undergone this contraction, I assume that terrorism is an inferior good. When the price of terrorism increases, the increase in income will lead to a decrease in the demand for terrorism increases (income effect). However, the substitution effect increases because of a decrease in the rate of substitution between terrorism and insurgency meaning that organizations sacrifice fewer units of insurgency for an additional unit of terrorism. Hence, theoretically, the overall demand for terrorism is unknown and dependent on the individual magnitudes of the substitution and income effect. While there is insufficient space to fully model this behavior, I argue that the income effect is likely to outweigh the substitution effect for these organizations because the substitutability of insurgency and terrorism is likely to be small, regardless of the financial circumstances of the organization in question.

For an organization that has undergone this contraction, I assume that terrorism is a normal good. When the price of terrorism increases, the increase in income will lead to an increase in the demand for terrorism (income effect). Similarly, the substitution effect increases. Hence, the overall demand for terrorism increases. For organizations that undergo this unexpected contraction, terrorism may actually be superior to insurgency because of the 'marketing' effect of demonstrative violence that may garner more donations and sympathizers. This marketing effect is less valuable to organizations with sound finances because of its inefficiency. Terrorism is also very risky. On the one hand, terrorism may push citizens to pressure governments to give in to demands. However, on the other, terrorism may also induce governments to use exceptionally harsh measures in an effort to maintain legitimacy. To the extent that organizations are rational, only those in dire financial straits will favor terrorism over insurgency. As a point of clarification, the financial threshold that divides terrorism as an inferior and normal good is an organization-specific rather than an industry standard.

5.4 Mechanism 4: To attack or not to attack? Case of Northeast Myanmar

The central problem for rationalist explanations of conflict is as follows: what factors hamstring the formation of an *ex ante* agreement given that *ex post* cost of conflict? Given the asymmetric nature of civil wars, the seeming equilibrium tends to conflict unless the state has considerable utility to gain from reaching an agreement, either because of weak capacity or high corruption.

The latter is best exemplified by the case of narcotic production and trafficking in Northeast Myanmar.

For Myanmar, I specifically investigate poppy-derived drugs such as opium and heroin, and *ya ba*. Ya ba pills are a mix of methamphetamines (*shabu*) and caffeine. The meth trade in Asia is estimated to be worth around US$60 billion, the majority of which originate in the many contested areas in the country. Though Myanmese EAOs still rely on opium as a source of revenue, most have dramatically shifted to *ya ba* smuggling given its profitability and the fact that meth labs are less visible than fields of poppies to the government. Unlike licit goods like coal and steel, civil war organizations likely have higher market power in the narcotics industry. While the exact number of market participants is unknown, armed organizations do not compete with traditional corporations for control of the narcotics market.

Complicating the context, the Tatmadaw (Myanmese military) is allegedly complicit in narcotics production by accepting 'taxes' for permission to produce narcotics. Unlike other forms of corruption, alleged complicity in drug production and trafficking is systematic. Furthermore, this reported complicity indicates that the organizations indicate that organizations may not have strong goal resolution and are more invested in the first-stage of the aforementioned business model.

Hence, insofar as government complicity occurs and the organization in question prefers to accrue profits than attack, the context in Northeast Myanmar exemplifies a classic bargaining problem: Why do attacks still occur when both organizations and the Tatmadaw are financially better off when complicity occurs? Let π represent the financial profits from narcotics, D the organization that produces and traffics narcotics, G the governments. The possible agreements are:

$$X = \{(X_D, X_G): 0 \leq X_D < \pi \ and \ X_G = \pi - X_A\}$$

As such, D and G propose the following:

$$A_D = \frac{1 - \delta_G}{1 - \delta_D \delta_G} \quad B_G = \frac{1 - \delta_D}{1 - \delta_D \delta_G}$$

N accepts offer B if $B \leq \frac{\delta_D(1-\delta_G)}{1-\delta_D\delta_G}$, G accepts offer A if $A \leq \frac{\delta_G(1-\delta_D)}{1-\delta_D\delta_G}$

Payoffs $(X_D *, X_G *)$ is a Rubinstein bargaining solution if it solves the constrained optimization problem:

$$argmax_{\delta D,\delta G}(\delta_D - d_N)(\delta_G - d_G)$$

Subject to:

$$(\delta_D, \delta_G) \in U$$
$$(\delta_D, \delta_G) \geq (d_D, d_G)$$

Where d represents the disagreement point. As δ tends to 1 and the 'friction' (1- δ) within the system disappears, we reach a system that resembles the Nash equilibrium and the payoffs tend to ½. The incentive for reaching an agreement is higher for organizations with more mercenary interests since the total financial proceeds,π, decreases with each round of Rubinstein bargaining. Assuming low friction,

In this case, $(d_D, d_G) = (\pi(1-v), 0), v \in (0,1]$

Where v is the disagreement payoff which in this case represents the financial cost of an attack. The Nash bargaining solution can be expressed:

$$U_D^N = \pi(1 - \frac{v}{2}) \text{ and } U_G^N = \frac{\pi v}{2}$$

As such, as v increases, the utility of the organization (D) decreases and the utility of the government (G) increases. This suggests that cooperation is less appealing the stronger the government and/or the weaker its strength. This counterintuitively suggests that weaker organizations are associated with higher conflict intensity.

There is insufficient space to fully operationalize the MPA and complicit bargaining mechanism. For the purposes of this thesis, I use these mechanisms like the terrorism-insurgency mechanism--as heuristic tools to interpret the empirics. I also predominantly consider these mechanisms for Myanmar in Hypothesis 5 because of qualitative information about the size and operations of these organizations.

6. <u>Measurements</u>

6.1 Operationalization

<u>Measuring political violence</u>

Due to the limitations of this thesis and the paucity of data, I only approximate the category an event belongs in, i.e., insurgency or terrorism by the composition of fatalities. For example, if ninety percent of an event's associated fatalities are civilians, I surmise that the event is more likely to be a terrorist one. It may be possible to use natural language processing to derive the location of the event from the source article in future work. I define an event as a discrete incident where either the organization or the state launched an attack. While casualties do not necessarily follow, events have a clear start and an end where a cessation of violence occurs.

<u>Measuring illicit financial flows</u>

As with most macroeconomic data, Goodhart's Law hinders the task of measuring illicit financial flows. In a 1975 article *the United Kingdom, Problems of Monetary Management: the U.K. Experience*[xxxiv], economist Charles Goodhart posited that "As soon as the government attempts to regulate any particular set of financial assets, these become unreliable as indicators of economic trends." In 1997, anthropologist Marilyn Strathern[xxxv] generalized Goodhart's Law with the axiom that "When a measure becomes a target, it ceases to be a good measure". In effect, Goodhart's Law has been compared to Heisenberg's uncertainty principle in quantum mechanics in the sense that both exemplify a precision-comprehensive tradeoff. Furthermore, Goodhart's Law, as a macro-level Hawthorne effect, suggests that macroeconomic indicators are no longer good representations of macroeconomic phenomena when they become important in policy discussions because governments simply optimize for indicators that observers track (we can also make a loose comparison to the observer effect).

The two main instruments I deploy for measuring illicit financial flows are no exception. To recapitulate, these two instruments are a modified Walker model and trade misinvoicing. For the most part, these two instruments are arguably not very popular measures. However, these two instruments exemplify the opposite poles of the precision-comprehensive tradeoff. The disaggregated Walker model accounts for a range of regulatory condition indicators, accounting for both domestic and cross-border illicit financial flows. While comprehensive, there is a lower precision since these indicators are not *sui generis* or unique to money

laundering. On the other hand, while trade-based money laundering has high precision they cover but one aspect of money laundering.

Neither instrument can totally separate illicit financial flows relevant to civil war organizations from the reservoir of flows relevant to petty criminals. Furthermore, while the FinCEN data traces how major multinational banks have been complicit in money laundering, the cases pulled are reported to not be representative of the universe of money laundering. This class of data, however, is very useful for pointing out specific geographies and banks that have been particularly egregious.

Operationalizing the Walker model

The disaggregated approach offers two main advantages. Firstly, it allows us to tease out which indicators are most relevant to civil war organizations. Secondly, it allows us to investigate country and year trends, unlike the standard Walker model that assumes that the same indicators have equal weight across space and time. To recapitulate, I exclude conflict to prevent endogeneity. I exclude SWIFT membership since most countries in question have adopted SWIFT in the late 1990s and early 2000s rendering its value questionable. I include Egmont membership as the organization started in 1995 but the countries in question (if at all) only took up membership in the 2000s hence inducing considerable variation. I separate government attitude into technical standards and international cooperation to investigate if the two have differing impacts on the financing of insurgency and terrorism. I add a constant of 3 to theoretically prevent negative Walker scores. As such, I effectively investigate GNI, bank secrecy, AML/CFT technical capabilities, international cooperation, Egmont membership, and corruption.

To clarify, while GDP measures the total market value of all finished goods and services produced within a country, GNI is the total income received from its residents and businesses regardless of location. Given that the thesis is concerned with incoming financial flows, GNI is a more suitable measure as it takes all organizations and individuals who use international payment and trade networks into account.

6.2 Linking conflict intensity with financial sources

To link financial source formality to the terrorism-insurgency mechanism, I focus on civil war events. This does not preclude non-state violence on civilians, but merely specifies that the time these events are included in the data is linked to the 'start' of a civil war. In effect, this allows me to analyze how groups toggle between attacking the state, other non-state actors, and civilians in the context of some form of a civil war Hence, cases are included so long as 1) The context of a civil war holds; 2) One side of the dyadic relationship is a non-state organization.

I operationalize terrorism and insurgency as measures of conflict intensity by analyzing the variation in the number of cumulative deaths and civilian deaths as a percentage of cumulative deaths. The latter allows me to evaluate each organization's preference for insurgency and terrorism. I use civilian targeting as the main distinguisher between insurgency and terrorism. Because of data quality issues, I treat the distinction between insurgency and terrorism as a spectrum rather than a binary. Hence, by analyzing the percentage of civilian deaths, I approximate organizations' preferences for insurgency and terrorism on a sliding scale.

My theory is (A) Organizations that rely more on formal sources are more likely to inflict more deaths overall and are more likely to target hard targets. (B) Organizations that rely on more informal financial sources are more likely to target civilians rather than hard government targets (terrorism).

Admittedly, the relationship between financial source formality and conflict may be endogenous. In this thesis, however, I only advance the argument that a correlation between formal sources and insurgency exists rather than arguing for any degree of sequential causality.

To measure formal sources, I consider the counterfactual: What barriers do organizations face in establishing formal financial networks? The more conducive an environment is to illicit financial activity, the more funding civil war organizations raise, and the worse the potential conflict intensity. Following the terrorism-insurgency mechanism, organizations with a higher percentage of formal sources would have a preference for insurgency.

To measure informal sources, I analyze changes in the overall volume of key resources namely, steel, coal, natural gas, and oil produced.

6.3 Formal factor 1: Bank secrecy-AML/CFT capability

Bank secrecy is an agreement between a bank and its clients that all activities and deposits are secure, confidential, and private. Off-shore jurisdictions such as Panama and the Cayman Islands have exceptional bank secrecy. I focus on the bank secrecy of the country the organization is domiciled in, i.e., where they carry out their attacks, for two reasons. Firstly, it is difficult to analytically discern which foreign jurisdictions are of most interest. While there are jurisdictions in the region like Singapore, Hong Kong, and Macau that are traditionally viewed as hubs for money laundering, other factors such as geographical proximity, and language serve as serious confounders. Secondly and more importantly, regardless of the size and geographical distribution of organizations' financial sources, all organizations would have to route money back to the country they are domiciled in. Hence, whatever route the finances undertake is secondary since organizations require a financial presence in their home jurisdictions.

On the other hand, anti-money laundering and combat (the) financing of terrorism (AML/CFT) are technical standards that deter, detect, and prevent criminal behavior. Policies include mandating banks to retain records and suspicious activity reporting (SAR) procedures for unusual and large transactions.

Instead of treating bank secrecy and AML/CFT capabilities as discrete factors, I argue that bank secrecy and AML/CFT capabilities should be conceptualized more continuously. Jurisdictions that have high bank secrecy can mediate the negative impact of bank secrecy with AML/CFT procedures as organizations are most drawn to jurisdictions with high bank secrecy and low AML/CFT capabilities. It would hence be ill-conceived to interpret bank secrecy or AML/CFT capabilities without consideration of the other.

I consider incorporation laws within the umbrella of AML/CFT measures. It is difficult to disentangle whether lax incorporation laws affect financial or informal financial sources more. On the one hand, money laundering via shell companies is a major challenge. Organizations that have significant dealings in producing and selling assets benefit from having front companies that disguise the illegitimate origins of these assets. I argue that incorporation laws affect the existence of shell companies more substantially than front organizations. Front companies, while arguably unethical, can be set up in any jurisdiction since the incorporation process required is virtually indistinguishable from regular companies. The incorporation of shell

companies, on the other hand, is easier in jurisdictions that explicitly have laws that explicitly tolerate and aid its existence.

6.4 Formal factor 2: Size of financial industry-GNI

Jurisdictions are most attractive when the economy has a high level of financialization. Financialization refers to the size of the financial sector as a percentage of total GDP. The higher the financialization, the greater gains an organization may have--not simply because of the plethora of accounts that render their activities less visible, but also because of the ease of transferring money within and between countries, and other money-making opportunities like investing in real estate.

While the size of the financial industry is already a relative measure, I consider the size of the financial industry as a factor of GNI per capita. Banks and institutional investors are drawn to jurisdictions that are already rich. However, wealth *per se* is less of a concern for civil war organizations as compared to traditional financial agents. Hence, GNI serves as an important control to temper the attractiveness of the financial industry to the overall wealth of the jurisdiction.

6.5 Informal factor 1: Exogenous price of assets

The exogenous price of assets represents the attractiveness of an asset to an organization. I temper this with inflation and the exchange rate to contextualize and localize these gains.

6.6 Informal factor 2: Quantity of assets

The quantity of assets is a loose proxy for the organization's level of asset production. While this measure is admittedly flawed given that licit goods are overwhelmingly produced by legal companies, the overall country-level production, like the financial sector size measure, provides a loose estimate of how much organizations stand to gain.

Unemployment

Importantly, I do not deploy asset prices and quantity in the same manner scholars like Dube and Vargas have. Instead of trying to approximate the effect of exogenous changes in the price of assets via a labor market effect, I directly approximate how much organizations misappropriate from these assets. To control for the labor market, I consider assets in conjunction with unemployment. Unemployment proxies the availability of labor and people's willingness to sell their services to organizations in times of economic hardship. Though the relationship between unemployment and these assets is likely to be endogenous, this thesis is predominantly interested in discerning what movement of indicators are *correlated* with conflict intensity rather than establishing causality. Unemployment is an important control that ensures that the level of conflict intensity is indeed attributable to informal financial shifts, rather than a general increase in the recruitment of fighters.

6.7 Special case of narcotics in Myanmar

The data on narcotics is spotty and data on the quantity of drug seizures is more available than price or drug production volume estimates. Drug production is particularly a problem in Northeast Myanmar with groups such as the Shan, Wa, and Kachin being notorious for drug trafficking. Organizations hold monopolistic control[xxxvi] on drug production and the high barriers to entry including learning the know-how, bribing chains of officials, and hiding laboratories imply high up-front fixed and variable costs. Hence, an organization that enters the drug business will likely already be relatively big with resources at its disposal.

Though Southeast Asia is infamous for the 'Golden Triangle'[xxxvii] of drug production between Thailand, Laos, and Myanmar, I only look at Myanmese civil war organizations because they have explicit connections to narcotics. While it is possible that Thai or other country's organizations also engage in the narcotics trade, the lack of prior evidence renders potential findings questionable. While data that separate drug seizures in Myanmar by region are few and far between, I attempt to account for the chance element by differentiating Northeastern organizations from others.

While narcotics are an informal financial source, I argue that the organizations' monopolistic control of narcotics tempers the market volatility dimension licit goods have. As such, narcotics should be treated as a special case. Because of bargaining theory, I expect higher conflict intensity in contexts where the organization is weaker.

6.8 Other control and amplification factors: Federal tax rate, military spending, corruption

Federal tax rate serves as a control because it affects organizations' choice of investing in formal and informal financial sources. The higher the federal tax, the more attractive cash-based sources are. Military spending proxies the strength of the military and ensures that the dependent variables reflect the strength of the organization and not the strength of the state. Corruption is also an important factor as it quantifies the organization's 'ease of doing business'. On the one hand, higher corruption allows organizations to accrue more financial resources, and hence, to launch more and deadlier attacks. According to bargaining theory, however, jurisdictions with higher corruption will have fewer attacks since governments are more willing to tolerate civil war organizations in exchange for financial incentives. I investigate which explanation is stronger in the results.

	Formal	Informal
Attractiveness	Bank secrecy-AML/CFT (substituting factors)	Price of assets
Potential gains	Size of financial sector moderated by GNI per capita	Quantity of assets produced
Control 1: Federal tax rate	Yes	Yes
Control 2: Military spending	Yes	Yes
Amplification factor: Corruption	Less important	More important

Figure 6: Independent variables

7. <u>Hypotheses</u>

H_1: The higher the bank secrecy, the lower the country's AML/CFT capabilities, and the higher the percentage of trade misinvoicing the more political violence-related fatalities and the lower civilian fatalities as a percentage of total fatalities.

H_2 : The larger the size of the financial sector, the more political violence-related fatalities and the lower civilian fatalities as a percentage of total fatalities.

H_3: The higher the exogenous price of assets, the less political violence-related fatalities and the higher civilian fatalities as a percentage of total fatalities*.

H_4: The higher the volume of assets produced, the less political violence-related fatalities and the higher civilian fatalities as a percentage of total fatalities.

*Assets included: steel, coal, natural gas, and oil.

H_5: Drug seizures and land area devoted to poppy production have no statistically significant impact on conflict intensity.

8. <u>Empirical objectives, measurement, and data strategy</u>

In this thesis, I apply the theory of formal financial sources to the variation in conflict intensity in the Philippines, Thailand, Myanmar, Malaysia, and Indonesia from 1997 to 2019. I first construct unique datasets on bank secrecy and AML/CFT capabilities and gather data on the remaining independent and dependent variables. I attempt to maximize the validity of my theory by first conducting a simple panel analysis on the Walker model, as is, as a standard to compare my models to.

Because the theory of financial source formality has little theoretical precedent, I compile a list of collinear but related variables such as international cooperation to maximize the empirical breadth of my findings. I use principal component analysis (PCA) and hierarchical clustering to

detect patterns in my variable choice. I also plot a simple correlation matrix to visualize potential multicollinearity issues.

After validating the theory, I proceed to test the hypotheses from Section 7 using panel analyses. I focus on the results from a pooled OLS and fixed-effects model. The first negates differences over cases and time while the second assumes that there are case differences that are time-invariant. While the first model will be better at validating financial source formality as a theory, the second model will highlight specific components of the model that are relevant to the Southeast Asian countries chosen. I conduct the Cochrane-Orcutt procedure for models that fail the Breusch-Godfrey test for autocorrelation.

8.1 Missing data strategy

I fill missing data in with an average or the last recorded variable. I also conduct regressions excluding incomplete cases in the annex to test the robustness of the imputation. I do not impute asset prices because of the volatility of markets.

8.2 Independent variables data sources

For the structural variables, I rely on data from the Financial Action Task Force (FATF) to measure government AML/CFT capacity; Transparency International to measure corruption; World Bank for data on GNI, unemployment, inflation, size of the financial sector, exchange rate, military spending, and federal taxation. I rely on the United Nations International Trade Statistics Database (COMTRADE) for data on trade misinvoicing. To analyze asset production data, I rely on data from the World Steel Organization for steel production, International Energy Agency for crude oil, natural gas, and coal production.

Deriving exogenous price data is always tricky. I use data from the World Bank's 'pink sheet' on prices of primary commodities for data on coal, crude oil, natural gas, and coal. Crude oil prices are an average of three leading measures: Brent, Dubai, and West Texas Intermediary; natural gas prices an average of prices in the US, Europe, and Japan; coal an average of Australian and South African prices. Obtaining historical price data on steel was particularly challenging given that steel is not a primary commodity. Instead, I rely on the producer price index from the Federal Reserve Bank of St. Louis.

8.3 Dependent variable sources

I primarily rely on data from the Uppsala Conflict Data Program (UCDP). In particular, I aggregate total deaths and the percentage of civilian deaths variables. I transform the data into an organization-year and country-year dataset and test the different levels of effects. For the organization-year analyses, I cluster standard errors and the country-year level since the independent variables are all at the country-year level.

UCDP data

The Uppsala Conflict Data Program (UCDP) based in Uppsala University collects data on organized violence. The UCDP data covers three dyads: (A) State-based: either conflict between two states or between a state and a rebel group (B) Non-state violence: violence between two armed groups neither of which is the government and (C) One-sided violence: use of armed force by a state or an armed group against civilians. All three types of violence require dyads to reach a twenty-five-death threshold[xxxviii]. I include all dyads with the exception of government on civilian violence. UCDP incident inclusion criteria are as follows: "The incidence of the use of armed force by an organized actor against another organized actor, or against civilians, resulting in at least 1 direct death in either the best, low or high estimate categories at a specific location and for a specific temporal duration."

6.6 Dependent variable: descriptive statistics
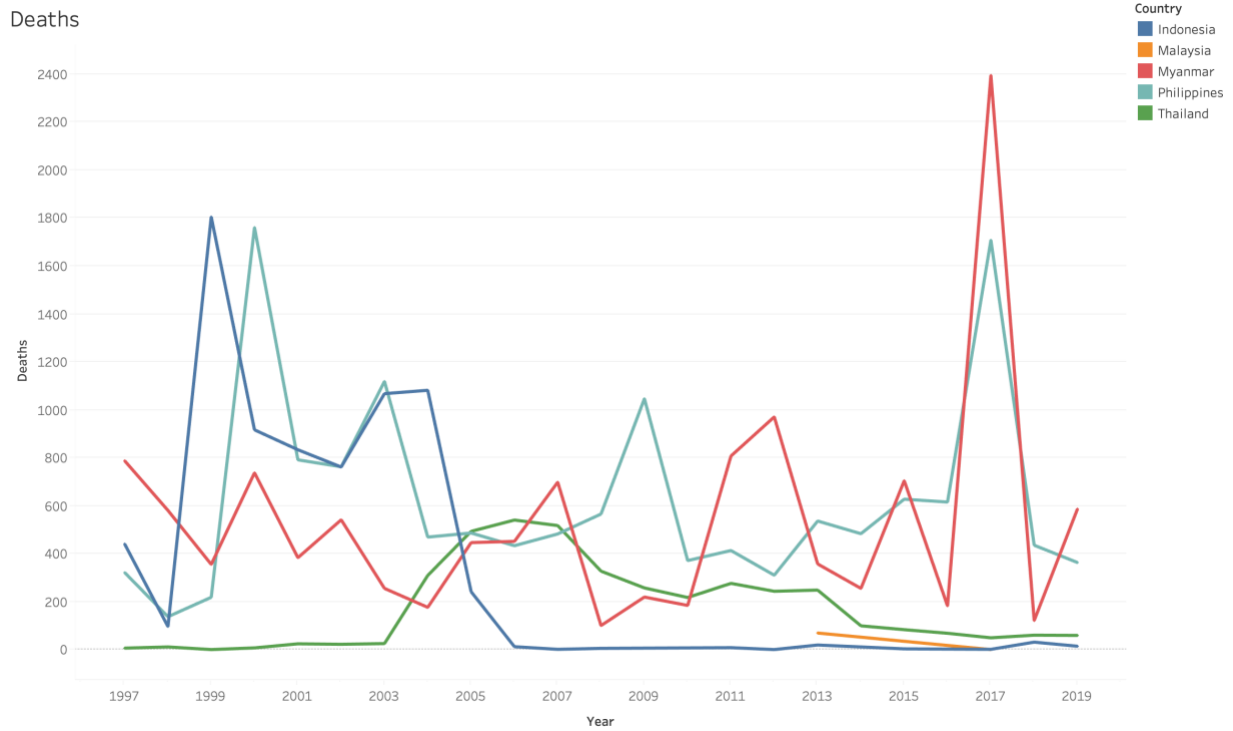
Figure 7: Distribution of sum of political violence-related deaths from 1997-2019 (UCDP)
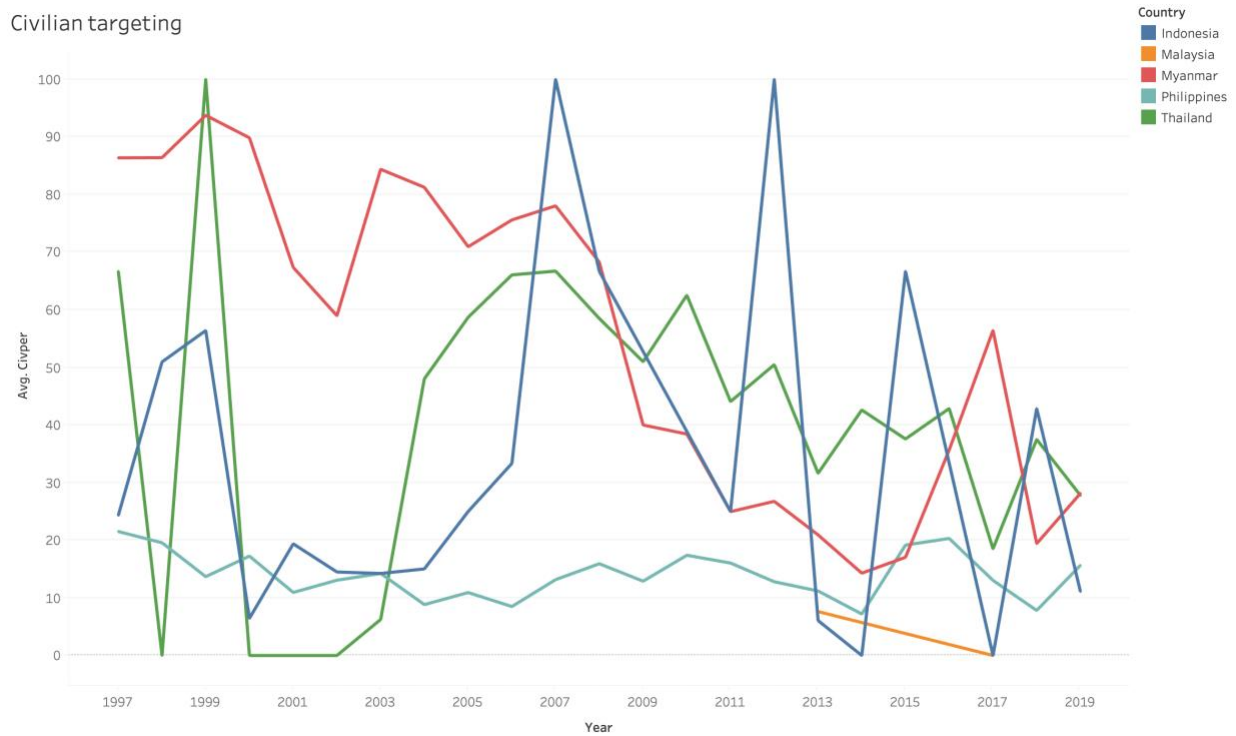
Figure 8: Variation in the mean civilian targeting percentage from 1997-2019 (UCDP)
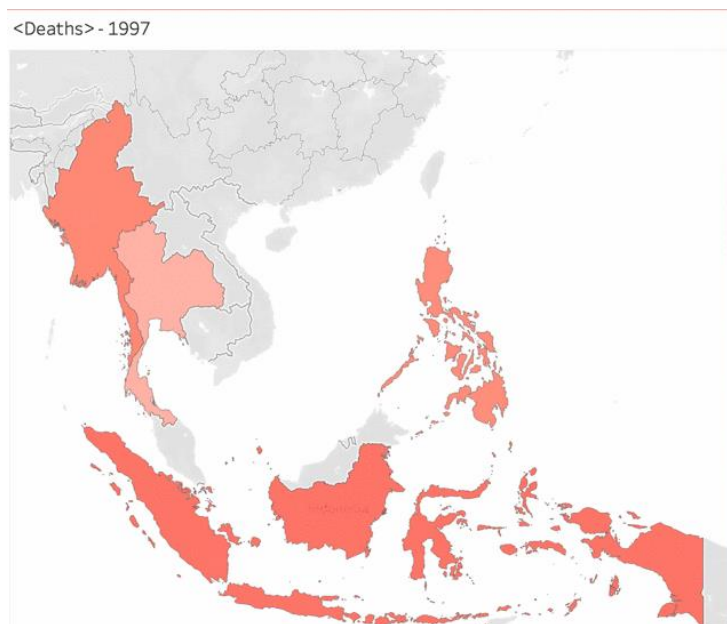
Figure 9: Animated heat map of variation in total deaths (UCDP)

From Figure 5, Indonesia has had an observable decline in the number of deaths from organized violence and Malaysia has had few deaths from 2013-2017. Thailand has had steady deaths with the exception of a gentle peak between 2003 and 2013. Myanmar and Philippines have had varying deaths. Cross-referencing Figure 4, with the exception of Myanmar that had a noticeably downward trend in the percentage of civilians killed, and Philippines that has had a steady 10-20% of civilians killed, Indonesian, Malaysian, and Myanmese organizations have targeted civilians at varying levels.

Top actors associated with fatalities
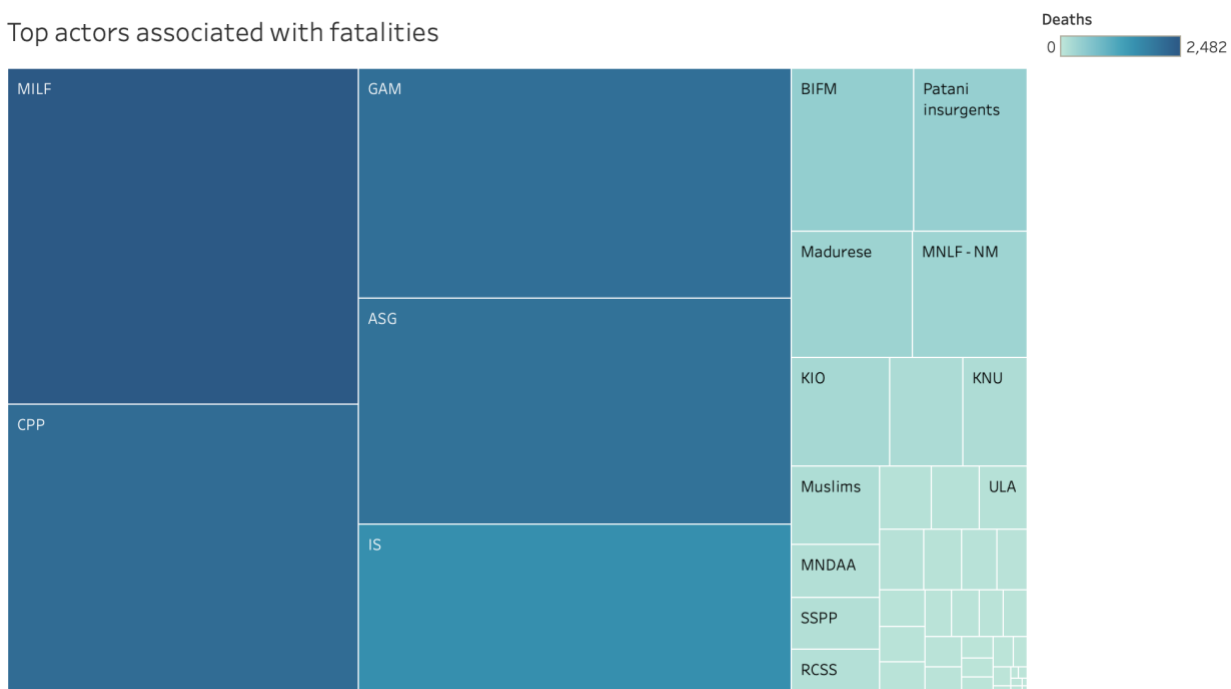
Abbreviation	Organization	Country
MILF	Moro Islamic Liberation Front	Philippines
ASG	Abu Sayyaf Group	Philippines
CPP	Communist Party of Philippines	Philippines
Patani Insurgents	Pattani United Liberation Organisation	Thailand
KNU	Karen National Union	Myanmar
GAM	Gerakan Aceh Merdeka	Indonesia
KIO	Kachin Independence Army	Myanmar

BIFM	Bangsamoro Islamic Freedom Fighters	Philippines
IS	Islamic State	Extra-regional (MENA)
ULA	United League of Arakan	Myanmar
MNDAA	Myanmar National Democratic Alliance Army	Myanmar
Dayak	Dayak people	Indonesia
NSCN-K	National Socialist Council of Nagaland	Extra-regional (India)
PSLF	Palaung State Liberation Front	Myanmar
RCSS	Restoration Council of Shan State	Myanmar
ARSA	Arakan Rohingya Salvation Army	Myanmar
SSPP	Shan State Progress Party	Myanmar

Figure 10, 11: Major organizations linked to fatalities

6.6 Independent variables

FATF

The Financial Action Task Force (FATF) is an intergovernmental organization inaugurated in 1989 by the G7 to combat money laundering[xxxix]. There are forty recommendations, eleven immediate outcomes, and nine special recommendations. Recommendations refer to technical compliance to the required legal and institutional framework while immediate outcomes evaluate the adequacy of enforcement of these technical standards. All recommendations and outcomes are geared towards encouraging states to build robust AML/CFT standards. The

special recommendations follow the same logic as the recommendations but were conceived to address the financing of terrorism specifically.

Recommendations are scored NC, PC, LC, and C (not compliant, partially compliant, largely compliant, and compliant). Immediate outcomes are scored low, medium, and substantial.

To evaluate these standards, member states undergo mutual evaluations which are peer reviews within geographical groups, such as the Asia-Pacific Group (APG). It is crucial to note that mutual evaluations do not happen in a predictable timeframe. Assuming that a country has its first mutual evaluation report (MER) in 2002, the country would likely undergo a follow-up evaluation in the next few years. Follow-up evaluations typically do not change ratings but cover the progress states have made in strengthening AML/CFT systems previously deemed inadequate. Though FATF mandates that follow-up assessments should be conducted five years after the first MER, in reality, gaps between MERs appear to range anywhere from five to ten years.

This presents a methodological challenge as the ratings assume that changes in recommendation compliance only occur in the year that a new MER is issued. To allow for the most minute gradations possible, I scan through all mutual evaluations to pick out the specific legislation that caused the rating changes. E.g., If Country X's Recommendation 5 was rated PC in 2008 and LC in 2013, I do not simply score PC; 2009: PC; 2010: PC; 2011: PC; 2012: PC; 2013: LC. Instead, if the report states that the 2008 rating was due to important legislation in 2004 and 2013, in 2011, I score 2004: PC 2005: PC, …, 2011:LC.

Adding to the difficulty, FATF changed and reordered its recommendations in 2012. While most recommendations have a clear cognate, some do not, or have multiple cognates. I lay out these pairs below, but it must be highlighted that some recommendation pairs are not total twins.

Purpose	Recommendation (2012)	Recommendation (pre-2012)
Financial institutions are required to identify, assess, and mitigate risk of terrorist financing and	I	-

money laundering		
National coordination to combat money laundering	II	XXXI
Money laundering should be criminalized	III	I
Police have the right to confiscate and freeze ML/FT assets	IV	III
Terrorist financing should be criminalized	V	-
Targeted sanctions against money laundering/financial terrorism	VI	-
Targeted sanctions against money laundering/financial terrorism related to proliferationcc	VII	XVII
Countries need to ensure that non-profit organizations are legitimate	VIII	-
Financial secrecy laws cannot inhibit the implementation of FATF recommendations	IX	IV
Customer due diligence and no anonymous accounts	X	V
Keep financial records	XI	X
Protection measures against politically exposed persons (PEPs)	XII	VI
Protection measures against correspondent banking	XIII	VII
Protection against money and value transfer services	XIV	-
Protection against new technologies	XV	VIII
Protection against wire transfers	XVI	-

Reliance on third parties in the know-your-customer (KYC) process	XVII	IX
Entities' AML/CFT regulations must extend to foreign branches	XVIII	XXII
Financial institutions need to deploy enhanced due diligence screening against partners and flows from high-risk countries	XIX	XXI
Reporting suspicious transactions	XX	XI
Tipping off	XXI	XIV
Due diligence for non-financial entities	XXII	XII
Other legal obligations for non-financial entities	XXIII	XVI
Beneficial ownership transparency requirements of legal persons	XXIV	XXXIII
Beneficial ownership transparency requirements of legal entities	XXV	XXXIV
Financial institutions are subject to adequate regulation and supervision	XXVI	XXIII
Supervisors' powers	XXVII	XXIX
Regulation of non-financial entities	XXVIII	XX, XXIV
Financial Intelligence Units (FIUs)	XXIX	XIII, XXVI
Designated authorities have responsibility for AML/CFT investigations	XXX	XXVII
Authorities should be able to obtain information when investigating potential offences	XXXI	XXVIII
Protection against cash couriers	XXXII	-

Availability of statistics on AML system	XXXIII	XXXII
Authorities should provide guidelines for institutions	XXXIV	XXV
Countries to sanction institutions and natural persons who flout regulations	XXXV	XVII
Countries should ratify treaties such as the Vienna Convention, 1988; the Palermo Convention, 2000; the United Nations Convention against Corruption, 2003; and the Terrorist Financing Convention, 1999	XXXVI	XXXV
Countries should provide mutual legal assistance to one another	XXXVII	XXXVI, XXXVII
Countries should assist one another in seizing and confiscating laundered assets	XXXVIII	XXXVIII
Countries should assist one another in extraditing offenders	XXXIX	XXXIX
Countries should assist one another in AML/CFT and respond spontaneously and on request	XXXX	XXXX
Where not possible, countries should levy civil and administrative liability on ML/CF offences	-	II
Financial institutions should develop internal programs against ML/TF	-	XV
Countries should not approve of the operation or continued operation of shell banks	-	XVIII
Financial institutions report all domestic and international currency transactions to a national central agency	-	XIX

Countries should have competent authorities in charge of AML/CFT	-	XXX

Figure 12: pre-2012 and 2012 FATF recommendation pairs

Bank Secrecy

The Walker model calls for bank secrecy to be scored on a scale from 0 (no secrecy laws) to 5 (bank secrecy laws enforced). However, the model does not specify a scoring method. As such, I used the method described by the Tax Justice Network (TJN)[xl] in its financial secrecy index. The TJN is an independent, United Kingdom-based non-governmental organization (NGO) dedicated to the research of international tax and financial regulation. While the TJN has reviewed some of the countries in question, the ranking does not stretch back to 1997 or include Myanmar.

Broadly speaking, bank secrecy is a conditional agreement between financial institutions and clients that all foregoing activities and information is secure, confidential, and private. Though bank secrecy has its historical roots in 17th century Italy, widespread modern bank secrecy originated from the Swiss Banking Act of 1934 that criminalized the disclosure of client information without the client's consent. The act triggered a huge capital flight into Switzerland that motivated other states to impose similar regulations to encourage deposits and prevent future capital flight. Bank secrecy, while necessary, has a tenuous relationship with security as investigators often have a high burden of proof to warrant the extraction of privileged customer information. Investigators in off-shore financial centers have very little legal recourse.

Bank secrecy is but one of many indicators the TJN analyzes for the overall financial secrecy score. The TJN looks beyond statutes and assesses how breaches of bank secrecy are criminalized such as if authorities can access suspicious account information without separate authorization, or if there are any undue notification requirements or appeal rights against obtaining said information. The TJN also includes compliance with FATF recommendations 5 and 10.

Criterion	Secrecy score (maximum 100)

Breaching bank secrecy may lead to a custodial sentence	(20)
Anonymous accounts allowed (FATF Recommendation 5)	(20)
Financial institutions mandated to keep records of more than five years (FATF Recommendation 10)	(20)
No reporting of large transactions	(20)
Inadequate powers to obtain banking information	(10)
Undue rights of appeal against attempts to obtain banking information	(10)

Figure 13: The Tax Justice Network's bank secrecy methodology

The TJN is problematic for three reasons. Firstly, the wording of the methodology is unclear. Intuitively, the higher the score, the 'worse' the situation is and the higher the bank secrecy. Hence, the wording should be "financial institutions are not mandated to keep records of more than five years".

Secondly, the matching between criteria and recommendations appears questionable. Though it is true that Recommendation 5 covered anonymous accounts and Recommendation 10 covered record-keeping, FATF made significant changes to their recommendations in 2012, rendering the pairing moot. Post-2012, anonymous accounts are covered by Recommendation 10 and record-keeping, Recommendation 11.

Thirdly, the pairing of the criteria of anonymous accounts and record-keeping seems arbitrary since there are FATF recommendations on the flagging of large transactions and the powers of investigative organizations. I thus include Recommendations 20 (R.11, pre-2012) that covers the reporting of suspicious transactions, and Recommendations 31 (R.28) that covers the powers of investigative institutions. I also include a new category: AML/CFT (R. 9 or R. 4 pre-2012). I use the FATF recommendation on suspicious transaction reporting (STR) because illicit transactions are not necessarily large.

Thus, I modify the TJN methodology as follows:

Criterion	Secrecy score (maximum 110)
Breaching bank secrecy may lead to a custodial sentence	(20)
Customer due diligence (FATF Recommendation 10 (5 pre-2012))	(20)
Financial institutions not mandated to keep records of more than five years FATF Recommendation 11. (R.10 pre-2012)	(20)
No reporting of large or suspicious transactions Recommendation 20 (R.11)	(20)
Inadequate powers to obtain banking information Recommendation 31 (R.28)	(10)
Financial secrecy laws inhibit the implementation of FATF recommendations Recommendation 9 (R.4)	(10)
Undue rights of appeal against attempts to obtain banking information	(10)

Figure 14: Modified bank secrecy methodology

It is crucial to caveat that financial secrecy and bank secrecy are not synonymous though most uses of the term 'financial secrecy' seem to stem from TJN. According to the TJN, bank secrecy is but one of three facets of financial secrecy, the other two being (A) Corporate secrecy: states that tolerate legal entities where the beneficial ownership is secret or muddied (B) Non-cooperation: jurisdictions that erect barriers for investigative cooperation and information exchange through actions such as refusing to collate information. FATF first evaluates whether there is an explicit section in a state's AML law that establishes the supremacy of AML concerns over bank or professional secrecy. FATF also evaluates financial institutions based on their measures in establishing secure correspondent banking relationships and ensuring that beneficial ownership of originators is established for wire transfers. While there are overlaps with corporate secrecy and non-cooperation, FATF Recommendation 9 appears to overwhelmingly evaluate bankers' obligations.

I keep the double weight of the criminalization of the breach of bank secrecy and double the category of customer due diligence, record-keeping, and reporting of large transactions as these categories affect both the occurrence and the detection of illicit financial activity. While the categories of powers to obtain bank information, financial secrecy, and rights to appeal are important, they affect the investigative process after detection and are hence less material to the puzzle at hand. After scoring countries out of 110, I normalize the values.

I code FATF recommendations on a scale of 10 to 0 with 10=NC, 6.67=PC, 3.33=LC, 0=C.
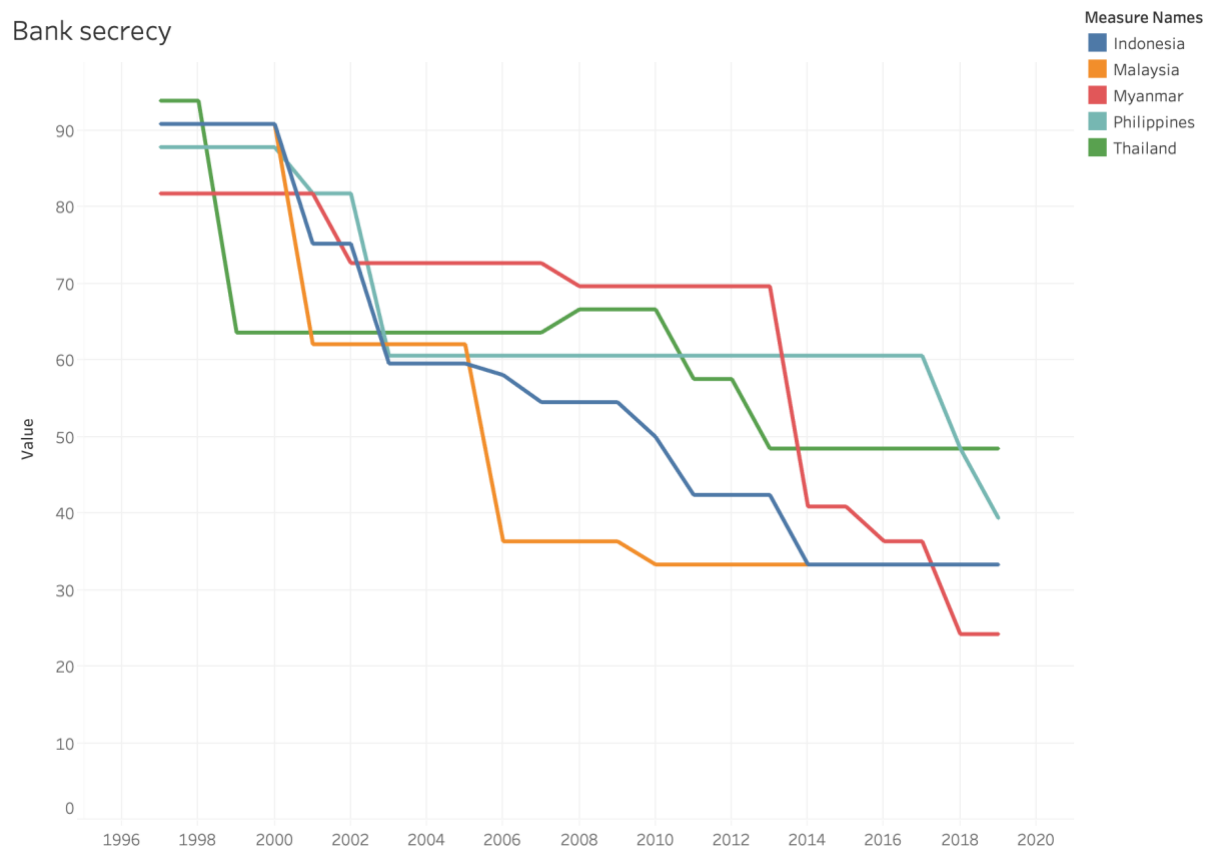
Figure 15: Bank secrecy

All countries show a general downward trend in bank secrecy, with Philippines (2018 to 2019) and Thailand (1998 to 1999) having particularly large shifts. As of 2019, Myanmar has the least and Thailand has the most bank secrecy compared to the other countries.

Government Attitude (domestic technical capabilities)

The Walker model specifies that the government attitude towards money laundering should be scored 0 (strongly anti-money laundering) and 4 (tolerant of money laundering). Despite this, the model does not specify a methodology for evaluating government attitude. For this category to be analytically useful, it needs to be distinct from bank secrecy and the other variables. As such, I constructed a methodology based on compliance with FATF recommendations that were assessed both pre-2012 and post-2012 and not related to bank secrecy. I also exclude (2012 coded) Recommendations 37-40 that cover international cooperation and include it in a separate category below to test if technical standards and international cooperation have differing impacts on conflict intensity. I exclude Recommendation 29 (2012) because the Egmont Group are the primary organizers of FIUs and a distinct factor in the model.

Hence, I include the following twenty-one FATF recommendations (2012 coding): II, III, IV, VII, XII, XIII, XV, XVII, XVIII, XIX, XXII, XXIII, XXIV, XXV, XXVI, XXVII, XXVII, XXIX, XXX, XXXIII, XXXV.
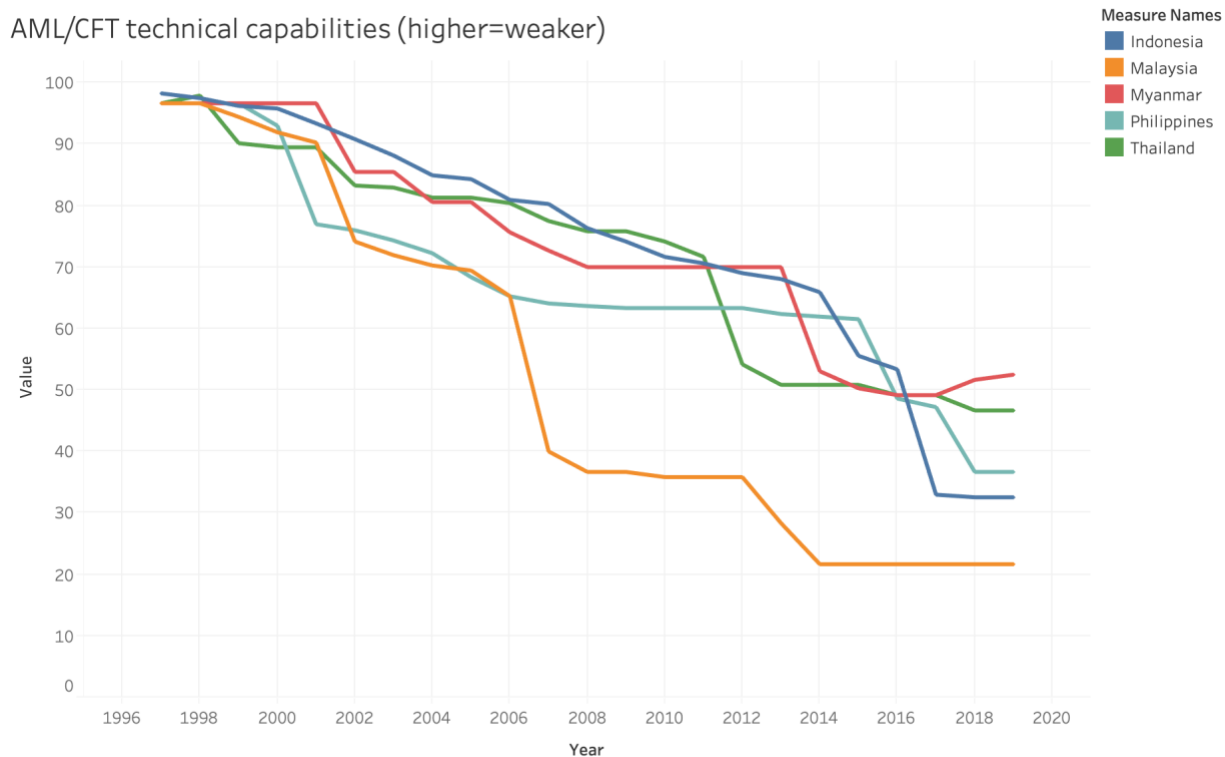
Figure 16: AML/CFT capabilities

From Figure 12, similar to bank secrecy, all five countries have become increasingly compliant to the FATF standards in question. Myanmar still has considerable technical deficiencies while Malaysia has made the most progress in becoming compliant with the standards in question.

Government attitude (Compliance with international standards & cooperation)

Though Walker does not include compliance with international law, I include the variable to analyze if treaty and international law compliance adds further explanatory power to the model. I modify FATF Recommendation 36 because the FATF rating does not analyze regional treaties from the Association of Southeast Asian Nations (ASEAN) or analyze all of the relevant UN treaties as seen in the table below. Recommendations 37-40 are useful, however, because they comprehensively map countries' cooperation with bilateral and multilateral efforts to curb money laundering.

Treaty	Organization	Included in FATF?
1980 Vienna Convention on the Law of Treaties	UN	Y
1997 International Convention for the Suppression of Terrorist Bombings	UN	N
1997 Ministerial Understanding on Cooperation in Finance	ASEAN	N
1999 International Convention for the Suppression of the Financing of Terrorism	UN	Y
2000 United Nations Convention against Transnational Organized Crime	UN	Y
2000 Protocol to Amend the Ministerial Understanding on ASEAN Cooperation in Finance	ASEAN	N
2000 United Nations Convention against Transnational Organized Crime (Palermo Convention)	UN	Y
2003 Agreement on the Establishment of the ASEAN+3 Finance Cooperation Fund	ASEAN	N
2005 International Convention for the Suppression of Acts of Nuclear Terrorism	UN	N
2005 UN Convention against Corruption	UN	Y

2007 ASEAN Convention on Counter Terrorism	ASEAN	N

Figure 17: List of all major international and regional treaties in Southeast Asia. See Annex for individual countries' ratification status.

I only count ratifications/accessions and not mere signing of treaties. When a country signs but does not ratify a treaty, it indicates an *intention* but not an *obligation* to abide by the terms of the treaty. I thus exclude mere signings because the intuition of the Walker model is to test technical weaknesses and not states' international posturing apropos money laundering.
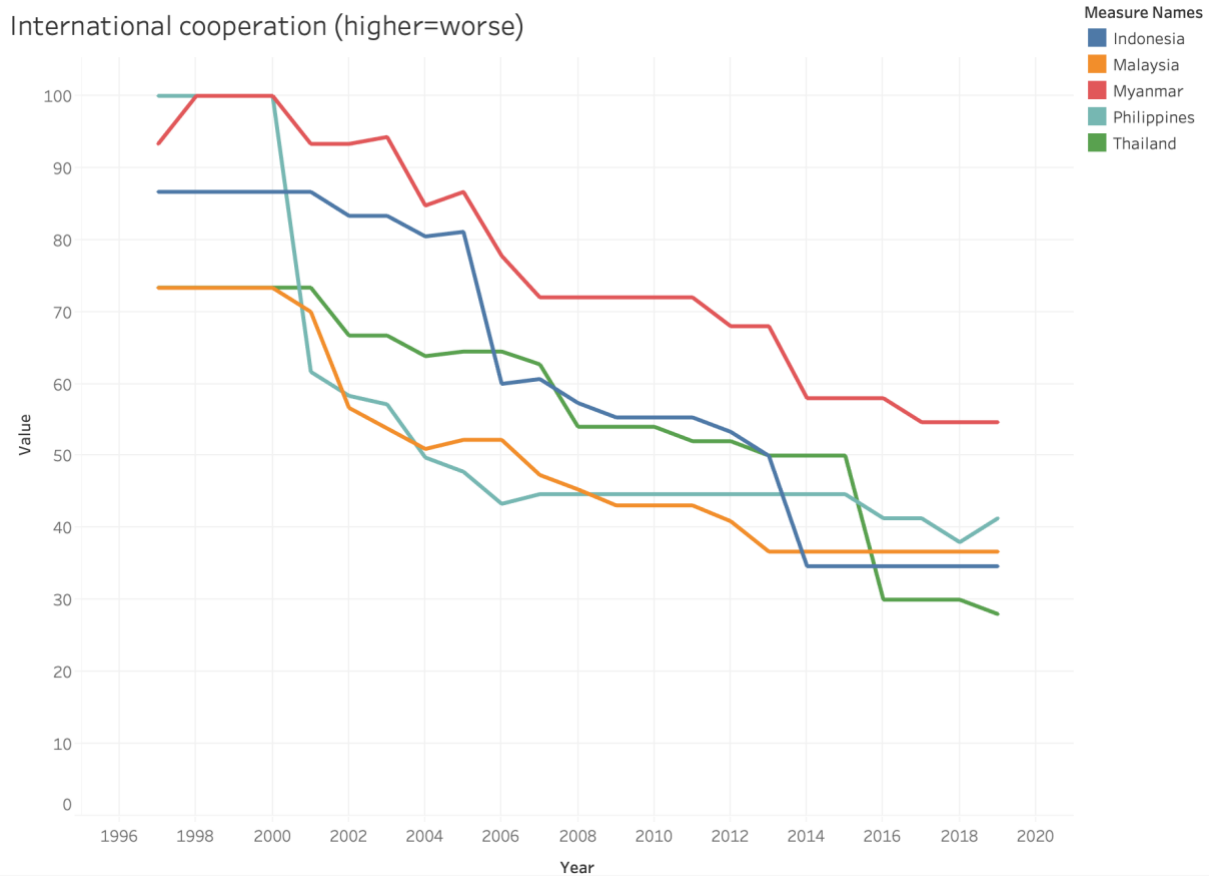
Figure 18: International AML/CFT cooperation

Similar to the variable government technical compliance, Myanmar has shown considerable resistance to cooperating with international standards. In contrast, Thailand has shown the most willingness to cooperate.

Egmont Group

The Egmont Group of Financial Intelligence Units (FIUs) is an international organization
dedicated to cross-border intelligence sharing for AML and CFT purposes. FIUs do not have
prosecutorial or enforcement authority, but rather act as information sharing agencies. Scholars
such as Unger have also explicitly included Egmont membership in subsequent iterations of the
Walker model.

Country	Commencement	Official Date of Entry
Philippines	2001	2005
Myanmar	-	-
Thailand	1999	2009
Indonesia	2003	2004
Malaysia	2001	2003

Figure 19: Egmont group membership

I score countries 100 once they officially joined Egmont, if at all, and disregarded
commencements for the same reason as why I exclude governments signing and not ratifying
international treaties.

Corruption

Like in the original Walker model, I measure corruption using the inverse of Transparency
International's Corruption Perception Index (CPI)[xli]. The CPI ranks states based on how corrupt
experts and business executives perceive a country's public sectors to be from 0 to 100 with 100
indicating total transparency and 0 indicating high corruption. However, in the case of the
Walker model, higher corruption scores represent more corruption. Thus, I take the inverse of
the CPI scores (e.g., 4 over 10 becomes 6 over 10) and halve the resultant score to fit Walker's
scale of 1 to 5.

Corruption
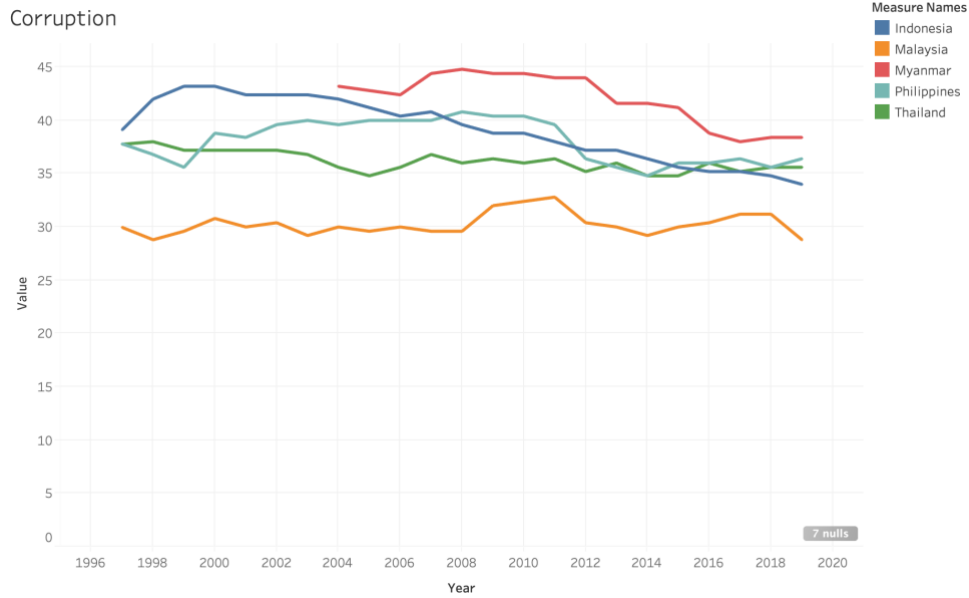
Figure 20: International AML/CFT cooperation

GNI per capita

For GNI per capita, I rely on data from the World Bank. No re-coding required and value in $USD.

GNI per capita
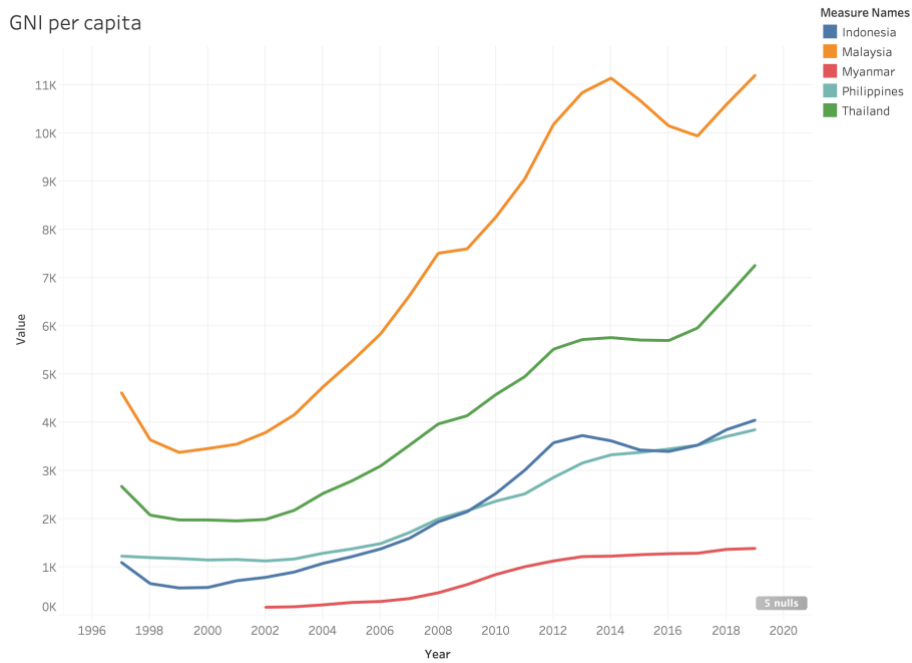
Figure 21: International AML/CFT cooperation

Walker scores

	Philippines	Myanmar	Thailand	Malaysia	Indonesia
1997	16.34	-no data-	13.74	17.04	16.42
1998	16.44	-no data-	13.72	17.16	16.12
1999	16.56	-no data-	9.10	17.03	15.97
2000	16.16	-no data-	9.09	16.86	15.97
2001	14.21	-no data-	9.09	12.52	13.65
2002	14.00	-no data-	8.83	11.90	13.53
2003	10.72	-no data-	8.86	12.91	11.13
2004	10.58	12.90	8.89	12.74	12.05
2005	11.42	12.98	8.98	12.79	12.13
2006	11.27	12.74	8.89	8.81	11.49
2007	11.27	12.36	8.67	8.24	10.92
2008	11.18	11.82	9.00	8.14	10.90
2009	11.22	11.86	9.96	7.85	10.89
2010	11.22	11.86	9.97	7.34	10.16
2011	11.30	11.90	8.47	7.30	9.09
2012	11.62	11.82	8.24	7.50	9.09
2013	11.68	12.06	6.69	7.30	9.01
2014	11.75	7.20	6.81	7.25	7.37
2015	11.62	7.18	6.81	7.17	7.25
2016	11.29	6.72	6.26	7.13	7.24
2017	11.23	6.73	6.34	7.05	6.83
2018	9.21	4.92	6.25	7.05	6.87
2019	7.83	4.94	6.21	7.29	6.95

Figure 22: Walker score without GNI per capita

From Figure 17, in 2019, Philippines has the highest Walker score of 7.83 while Myanmar has the lowest Walker score of 4.94. From the Walker score alone, we would expect Philippines to have the most instances of political violence and terrorism and Myanmar to have the least. Referencing the preliminary exploration of data from the UCDP and the GTD, this does not

seem like the case. As such, it is necessary to also analyze the individual categories correlation with conflict intensity.

	Philippines	Myanmar	Thailand	Malaysia	Indonesia
1997	20092.54	-no data-	36826.18	78727.40	18065.67
1998	19722.48	-no data-	28531.59	62449.89	10639.19
1999	19535.37	-no data-	18015.19	57568.54	9105.47
2000	18586.44	-no data-	17988.81	58343.09	9260.37
2001	16481.08	-no data-	17807.11	44463.63	9828.05
2002	15821.96	-no data-	17567.20	45086.75	10690.50
2003	12547.85	-no data-	19317.15	53725.04	10018.33
2004	13642.32	2837.35	22494.72	60407.53	13014.09
2005	15756.89	3503.29	25065.05	67418.73	14798.99
2006	16787.87	3694.39	27547.00	51429.49	15861.46
2007	19385.06	4327.56	30613.04	54653.14	17478.25
2008	22364.12	5553.77	35731.08	61105.93	21143.08
2009	24337.42	7588.18	41235.53	59676.79	23424.04
2010	26580.50	10078.05	45648.51	60634.69	25712.27
2011	28464.41	12015.50	41943.01	66071.89	27346.16
2012	33220.04	13352.68	45504.32	76317.03	32553.77
2013	36896.05	14708.97	38285.10	79156.78	33597.19
2014	39119.60	8856.40	39244.03	80752.59	26691.60
2015	39273.20	9052.81	38903.37	76563.71	24855.39
2016	38964.78	8602.52	35680.01	72358.20	24623.89
2017	39629.07	8687.01	37784.31	70065.93	24125.86
2018	34165.39	6747.22	41248.02	74647.71	26434.66
2019	30148.20	6868.89	45082.42	81635.53	28131.89

Figure 23: Walker scores with GNP per capita (to two decimal places)

After multiplying the GNP per capita to the Walker scores, Myanmar has the lowest and Malaysia the highest score. Again, this does not seem like the case preliminarily referencing the UCDP and GTD data, as it would imply that there is strongest conflict intensity in Malaysia and the weakest in Myanmar.

Non-Walker model factors

Unemployment as a % of total labor force (modeled on ILO estimate)

The higher the unemployment rate, the lower the opportunity cost of joining political violent organizations. Used as a control for the labor market effect. Across the board, unemployment has been relatively stagnant, with a spike in 1997 for Thailand and an increasing trend in Indonesia from 1997 to 2008. This indicates that the labor market effect, i.e. individuals joining organizations associated with a decline in employment prospects, is stronger in the periods indicated.
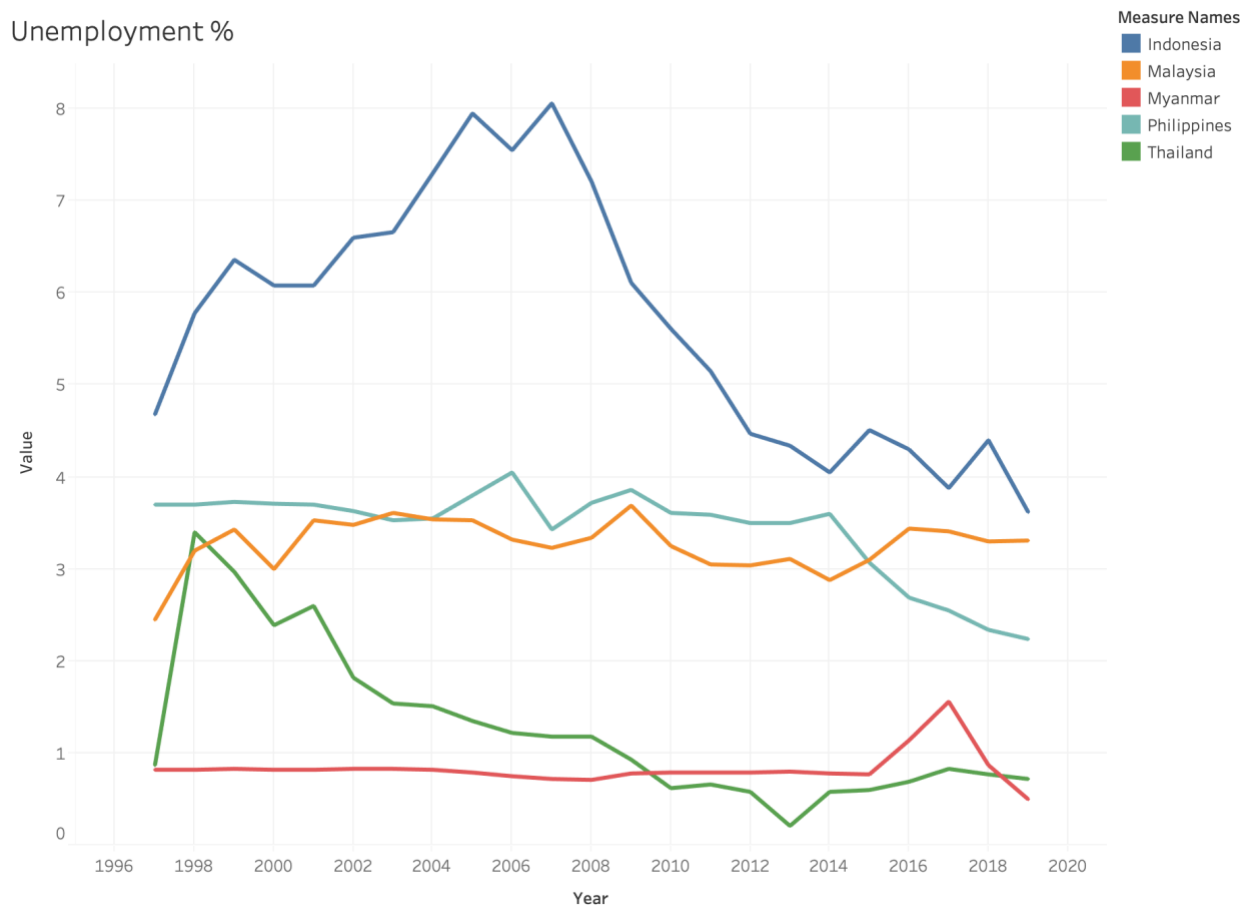
Figure 24: Unemployment %

Inflation percentage

The higher the inflation, the more 'adjusted' gains from assets are. Used as a control. Indonesia and Myanmar have experienced high market volatility from 1997 to 2008. This indicates that ceteris paribus, the gains from informal financial sources theoretically also suffered from

volatility, and that we would expect variations in conflict intensity for organizations that rely on informal sources.
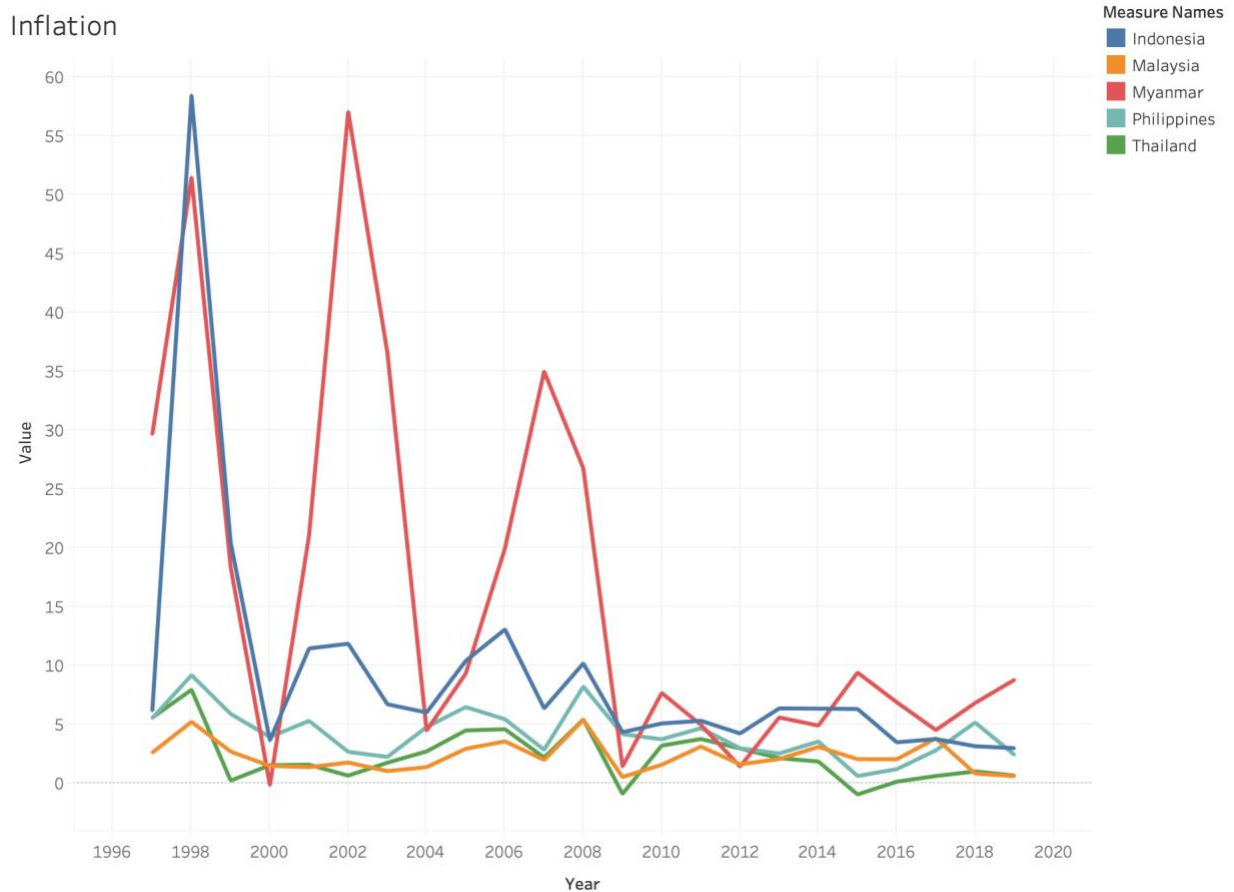
Figure 25: Unemployment %

Size of financial sector

Percentage of domestic credit provided by the financial sector. The higher the percentage, the more important the Walker model factors and trade misinvoicing is likely to be in predicting political violence. The lower this percentage, the stronger informal value transfer systems are. Informal value transfer systems are systems that receive and transfer funds between individuals from different locations. Across the board, the size and importance of the financial industry has shown a decreasing trend from 1997 to 2008 and an increasing trend from 2008 to 1997. In line with theory, cumulative deaths show a similar trend.

% credit provided to the private sector by banks
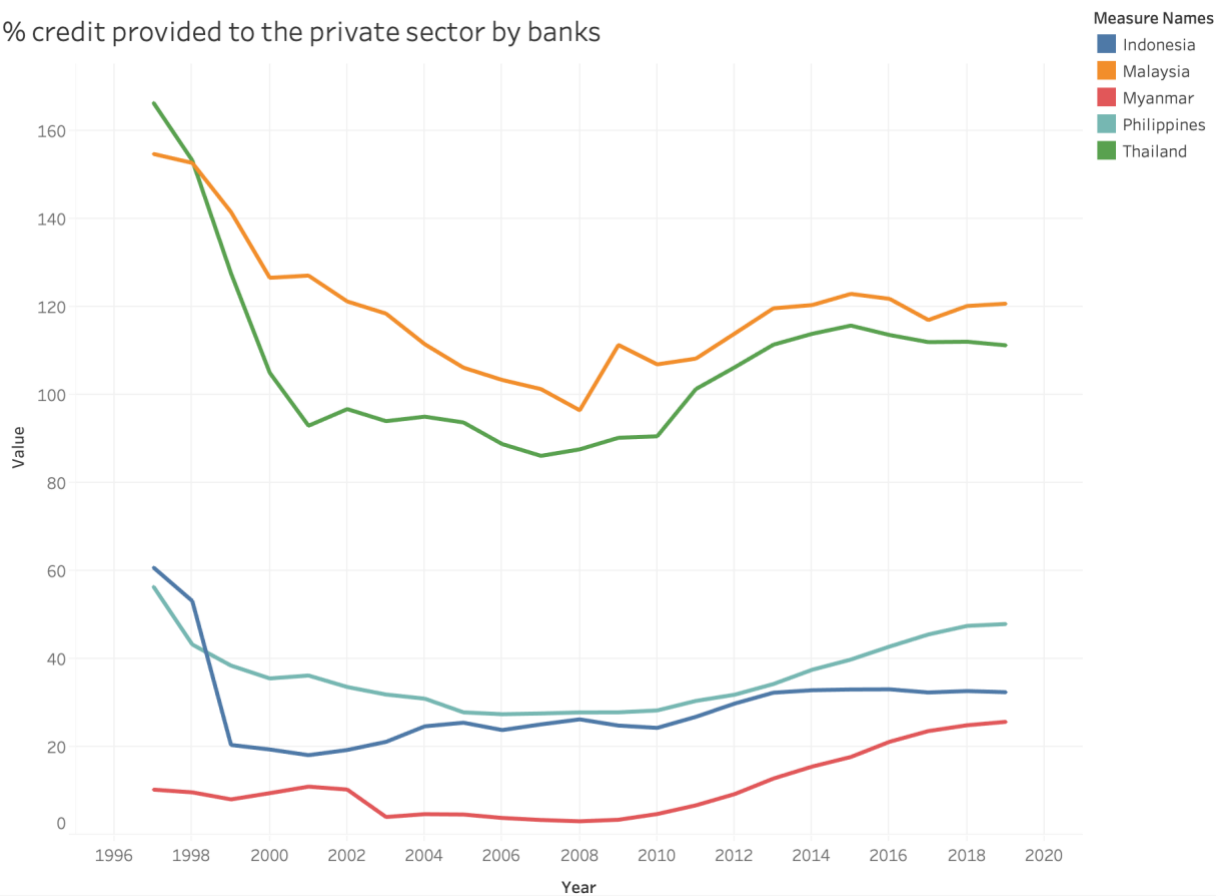
Figure 26: Size of the financial sector

Federal tax

Tax percentage of GDP. Used as a control given that government-inflicted deaths are included in the dependent variable.
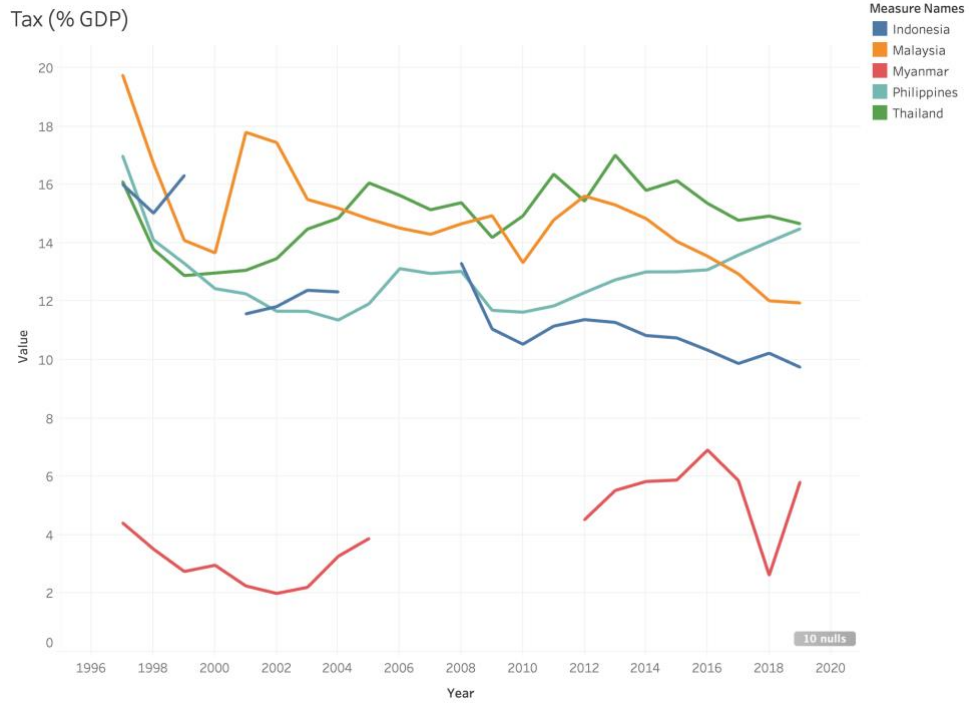
Figure 27: Federal tax %

Military spending as a % of GDP

Military spending (% GDP)
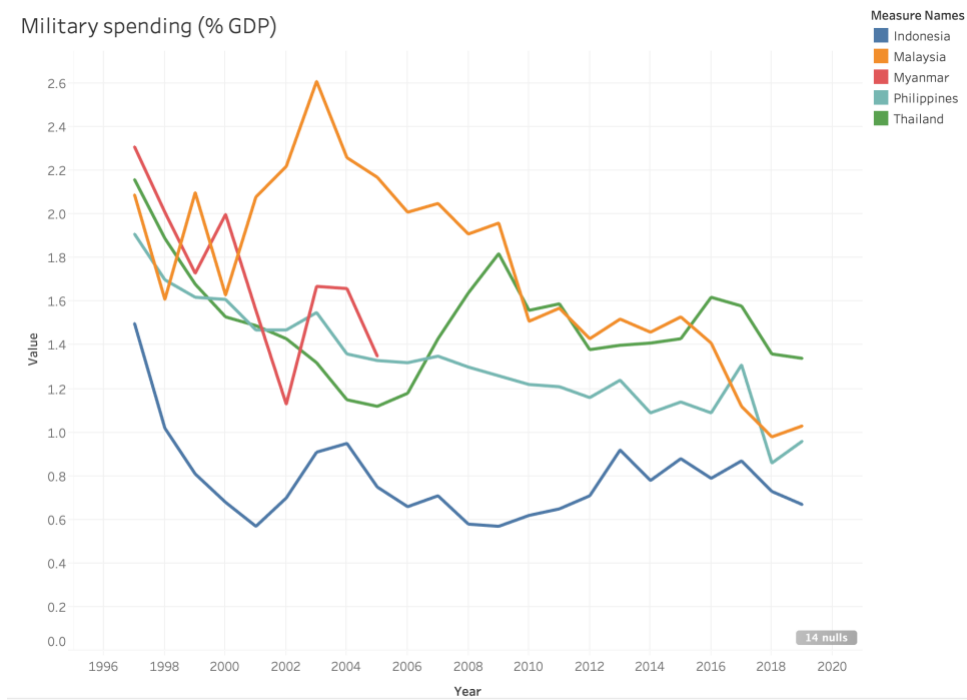
Figure 28: Military spending %

Trade misinvoicing

As mentioned, the GFI defines trade misinvoicing as a method for moving money illicitly across borders, involving the deliberate falsification of the value, volume, and/or type of commodity in an international commercial transaction of goods or service by at least one party to the transaction. UN COMTRADE and other international bodies, such as the International Monetary Fund, provide year-by-year bilateral trade data. For a country dyad X and Y, COMTRADE records the total $USD value of goods X declared it exported to Y as well as the total $USD value of goods Y declared it imported from X. There is an explicit connection between declared exports and imports, and free on board (FOB) and cost, insurance, and freight (CIF). FOB has the named port of shipment and the seller must themselves load the goods on board and bear the risk. CIF has the named port of destination and though the seller pays the cost of freight and insurance, the buyer bears the risk once goods are loaded. In theory, the value of exports should equal imports. While small discrepancies are expected because of the cost of freight, insurance, duties, and lapses in record-keeping and the like, large discrepancies signal something more systematic and nefarious. Trade under-invoicing occurs when a country's CIF imports are less than the corresponding value of FOB exports suggesting that exports are either over-invoiced, or that imports are under-invoiced, or both. Because CIF should theoretically

exceed FOB, this discrepancy is also in the 'wrong' direction adding to the evidence of nefarious activity. On the other hand, trade over-invoicing occurs when a country's CIF imports are more than the corresponding value of FOB exports above a 'reasonable' adjustment for the cost of freight, insurance, and duties.

For all years, I analyze each country's overall CIF incoming FOB from all trading partners. Because COMTRADE does not have data on Myanmar from 1997 to 2009, I use data from the IMF instead. I count export and re-export flows; import and re-import flows as per the standard convention in international trade. I also count the absolute value of misinvoicing since both over-and under- invoicing pose money laundering risk.
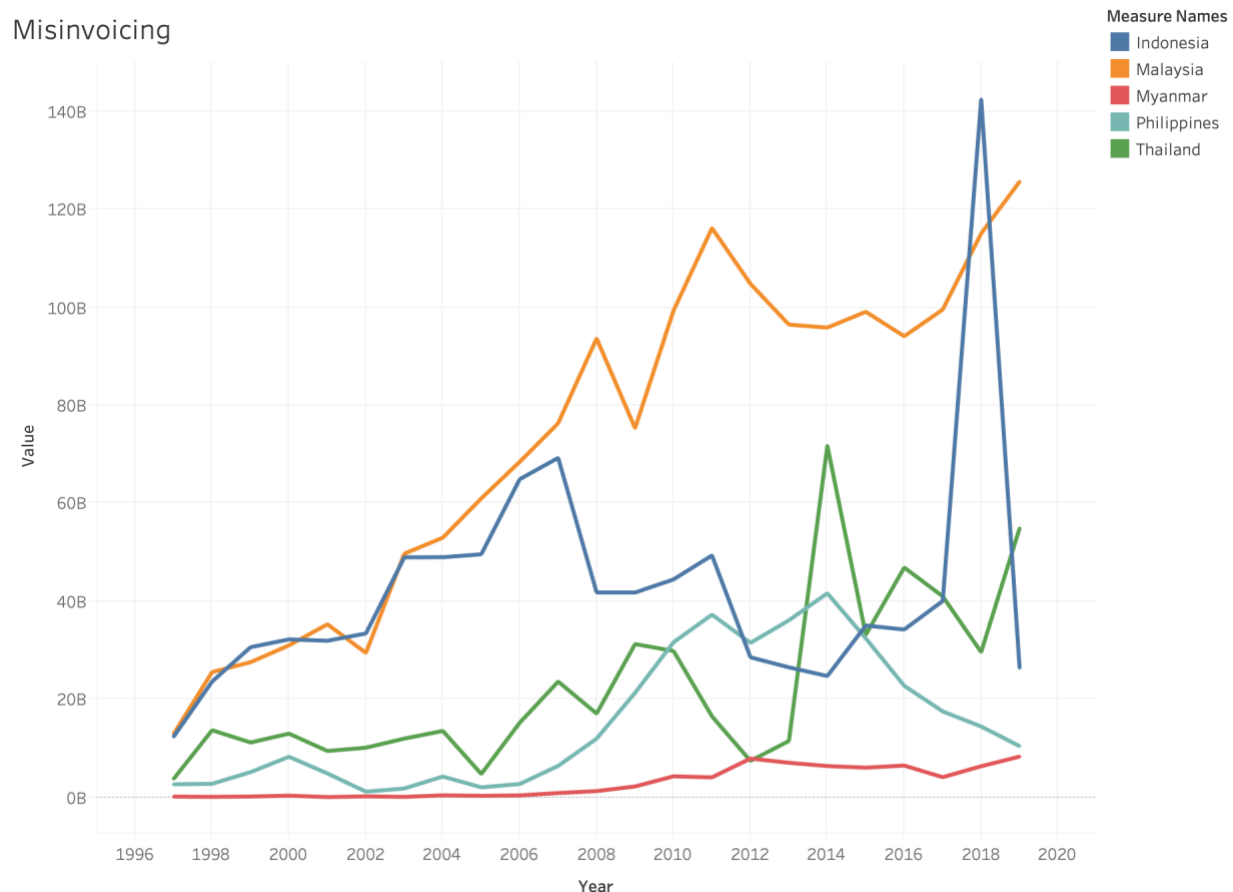
Figure 29: Misinvoicing
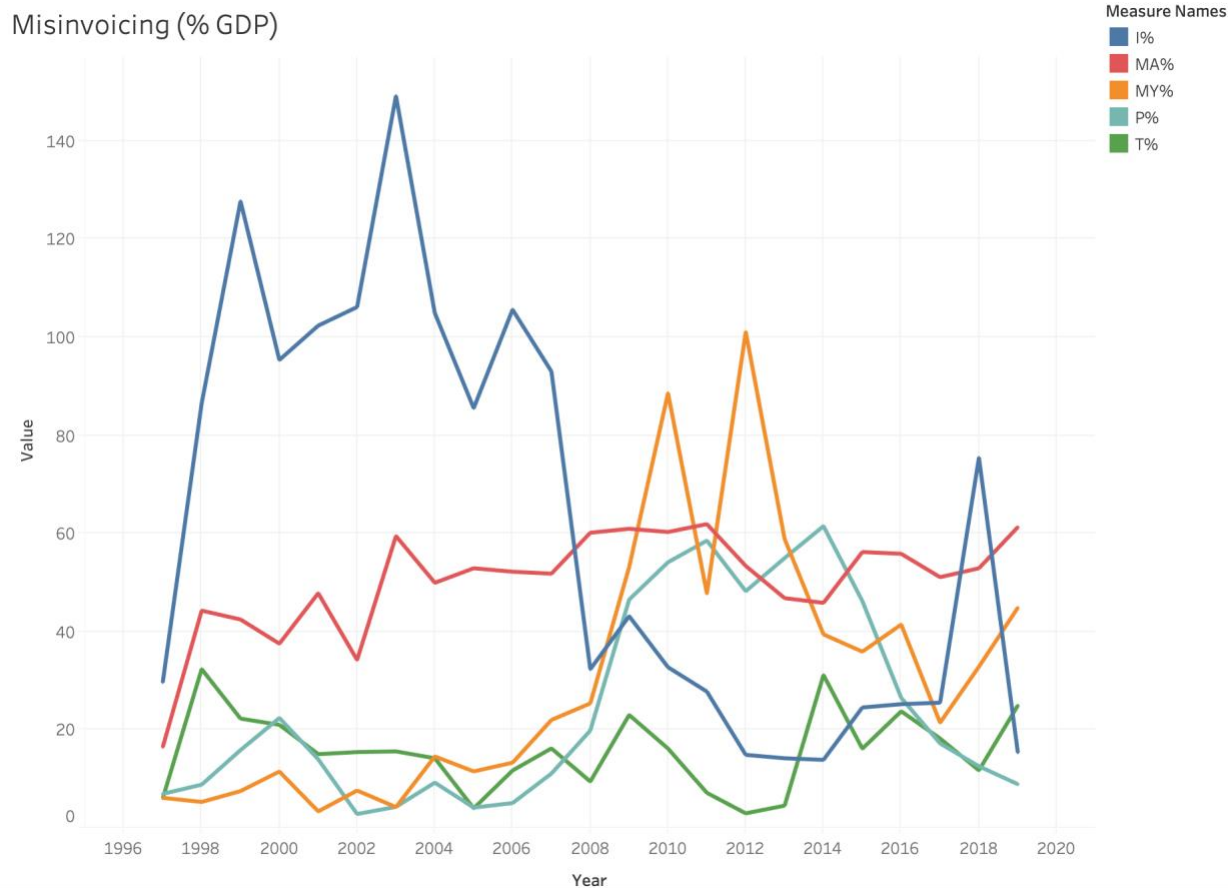
Figure 30: Misinvoicing %

The percentage of misinvoicing has dropped precipitously for Indonesia while Myanmar experienced a spike between 2008 and 2014. The percentage of misinvoicing has remained relatively stagnant for the other jurisdictions. In line with the theory, cumulative deaths follow a similar pattern.

Asset data

I included steel, coal, natural gas, and crude oil because fossil fuels, and natural gas because fossil fuels and metals have consistently been the region's top exports.

Steel (in thousand metric tons)
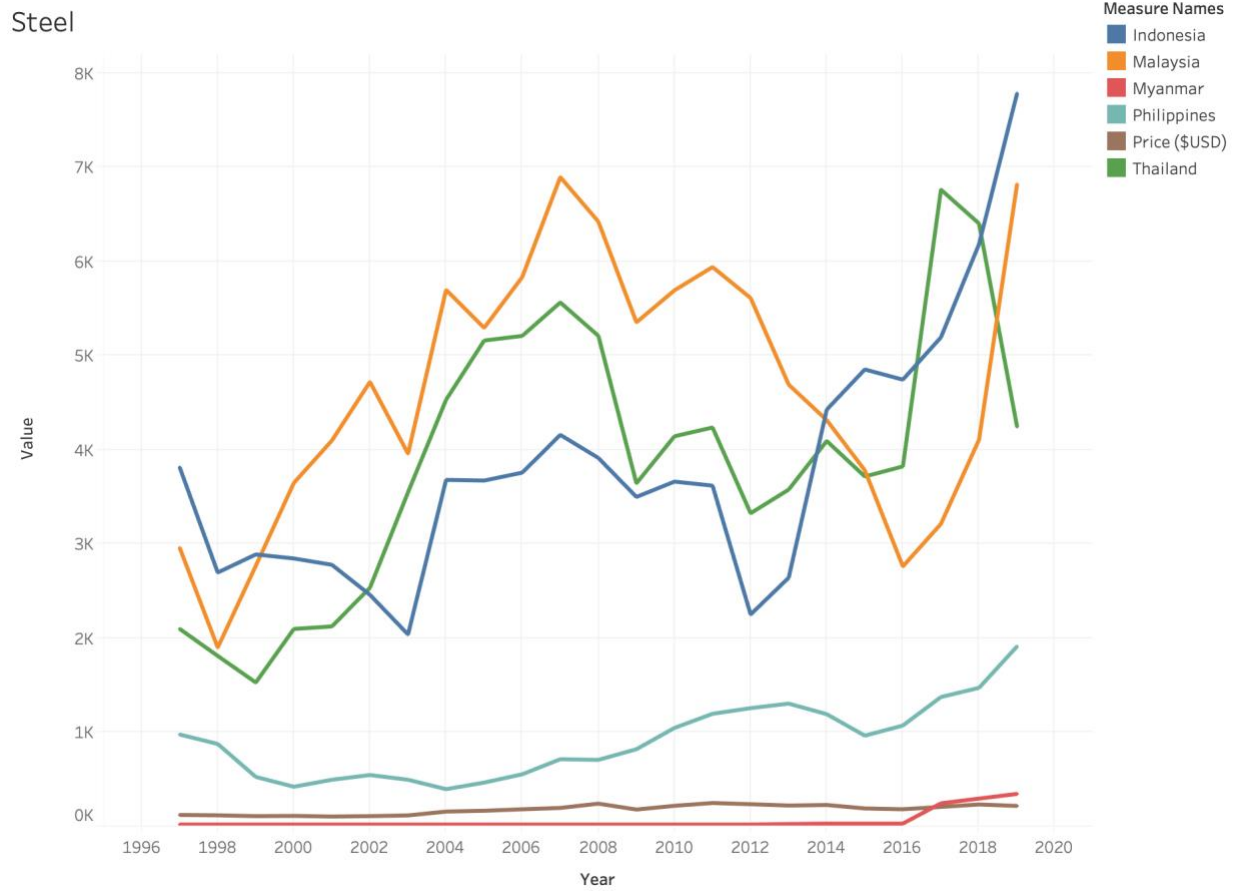
Figure 30: Steel

Across the board, exogenous steel price has remained relatively stable. Steel production has increased by more than three-fold for Indonesia, Malaysia, and Thailand. This indicates that the gain for informal sources is high

Coal (in ktoe)
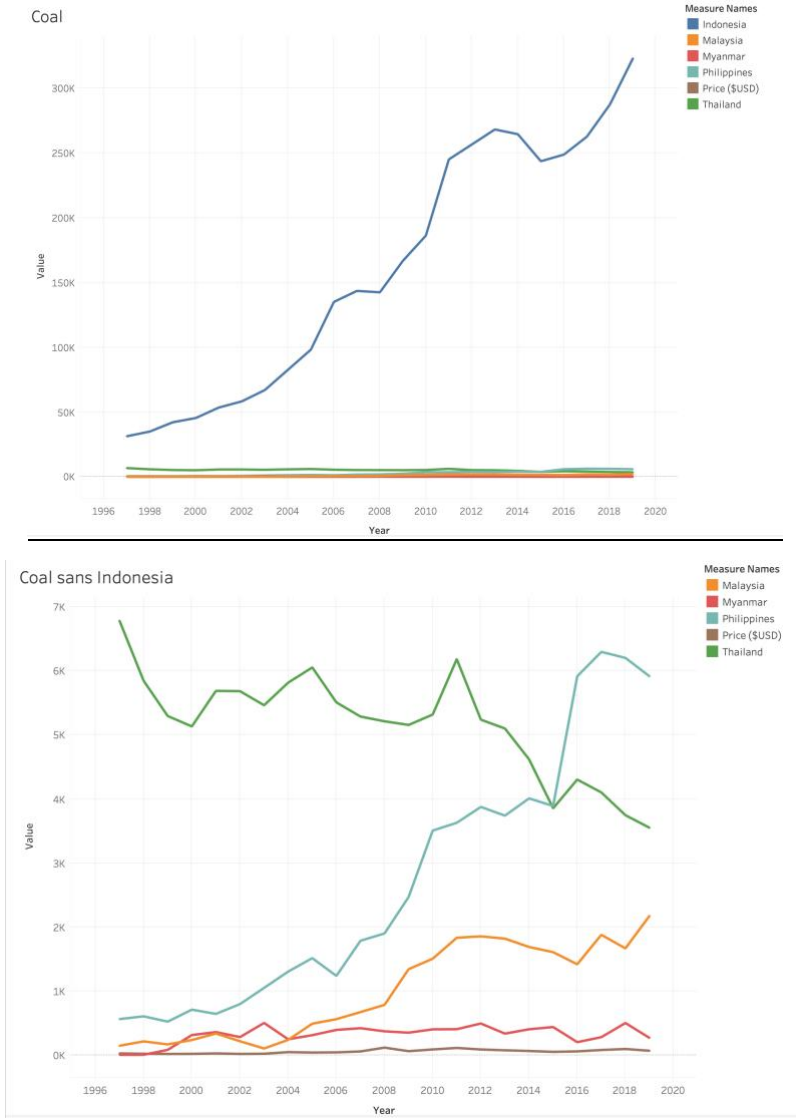
Figure 31: Coal

Coal production has dramatically increased in Indonesia and the Philippines by more than 500%. Malaysia has a less dramatic increase by 100%. Coal production has dropped in Thailand by close to 30%.

Natural gas (in tj)
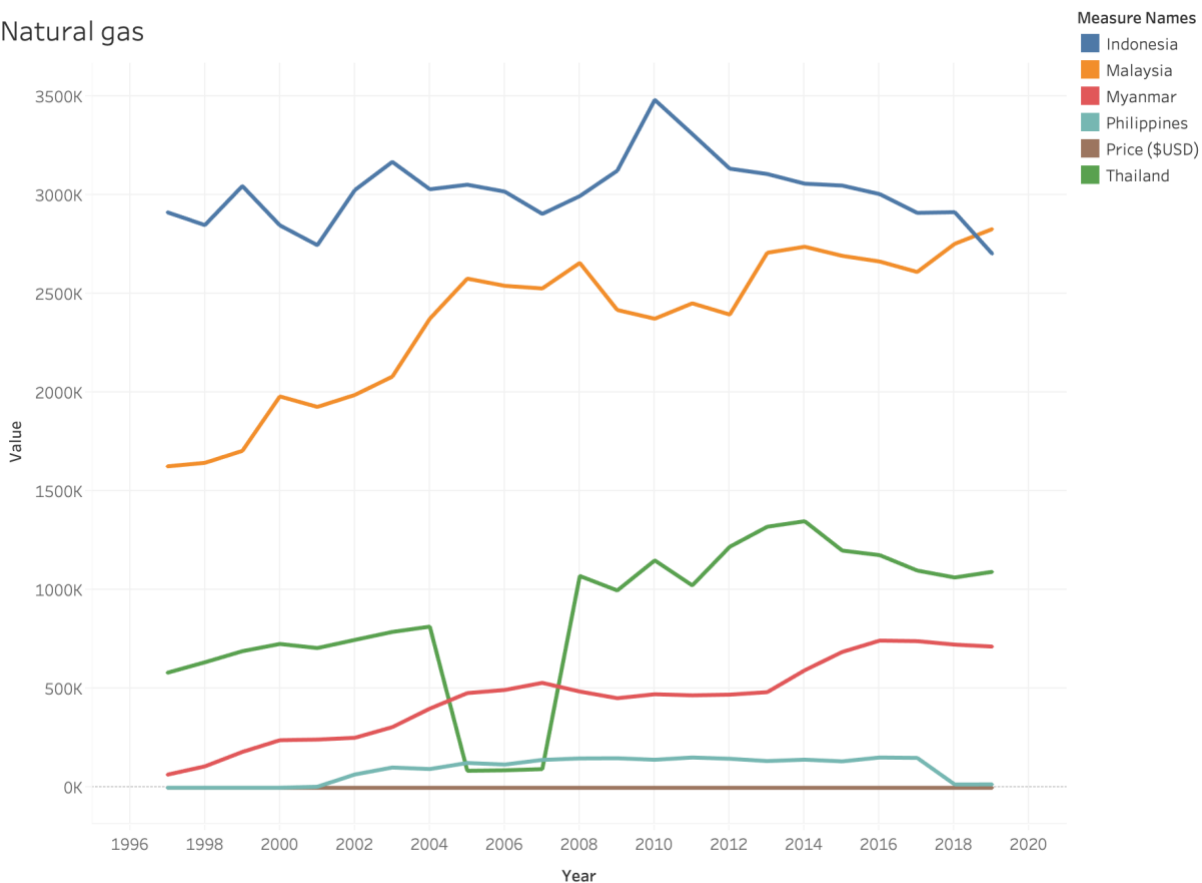
Figure 32: Natural gas

Natural gas production has shown a steady gradual increasing trend with the exception of a sharp drop in production in Thailand from 2004 to 2008.

Crude oil (kt)
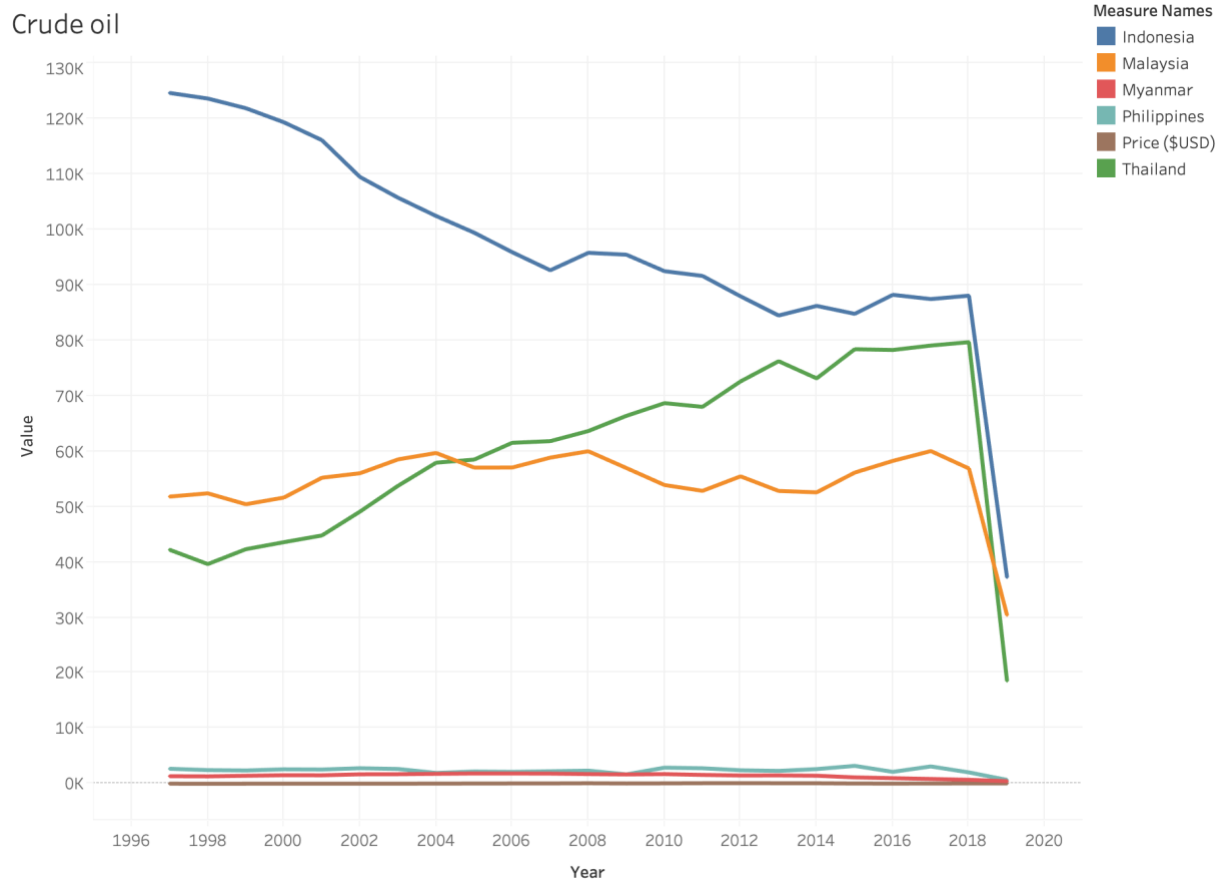
Figure 33: Crude oil

Crude oil production has precipitously dropped in Indonesia, Thailand, and Malaysia in 2019. According to theory, this indicates that ceteris paribus, revenue from informal financial sources dropped during the same period.

Narcotics (Myanmar)

I obtain data on narcotics seizures and potential production levels from the UNODC. I take an average where multiple reports report different statistics.

	Seizures								Potential	
Year	Meth tablets	Crystal meth (kg)	Meth Powder (kg)	Heroin (kg)	Raw Opium (kg)	Brown Opium (kg)	Liquid Opium (kl)	Low Grade Opium	Opium land area (ha)	Opium potential (kg)

								(kg)		
1997									155150	1680
1998				404	5394	96	206	312	130300	1300
1999				245	1473	24	333	314	89500	900
2000	2492			159	1528	23	16	245	108700	1090
2001	3023	518		97	1629	7	19	142	105000	1100
2002	8742	415		334	1863	314	18	126	81400	830
2003	372	102		569	1482	156	52	204	62200	810
2004	779	0	69	974	607	59	39	396	44200	370
2005	340	280	19	812	773	44	21	128	32800	310
2006	1773	3	136	192	2321	1371	29	6154	21600	320
2007	155	3	471	68	1274	1121	56	10972	27930	360
2008	103	16	4	88	1463	206	80	2453	32170	410
2009	2223	124	339	541	752	326	27	465	41450	330
2010	204	226	0	89	765	98	35	147	37220	580
2011	548	33	20	42	828	37	60	282	41240	610
2012	1689	427	7	208	1470	46	29	81	42000	690
2013	947	173	7	239	2357	72	115	66	47400	870
2014	1176	47	108	435	1828	1109	102	134	49800	673
2015	4645	2260	198	186	889	539	38	35	48750	647
2016	9147	2460	55	769	944	472	47	22		
2017	6882	1108	107	662	1256	348	146	6	41500	550
2018	9923	2878	45	1099	2829	554	146	30	42000	520
2019	10111	9426	478	690	1949	8	87	96	42000	

Figure 34: Narcotics data (Myanmar)

Variable terminology key and degree of precision

Variable name	Precision	Variable
Inflation	Imprecise (macro)	Inflation

Cor	Imprecise (macro)	Corruption
Tax	Imprecise (macro)	Federal tax rate as a % of GDP
Milspend	Imprecise (macro)	Military spending as a % of GDP
Eg	Precise	Egmont
Govatt	Precise but ineffectual	International government cooperation
Bank Secrecy	Precise	bank secrecy
Govtech	Precise	AML/CFT capabilities
Finsec	Imprecise	Size of financial sector % GDP
Steel	Imprecise	Volume of steel production
GNI	Imprecise	GNI
Misinvvalue	Very precise (exact amount of money siphoned)	Absolute amount of misinvoicing
Exchange	Imprecise	Exchange rate compared to USD
Coal	Imprecise	Volume of coal production
Ng	Imprecise	Volume of natural gas
Oil	Imprecise	Volume of crude oil production
Misinvper	Very precise (exact amount of money siphoned)	Misinvoicing % of GNI
Unemploy	Imprecise and a confounder	Unemployment %

Figure 35: Variable names

9. <u>Results</u>

This section has three stages: (A) Exploratory, unsupervised learning to discover patterns in the data; (B) Supervised learning to test my hypotheses; (C) Predictive modeling to amalgamate both sections with the objective of predicting future conflict intensity. In (A), I use principal component analysis and hierarchical clustering; (B) Panel regression analysis with fixed and pooled effects; (C) Random forest.

9.1 Principal Component Analysis

Formal financial sources variables: bank secrecy, AML/CFT capabilities, international cooperation, size of the financial sector, GNI, tax, corruption, and misinvoicing percentage.

Informal financial sources variables: price and quantity of assets and corruption.

I use principal component analysis (PCA) as an exploratory data analysis strategy. By rotating the data orthogonally to discover linearly uncorrelated eigenvectors, I find the independent variables that explain the most variance in conflict intensity.

PCA analysis of all variables
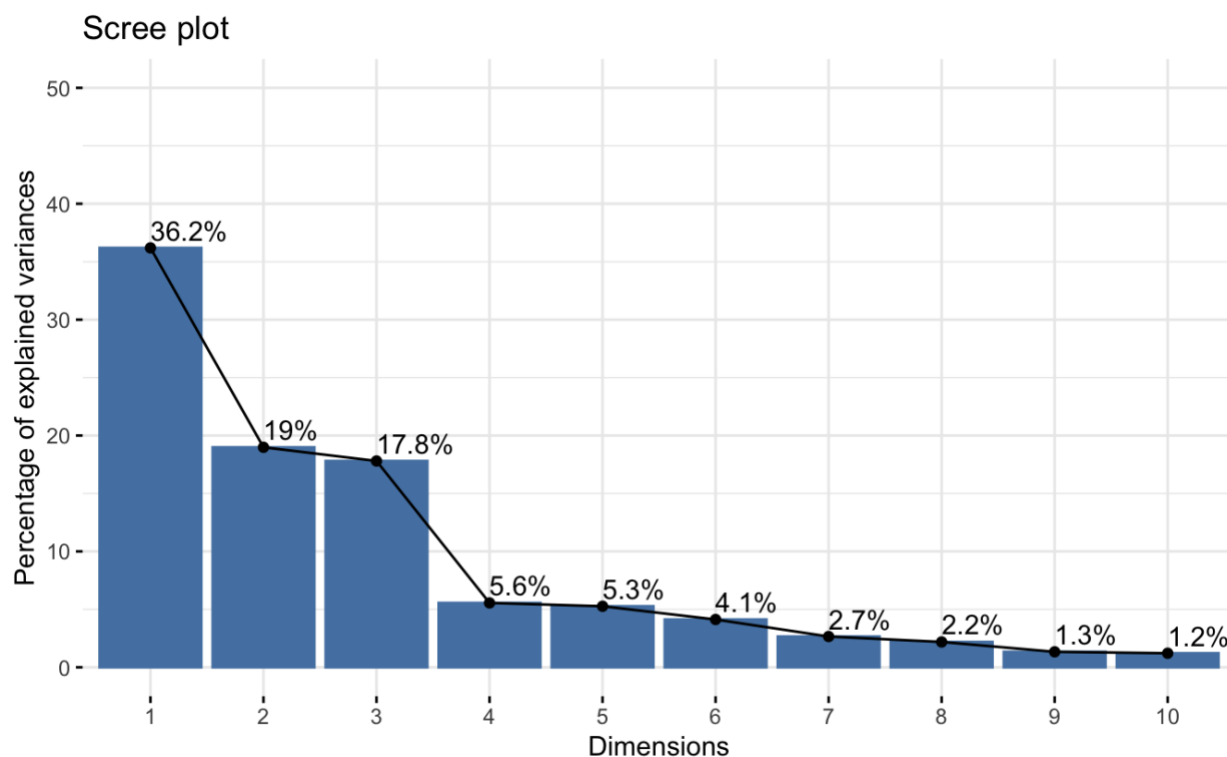
Figure 36: PCA (all)

The first three components capture close to three-quarters of the variance in the data (73%).

PCA analysis of formal financial sources
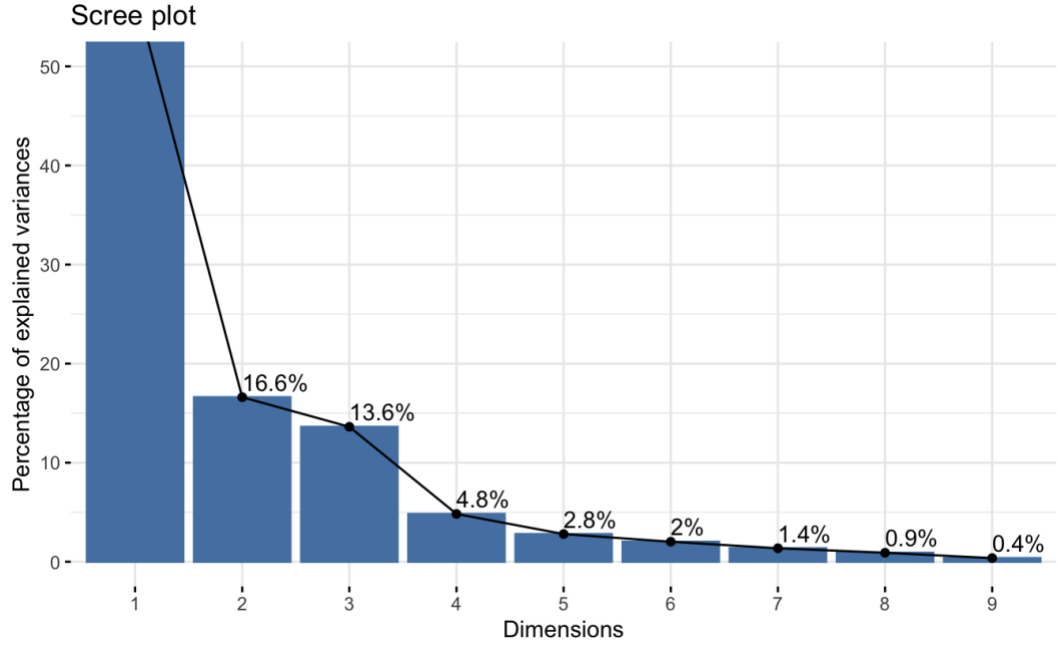
Figure 37: PCA (formal)

The first component captures a large percentage (>50%) of the variance in the data.

<u>Informal sources</u>
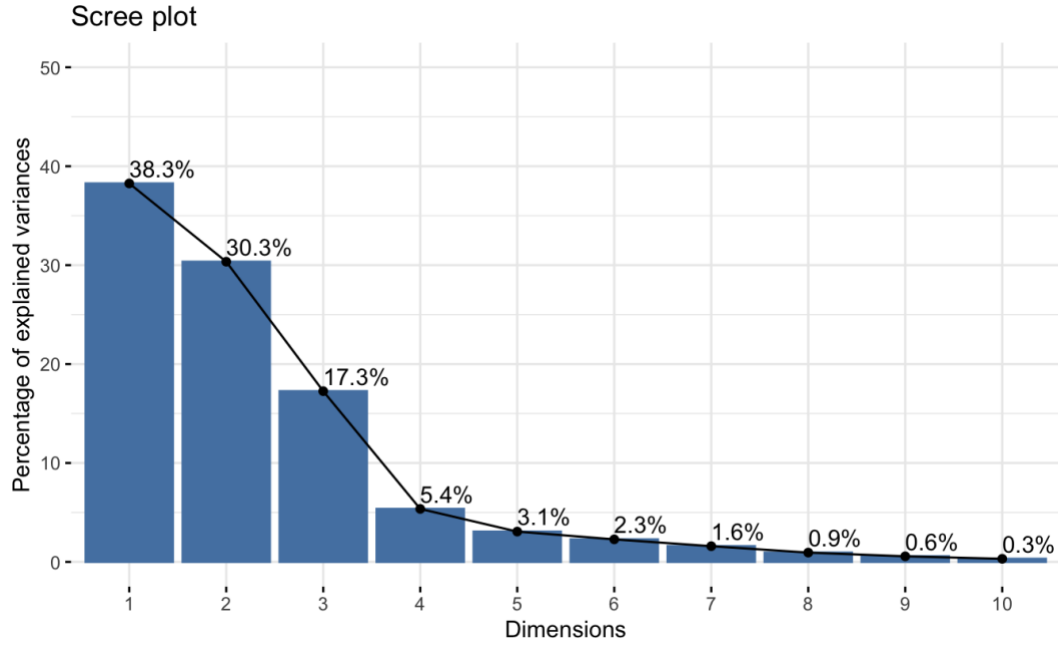
Figure 38: PCA (informal)

However, no variable appears to contribute to the majority of variance in the first three components in any PCA analysis. This indicates that the dimensionality cannot be reduced without losing a substantial amount of variance in the data.
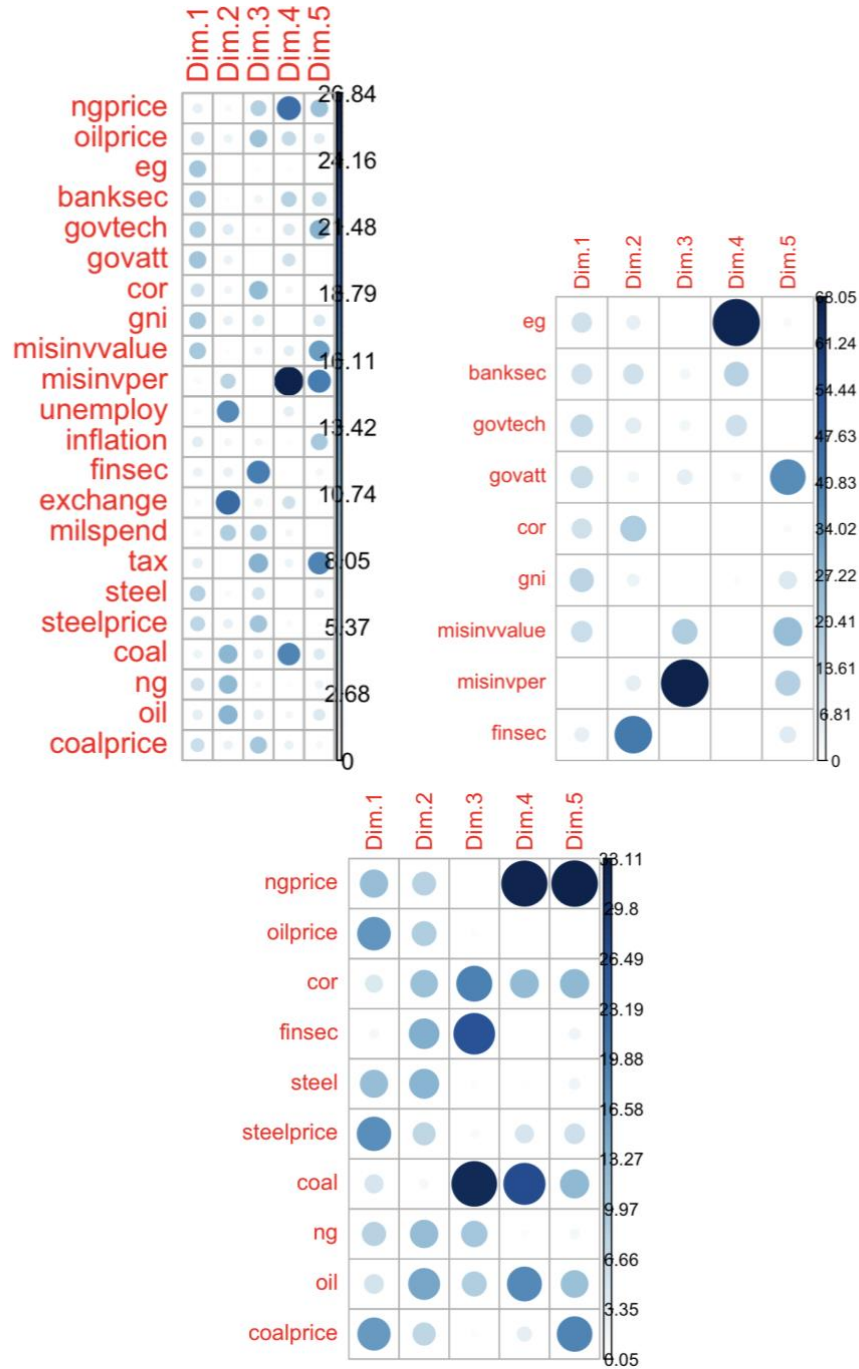
(From left, right, down) Figure 39-41: PCA contribution plot (all, formal, informal)

9.2 Hierarchical clustering

I exclude asset prices from the k-means because the variable is exogenously determined while the rest of the independent variables are determined from the countries of interest. Including asset prices will unfairly detect more similarities in the endogenous variables than present. I compute a dendrogram setting k=6.
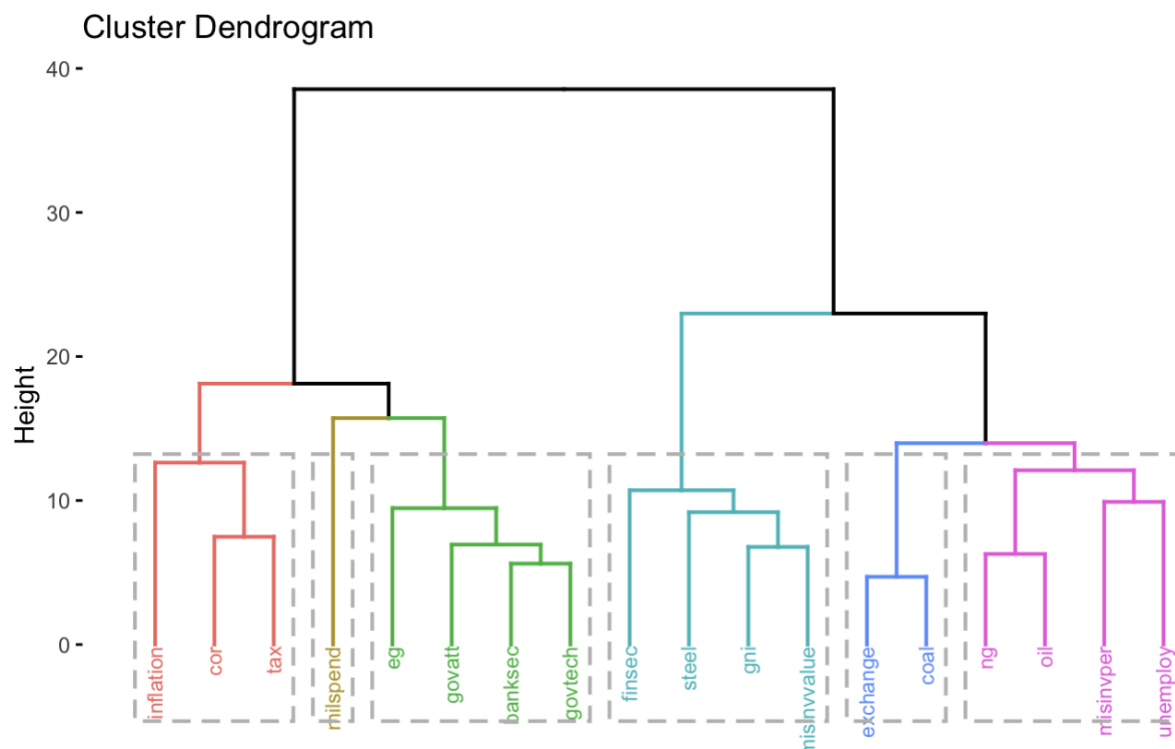
Figure 42: hierarchical k-means

Interestingly, we can infer that corruption and taxation have a small Euclidean distance. This indicates that corruption may not only explain the organization's 'ease of doing business' but also act as a control to account for the government's ability to match organizations on the battlefield. It is also possible that corruption and tax substitute for one another, i.e. that countries with lower taxes may still have high government capacity if they siphon corruption revenue to build up the military. It is also possible that the two amplify one another, that jurisdictions with higher taxes also have higher corruption if the state is predominantly concerned with some form of prebendalism.

Similarly, as predicted, bank secrecy and AML/CFT capability have a small Euclidean distance indicating that they may be substitutes for one another. International government cooperation appears to be proximate to bank secrecy and AML/CFT capability, I hence exclude international cooperation altogether. Very interestingly, the volume of steel production has a relatively small Euclidean distance to absolute misinvoicing value. This indicates that steel may be particularly vulnerable to trade-based money laundering. Similarly, the small Euclidean distance between GNI and absolute misinvoicing value suggests that misinvoicing is most meaningful as a relative measure.

The small Euclidean distance between exchange rate and coal production is interesting but not substantively relevant to this paper as it indicates that coal may be an asset that is predominantly exported in the region and hence is susceptible to exchange rate fluctuations. The proximity between natural gas and crude oil production is expected since both products come from the same primary source.

9.3 Correlation matrix
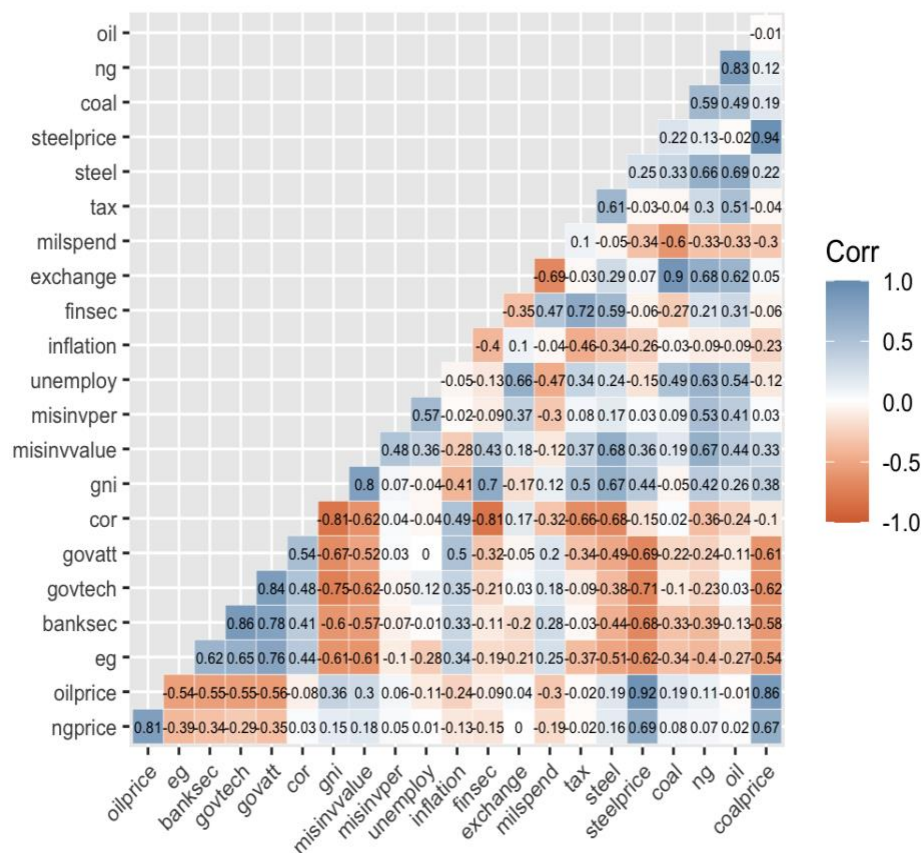
Figure 43: hierarchical k-means

Among the formal factors, bank secrecy and AML/CFT capabilities are highly correlated at 0.86, corruption and the size of the financial sector at -0.81 indicating that jurisdictions with lower taxes may 'substitute' their lack of funds with corrupt practices. International cooperation, govatt, is highly correlated with AML/CFT capabilities (0.84), bank secrecy (0.78), and Egmont group membership (0.76). The size of the financial sector is highly negatively correlated with corruption (-0.81) indicating that by substituting for informal value transfer systems, AML/CFT regimes in the banking system may be a good mechanism against money laundering.

Among the informal factors, prices appear to be highly correlated between steel and coal (0.94) and natural gas and oil (0.81). Similarly, coal production is highly correlated with the exchange rate (0.9) indicating that the proceeds from coal may derive more heavily from international sales. Unemployment and misinvoicing percent are relatively correlated at 0.57.

Interpreting pooled vs fixed effects

Because pooled effects are more case agnostic, they help test the validity of the theory as it is. Fixed effects assume that the specifics of the cases explain the variance in the dependent variables. Hence if the pooled effects is significant but the fixed effects model not, we can interpret that the variable may be important to the theory but not for the specific Southeast Asian country, and vice versa.

<u>Civilian targeting as an important indicator in the terrorism-insurgency mechanism</u>
As explained, richer organizations that I theorize to rely on formal financial sources are less likely to dip below the threshold where they would have to let troops go and hence would treat terrorism as a normal rather than an inferior good. On the flip side, civilian targeting serves as a litmus test for the importance of variables as an epiphenomenon or organizational decision-making.

9.4 Walker model

I use the basic Walker model as a basis to compare the results of my model to.

```
===============================================================================
                                 Dependent variable:
             -------------------------------------------------------------------
                         deaths                            civper
                  (1)              (2)              (3)              (4)
-------------------------------------------------------------------------------
score          47.725***        26.861*          -1.433*           0.280
              (12.950)         (14.681)          (0.798)          (0.755)

Constant       -117.305                          33.008***
              (140.873)                          (8.681)

-------------------------------------------------------------------------------
Observations      79               79               79               79
R2               0.150            0.044            0.040            0.002
Adjusted R2      0.139           -0.022            0.028           -0.066
F Statistic  13.581*** (df = 1; 77) 3.348* (df = 1; 73) 3.224* (df = 1; 77) 0.137 (df = 1; 73)
===============================================================================
Note:                                        *p<0.1; **p<0.05; ***p<0.01
```

Figure 44: Walker model

*1, 3 are pooled models and 2,4 are fixed effects models. I focus on the pooled effects and reference the fixed effects in brackets.

The Walker score has an R squared of 0.150 (0.044) in explaining total deaths and 0.040 (0.002) in explaining civilian percentage of total deaths. Overall, the model indicates that the

higher the Walker score, the more deaths and the lower percentage of civilian deaths. To recapitulate, the Walker model is a composite measure composed of bank secrecy, AML/CFT capabilities, international cooperation on AML/CFT, Egmont group membership, and corruption--factors accounted for primarily by the formal financial model. I thus infer that the Walker model is somewhat in line with my theory. The Walker score, alone, however, is misleading because it does not take into account how factors such as bank secrecy and AML/CFT capabilities theoretically substitute for one another.

9.5 Results (country-year)

Formal sources

	Dependent variable:			
	deaths		civper	
	(1)	(2)	(3)	(4)
banksec	31.087***	20.250*	0.655	0.524
	(8.069)	(10.571)	(0.520)	(0.635)
govtech	4.687	5.754	0.561	0.199
	(5.975)	(7.500)	(0.385)	(0.451)
banksecgovtech	-0.279***	-0.204	-0.010	-0.004
	(0.093)	(0.123)	(0.006)	(0.007)
finsec	-6.814***	-4.750*	0.261**	-0.158
	(1.817)	(2.763)	(0.117)	(0.166)
gni	0.017	0.023	0.005	0.001
	(0.081)	(0.087)	(0.005)	(0.005)
finsecgni	0.0002	0.0002	-0.00003	0.00001
	(0.001)	(0.001)	(0.00004)	(0.00004)
misinvper	1.313	2.614**	-0.190***	-0.104
	(0.918)	(1.196)	(0.059)	(0.072)
eg	3.472***	3.349***	0.074	0.002
	(0.935)	(1.067)	(0.060)	(0.064)
tax	-211.445**	-120.825	-4.451	-4.569
	(98.401)	(113.226)	(6.339)	(6.804)

```
taxcor              6.549***            3.874               0.150               0.196
                    (2.373)             (2.952)             (0.153)             (0.177)


cor                 -68.660*            -35.635             1.596               -2.576
                    (35.872)            (41.373)            (2.311)             (2.486)


milspend            197.567**           120.766             -2.825              -0.597
                    (91.170)            (116.818)           (5.873)             (7.020)


Constant            1,401.154                               -109.641
                    (1,370.935)                             (88.311)


-------------------------------------------------------------------------------------------
Observations        115                 115                 115                 115
R2                  0.518               0.315               0.362               0.095
Adjusted R2         0.461               0.203               0.287               -0.053
F Statistic      9.126*** (df = 12; 102) 3.760*** (df = 12; 98) 4.827*** (df = 12; 102) 0.857 (df = 12; 98)
===========================================================================================
```

Figure 45: Formal model (country-level)

*To recapitulate, govtech is coded from 0 (very strong AML/CFT capabilities) to 100 (very weak AML/CFT capabilities). Similarly, e.g. is binary and coded from 100 (not a membership of Egmont group) and 0 (member of Egmont group).

Bank secrecy-AML-CFT capabilities

Both affirming and disproving Hypothesis 1, bank secrecy is strongly correlated at the 1% (10%) level with cumulative deaths at 31.087 (20.025). In line with theory, weak AML/CFT capabilities are also positively correlated with cumulative deaths but are not statistically significant. Furthermore, the interaction term banksecgovtech, is slightly negatively correlated with cumulative deaths at -0.279 the 1% level for the pooled model. This indicates that in and of themselves, bank secrecy and AML/CFT capabilities increase the likelihood of money laundering. However, when analyzed together, AML/CFT capabilities may temper the effect of high bank secrecy. This, again, emphasizes the importance of analyzing these factors as a system rather than discretely as the basic Walker model does.

Bank secrecy and AML/CFT capabilities do not appear to have a statistically significant impact on civilian targeting. Interestingly, the interaction term banksecgovtech is not statistically significant either. Tying the empirical results back to the terrorism-insurgency mechanism, this makes theoretical sense. As explained, organizations that rely on formal financial sources are

less likely to experience large income shocks and to dip below a critical point where they would have to drop a substantial amount of their troops. As such, terrorist tactics continue to be an inferior good for these organizations. The fact that bank secrecy and AML/CFT capabilities are not statistically significant, however, does not prove this theory but merely fails to disprove it.

Misinvoicing

The percentage of misinvoicing to GDP is highly correlated with cumulative deaths at 2.614 (5%) and negatively correlated with civilian targeting at -0.190 (1%). This again is in line with the theory. Misinvoicing measures a formal financial source and hence organizations that rely on misinvoicing heavily are likely to be wealthier and employ large numbers of troops. The fact that misinvoicing is statistically significant with civilian targeting indicates that the financial gains from misinvoicing is so great that organizations with formal financial sources are less likely to dip below the aforementioned financial threshold explored in the terrorism-insurgency mechanism. As explained, trade misinvoicing is a very precise but narrow measure whereas bank secrecy and AML/CFT capabilities are imprecise but broad measures. Because the correlation with civilian targeting is statistically significant for the fixed model, I gather that misinvoicing is a better predictor of organizational finances than bank secrecy and AML/CFT capabilities are.

I thus fail to reject Hypothesis 1 for the country-level effects

Size of the financial sector

To recapitulate, the size of the financial sector is the percentage of credit provided by banks to industry and businesses. The size of the financial sector is negatively correlated with cumulative deaths at -6.814 (-4.750) at the 1% and 10% levels, and 0.261 with civilian targeting at the 5% level. However, the effect of the financial sector is close to 0 once interacted with gni, though the interaction term finsecgni is not statistically significant. Broadly, this indicates that contrary to the theory, the financial sector may actually temper the gains from formal sources because as interpreted from the correlation matrix, the formal sector may substitute for the informal value transfer system that has little to no AML/CFT controls. The positive correlation between the size of the financial sector and civilian targeting indicates that organizations that rely on the financial sector are more likely to dip below the terrorism-insurgency threshold.

There are two possible explanations for this. Firstly, it is possible that organizations significantly rely on international networks. The local bank account may simply receive funds from overseas and hence not show up in the financial sector indicator. The trade misinvoicing results add further weight to this interpretation. Secondly, it is possible that organizations simply do not rely on front businesses as much as methods like misinvoicing. However, again, the interaction term's small but not statistically significant correlation suggests that GNI is a confounder

I weakly fail to reject Hypothesis 2 but caveat that there is insufficient evidence that GNI does not negate the impact of the size of the financial sector.

Other observations
Egmont group membership is strongly correlated with cumulative deaths at 3.472 (1%) in the pooled regression and 3.349 (1%) for the fixed effects. This indicates that like bank secrecy and AML/CFT capabilities, not having a financial intelligence unit is aids organizations seeking financial gains from formal financial sources, but that the absence of a financial intelligence unit does not temper money laundering to a degree in which organizations would not cross the threshold in the terrorism-insurgency mechanism (as indicated with trade misinvoicing).

Corruption is surprisingly negatively correlated with cumulative deaths in the pooled model at -68.660 (1%). This indicates that as explored in the unsupervised and exploratory analysis, corruption may be substituting for taxes in proxying for government strength. This also vindicates bargaining theory as specific personnel within the military/government may be more willing to tolerate civil war organizations in exchange for financial incentives.

This is further indicated by the negative correlation between tax and cumulative deaths -211.445 (1%) for the pooled model. However, the fact that the interaction term, taxcor, is positively correlated with cumulative deaths at 6.549 (1%) indicates that corruption may temper financial gains only when the state's formal extractive power is low.

Informal sources

```
==========================================================================================
                                  Dependent variable:
          --------------------------------------------------------------------------------
                    deaths                                     civper
            (1)               (2)                    (3)                   (4)
------------------------------------------------------------------------------------------
```

coal	-0.003**	-0.003**	-0.0001	-0.0002**
	(0.001)	(0.001)	(0.0001)	(0.0001)
coalprice	1.517	2.197	0.059	0.078
	(2.685)	(2.463)	(0.141)	(0.139)
oil	-0.0004	-0.0005	0.0005***	0.00004
	(0.002)	(0.003)	(0.0001)	(0.0002)
oilprice	2.409	1.018	-0.197	-0.250
	(3.027)	(2.836)	(0.159)	(0.160)
ng	-0.0002***	-0.0001	-0.00002***	-0.00001**
	(0.0001)	(0.0001)	(0.00000)	(0.00001)
ngprice	-7.823	20.879	1.783	2.570**
	(22.421)	(22.713)	(1.181)	(1.279)
steel	-0.015	0.010	0.002	-0.0004
	(0.024)	(0.029)	(0.001)	(0.002)
steelprice	-1.898	-3.641	0.136	0.167
	(2.518)	(2.406)	(0.133)	(0.135)
unemploy	24.772	-160.663***	-1.438	-4.015
	(29.471)	(56.910)	(1.552)	(3.205)
inflation	-6.863**	-8.038***	-0.109	-0.009
	(3.014)	(2.892)	(0.159)	(0.163)
exchange	0.062**	0.017	0.002	0.003
	(0.030)	(0.033)	(0.002)	(0.002)
milspend	-118.758	-95.716	2.841	7.269
	(109.802)	(105.269)	(5.782)	(5.928)
unemploymisinvper	0.387	0.757**	-0.011	-0.008
	(0.317)	(0.311)	(0.017)	(0.018)
Constant	811.607**		-14.517	
	(370.523)		(19.511)	
Observations	115	115	115	115
R2	0.452	0.335	0.516	0.228
Adjusted R2	0.381	0.218	0.453	0.093
F Statistic	6.405*** (df = 13; 101)	3.756*** (df = 13; 97)	8.269*** (df = 13; 101)	2.204** (df = 13; 97)

Note: *p<0.1; **p<0.05; ***p<0.01

Figure 46: Informal model (country-level)

With the exception of natural gas price and civilian targeting in the fixed effects model, asset prices do not have a statistically significant effect on cumulative deaths and civilian targeting. This suggests that organizations in Southeast Asia may have significant natural gas activities. This, however, does not rule out that these armed organizations do not have dealing in steel, crude oil, and coal as it is possible that their actions are 'hidden' within the mass of production from the legitimate industry. It is plausible that the effect of natural gas prices 'show up' because the organizations have a higher market share of total asset production.

In line with theory, the positive correlation between natural gas prices and civilian targeting at 2.57 (5%) indicates that perceived natural gas gains, as an informal financial source, are less stable than formal ones. As a reverse to the results of misinvoicing, this indicates that organizations that rely on natural gas are more likely to dip below the threshold where terrorism becomes a normal good.

I reject Hypothesis 3 for coal, steel, and crude oil and fail to reject it for natural gas.

Contra Hypothesis 4, coal at -0.002 (5%) for the pooled model and natural gas production at -0.00002 (1%) and -0.00001% (5%) for the fixed and pooled effect models respectively are negatively correlated with civilian targeting. My theory, however, predicts that asset production would be negatively correlated with cumulative deaths and positively correlated with civilian targeting. This indicates that organizations that rely on coal and natural gas and not likely to fall below the threshold where terrorism becomes a normal good. This suggests that the gains from coal and natural gas may be more than my theory anticipated--however, the negative correlation with cumulative deaths suggests that organizations that rely on these sources may simply be more risk-averse, being careful to not launch too many attacks that would put them in the financial red. This, again, harks back to the importance of distinguishing short-run and long-run behavior, the details of which are beyond the scope of this thesis. Oil, however, is in line with my theory as oil production is positively correlated with civilian targeting.

The major limitation of this model is the confounding effect of the labor market mechanism. As Dube and Vargas and countless others have argued, the direction of these asset production correlations with conflict intensity may be less a product of different organizational financial

revenues, and more a result of individuals flowing in and out of the conflict industry. This is strengthened by the results of unemployment and inflation. Unemployment is negatively correlated with cumulative deaths at -160.663 at the 1% level for the fixed effects model. Inflation, which is another proxy for financial hardship shows a similar effect--i.e. At -6.863 (5%) and -8.038 (1%) for the pooled and fixed effects models respectively, the higher the inflation the less cumulative deaths because individuals are less likely to face financial hardship and be tempted to join an armed organization.

I reject Hypothesis 4 for coal and natural gas but weakly fail to reject it for crude oil. I caveat that there is insufficient evidence that the results from this analysis distinguishes the financial proceeds from the production of assets from the labor market effect.

<u>Overall model</u>
I highlight variables that have markedly different coefficients than the individual formal and informal models.

	Dependent variable:			
	deaths		civper	
	(1)	(2)	(3)	(4)
banksec	21.497**	25.206**	0.635	0.816
	(10.605)	(11.588)	(0.562)	(0.628)
govtech	**4.602**	**13.865**	**0.774***	**0.996****
	(7.658)	**(9.159)**	**(0.406)**	**(0.496)**
banksecgovtech	-0.190	-0.297**	-0.008	-0.011
	(0.123)	(0.140)	(0.007)	(0.008)
finsec	-4.768*	-0.528	-0.079	0.029
	(2.562)	(4.041)	(0.136)	(0.219)
finsecgni	-0.001	-0.001	0.0001	0.0001*
	(0.001)	(0.001)	(0.00005)	(0.0001)
eg	2.887**	2.841**	0.053	0.037
	(1.240)	(1.294)	(0.066)	(0.070)
coal	-0.002	-0.002	-0.0001	-0.0001
	(0.002)	(0.002)	(0.0001)	(0.0001)
coalprice	0.189	0.949	0.144	0.241

	(2.808)	(3.079)	(0.149)	(0.167)
oil	0.00000	0.001	0.0001	0.0001
	(0.003)	(0.004)	(0.0001)	(0.0002)
oilprice	-0.395	-0.631	-0.235	-0.226
	(3.321)	(3.292)	(0.176)	(0.178)
ng	-0.0001	-0.0002	-0.00001**	-0.00002**
	(0.0001)	(0.0002)	(0.00001)	(0.00001)
ngprice	-3.848	15.646	2.441*	3.592**
	(26.874)	(31.277)	(1.425)	(1.694)
steel	-0.029	-0.006	0.001	0.001
	(0.029)	(0.036)	(0.002)	(0.002)
steelprice	-0.969	-1.986	0.201	0.069
	(2.947)	(3.584)	(0.156)	(0.194)
unemploy	-29.803	-138.017**	-5.909**	-7.737**
	(49.066)	(67.580)	(2.601)	(3.660)
inflation	-6.215*	-6.798**	-0.109	-0.095
	(3.257)	(3.275)	(0.173)	(0.177)
exchange	0.032	0.020	0.005**	0.004*
	(0.035)	(0.038)	(0.002)	(0.002)
unemploymisinvper	0.817	0.970*	0.041	0.035
	(0.521)	(0.532)	(0.028)	(0.029)
cor	-19.810	-45.583	-5.193**	-6.857**
	(44.950)	(52.214)	(2.383)	(2.828)
tax	-74.037	-219.472	-14.381**	-17.623**
	(109.482)	(140.173)	(5.803)	(7.591)
taxcor	2.630	5.918	0.397***	0.477**
	(2.824)	(3.745)	(0.150)	(0.203)
gni	0.212*	0.164	-0.006	-0.007
	(0.127)	(0.141)	(0.007)	(0.008)
misinvper	**-2.047**	**-1.595**	**-0.242**	**-0.173**
	(2.830)	**(2.960)**	**(0.150)**	**(0.160)**
milspend	108.380	85.044	5.851	6.878
	(126.503)	(141.304)	(6.706)	(7.653)
Constant	99.123		117.840	
	(1,966.979)		(104.264)	

```
Observations              115              115              115              115
R2                       0.591            0.419            0.634            0.376
Adjusted R2              0.482            0.230            0.536            0.173
F Statistic       5.418*** (df = 24; 90) 2.586*** (df = 24; 86) 6.487*** (df = 24; 90) 2.164*** (df = 24; 86)
================================================================================================================
Note:                                                             *p<0.1; **p<0.05; ***p<0.01
```

Figure 47: Overall model (country-level)

Cochrane-Orcutt procedure

I perform the Cochrane-Orcutt procedure for models that fail the Breusch-Godfrey test. This accounts for autocorrelation within the models.

1: Cumulative deaths (pooled)

```
Durbin-Watson statistic
(original):    NA , p-value: NA
(transformed): 2.02049 , p-value: 5.228e-02


 coefficients:
     (Intercept)            banksec           govtech    banksecgovtech            finsec
      -35.110810          19.856362          4.518144         -0.173928         -5.296356
       finsecgni                 eg              coal         coalprice               oil
       -0.001067           2.959165         -0.001917          0.234738         -0.000502
         oilprice                ng           ngprice             steel        steelprice
       -0.689506          -0.000052         -4.624296         -0.028158         -0.724569
         unemploy          inflation          exchange unemploymisinvper               cor
      -31.633197          -6.270182          0.032334          0.786020        -18.027495
             tax             taxcor               gni          misinvper           milspend
      -68.635029           2.684968          0.207113         -1.920291        127.473073
```

2: Civilian targeting (pooled)

```
Durbin-Watson statistic
(original):    NA , p-value: NA
(transformed): 1.98796 , p-value: 3.599e-02


 coefficients:
     (Intercept)            banksec           govtech    banksecgovtech            finsec
      115.168940           0.602550          0.771118         -0.007350         -0.088905
       finsecgni                 eg              coal         coalprice               oil
        0.000081           0.053818         -0.000061          0.144255          0.000136
         oilprice                ng           ngprice             steel        steelprice
       -0.241010          -0.000014          2.425312          0.000599          0.205771
         unemploy          inflation          exchange unemploymisinvper               cor
       -5.940131          -0.110061          0.004803          0.039781         -5.152733
             tax             taxcor               gni          misinvper           milspend
      -14.270277           0.397555         -0.005769         -0.238879          6.200727
```

3: Cumulative deaths (fixed effects)

```
number of interaction: 11
 rho 0.781681


Durbin-Watson statistic
(original):    NA , p-value: NA
(transformed): 2.30965 , p-value: 9.432e-01


 coefficients:
          banksec          govtech    banksecgovtech            finsec         finsecgni
        16.377751        11.274473         -0.197531          4.703635         -0.002641
               eg             coal         coalprice               oil          oilprice
         0.689306        -0.000923         -2.019864          0.000865         -1.623852
               ng          ngprice             steel        steelprice           unemploy
         0.000003        27.217891          0.054167         -1.253240        -13.493706
        inflation         exchange unemploymisinvper               cor               tax
        -3.588144        -0.046184          0.372165         54.445585       -144.117018
           taxcor              gni         misinvper          milspend
         4.166607         0.425986         -0.302899        152.162580
```

4: Civilian targeting (fixed effects)

```
number of interaction: 15
 rho 0.790984


Durbin-Watson statistic
(original):    NA , p-value: NA
(transformed): 2.28603 , p-value: 9.291e-01


 coefficients:
          banksec          govtech    banksecgovtech            finsec         finsecgni
         0.983147         0.656508         -0.012502          0.257853          0.000083
               eg             coal         coalprice               oil          oilprice
         0.053293        -0.000021          0.087343         -0.000058         -0.274844
               ng          ngprice             steel        steelprice           unemploy
        -0.000011         1.582718         -0.003763          0.306117         -9.855538
        inflation         exchange unemploymisinvper               cor               tax
        -0.100797         0.004993         -0.036935         -6.390988        -17.741138
           taxcor              gni         misinvper          milspend
         0.524771        -0.012588          0.051509          5.745089
```

Interestingly, misinvoicing is not statistically significant when combined. This suggests that there may be overlap between misinvoicing and the informal sources. It is possible that the coal, oil, steel, and natural gas are being traded and misinvoiced. Reports, however, suggest that with

the exception of coal in Indonesia, Southeast Asia is a net importer of energy. While this does not disprove the intuition that these assets are being exported, it suggests that the probability of this misinvoicing mechanism occurring is less likely. More work needs to be done to expand the set of assets to other profitable goods and to distinguish countries by their net importing or net exporting status.

Furthermore, AML/CFT capabilities is now positively correlated with civilian targeting at 0.774 (0.996) at the 1% and 5% levels respectively, indicating that those that rely on formal sources are likely to fall below the threshold where terrorism becomes a normal good. A plausible explanation is that organizations that rely on trade misinvoicing coal, crude oil, steel, and coil may be significantly hamstrung by robust AML/CFT measures.

Further research needs to be conducted to theorize how formal and informal sources interact with one another.

Drug model: Myanmar

	Dependent variable:			
	deaths		civper	
	(1)	(2)	(3)	(4)
Methtablets	0.016	0.005	0.002**	0.002**
	(0.035)	(0.035)	(0.001)	(0.001)
Crystalmeth	-0.010	0.044	-0.001	-0.001
	(0.071)	(0.056)	(0.001)	(0.001)
Methpowder	0.860		-0.010	
	(0.714)		(0.014)	
Heroin	-0.413	-0.416	0.006	0.006
	(0.266)	(0.271)	(0.005)	(0.005)
Rawopium	0.084	0.060	0.0002	0.0004
	(0.087)	(0.087)	(0.002)	(0.002)
Brownopium	-0.194	-0.116	-0.004	-0.005
	(0.224)	(0.219)	(0.004)	(0.004)
Liquidopium	-0.809	-0.841	0.033*	0.033*
	(0.807)	(0.823)	(0.016)	(0.015)
Lowgradeopium	-0.011	0.010	0.001	0.001
	(0.041)	(0.038)	(0.001)	(0.001)

```
opiumlandarea           -0.007          -0.004          -0.00005         -0.0001
                        (0.006)         (0.005)         (0.0001)         (0.0001)


opiumpotential           0.481           0.263           -0.001           0.002
                        (0.679)         (0.668)         (0.013)          (0.012)


unemployment            360.734         402.063          -1.767           -2.266
                       (410.951)       (417.815)        (7.919)          (7.736)


inflation               -4.375          -4.218           -0.100           -0.102
                        (4.543)         (4.634)          (0.088)          (0.086)


Constant                177.071         185.275           2.463           2.364
                       (362.062)       (369.335)         (6.977)          (6.838)


-----------------------------------------------------------------------------------------
Observations              23              23               23               23
R2                       0.539           0.472            0.783            0.771
Adjusted R2             -0.014          -0.055            0.523            0.542
Residual Std. Error  233.420 (df = 10)  238.151 (df = 11)  4.498 (df = 10)    4.409 (df = 11)
F Statistic          0.975 (df = 12; 10) 0.895 (df = 11; 11) 3.012** (df = 12; 10) 3.366** (df = 11; 11)
=========================================================================================
Note:                                                        *p<0.1; **p<0.05; ***p<0.01
```

Figure 48: Drug model (country-level)

*I conduct regressions 2 and 4 without meth powder because significant imputation was done. It appears that the results do not change significantly with the exclusion of meth powder.

Across the drug seizure and potential data, only seizures of meth tablets and liquid opium are statistically significant and positively correlated with civilian targeting at the 5% and 1% levels respectively. This, however, does not simply suggest that meth tablets and liquid opium are driving Myanmese organizations' finances. As explored in the concept of MPA and the complicity mechanism, the monopolistic nature of the narcotics industry implies that the de facto state of affairs should be cooperation. Hence, as expected, narcotics are not statistically significant with cumulative deaths. The positive correlations between meth tablets and liquid opium and civilian targeting can be interpreted in two ways. Firstly, it is possible that the terrorism-insurgency mechanism is at play: organizations that rely on these narcotics are likely to dip below the threshold where terrorism becomes a normal good. This, however, is arguably less likely given qualitative knowledge about the strength of the narcotics industry. It is more likely that organizations strike deals with the military and hence turn to terrorism to achieve their goals.

Nevertheless, there is too much aggregation in this model. I separate Northeast from non-Northeast Myanmese organizations below.

I tentatively fail to reject Hypothesis 5 but caveat that there is significant aggregation in the model.

9.6 Organization-level effects

Coefficients that are substantially different from the country-level effects are bolded. I consider the pooled effects because a fixed effects model would overestimate the individual effects of each organization. There are insufficient numbers of cases for each organization to make such a measure meaningful.

Formal sources

```
=========================================================
                          Dependent variable:
                    -----------------------------
                        deaths          CIVPER
                         (1)              (2)
---------------------------------------------------------
banksec                28.925***        0.335**
                        (6.447)          (0.139)

govtech                10.765*          0.880***
                        (6.015)          (0.129)

banksecgovtech         -0.285***        -0.008***
                        (0.081)          (0.002)

finsec                 -6.153**         0.243***
                        (2.391)          (0.051)

finsecgni              -0.001*          -0.00003**
                        (0.001)          (0.00001)

eg                      4.116***        0.089***
                        (0.845)          (0.018)

cor                    -76.184**        -0.988
                        (33.408)         (0.718)
```

```
tax                        -373.504***    -7.930***
                           (120.741)       (2.594)


taxcor                      10.597***      0.199***
                            (2.834)        (0.061)


gni                          0.238***      0.007***
                            (0.090)        (0.002)


misinvper                    1.084        -0.086***
                            (0.997)        (0.021)


milspend                   235.582**      -3.558*
                            (99.583)       (2.139)


Constant                  1,226.967       -7.312
                          (1,322.494)     (28.412)


-------------------------------------------------------
Observations                  385           385
R2                           0.315         0.480
Adjusted R2                  0.293         0.463
F Statistic (df = 12; 372)  14.264***     28.575***
=======================================================
Note:                      *p<0.1; **p<0.05; ***p<0.01
```

Figure 49: Formal model (organization-level)

<u>Cochrane-Orcutt procedure:</u>

Cumulative deaths:

```
Durbin-Watson statistic
(original):   NA , p-value: NA
(transformed): 1.99944 , p-value: 3.781e-01

 coefficients:
   (Intercept)        banksec        govtech banksecgovtech         finsec      finsecgni
   1175.439861      28.555932      10.722408      -0.282288      -6.205935      -0.001062
            eg            cor            tax         taxcor            gni       misinvper
      4.084305     -74.843960    -373.717638      10.613284       0.241715       1.056617
       milspend
     241.114416
```

Unlike the country-level effects, bank secrecy, AML/CFT capabilities, and Egmont membership are positively correlated with civilian targeting at 0.335 (5%), 0.880 (1%), and 0.089 (1%) respectively. This suggests that the more an organization relies on formal financial sources, the more likely they are to fall below the threshold where terrorism becomes a normal good. This suggests that formal financial sources are unstable sources for individual organizations. Hence, barring inter-organizational collaboration, **I reject hypothesis 1 for organization-level effects.**

<u>Informal sources</u>

```
=======================================================
                       Dependent variable:
                  ----------------------------
                      deaths         CIVPER
                       (1)            (2)
-------------------------------------------------------
coal                  -0.001       -0.0001***
                     (0.001)        (0.00003)


coalprice             3.222         0.099**
                     (2.069)         (0.042)


oil                   0.002         0.0002***
                     (0.003)         (0.0001)


oilprice             -1.292        -0.169***
                     (2.282)         (0.046)


ng                 -0.0002***     -0.00001***
                    (0.0001)        (0.00000)


ngprice               3.499         1.320***
                    (17.227)         (0.348)


steel                -0.034         0.003***
                     (0.035)         (0.001)


steelprice           -2.301          0.045
                     (1.932)         (0.039)


unemploy             28.207         -0.459
```

	(22.345)	(0.451)
inflation	-10.390***	-0.130***
	(2.146)	(0.043)
exchange	0.027	0.002***
	(0.030)	(0.001)
milspend	-127.221	6.224***
	(111.112)	(2.245)
unemploymisinvper	0.838***	-0.008
	(0.285)	(0.006)
Constant	1,079.027***	-10.121
	(312.537)	(6.314)

```
-------------------------------------------------------
Observations               385              385
R2                         0.273            0.511
Adjusted R2                0.247            0.494
F Statistic (df = 13; 371) 10.697***        29.862***
=======================================================
Note:                      *p<0.1; **p<0.05; ***p<0.01
```

Figure 50: Informal model (organization-level)

Coal price, oil price, and steel are now statistically significant with civilian targeting. The positive correlations between coal price and oil price are in line with the theory while steel's negative correlation is not. This yet again suggests that the imprecision of asset data is what is predominantly driving this empirical inconsistency. Furthermore, the fact that unemployment is now not statistically significant suggests that the labor market effect may be less present at the organization-level.

Cochrane-Orcutt Procedure for civilian targeting

```
Durbin-Watson statistic
(original):    NA , p-value: NA
(transformed): 2.00248 , p-value: 3.801e-01

 coefficients:
    (Intercept)           coal        coalprice             oil        oilprice
    1091.175750      -0.001452         3.286412        0.001646       -1.346997
```

ng	ngprice	steel	steelprice	unemploy
-0.000249	3.872889	-0.035471	-2.316855	28.135611
inflation	exchange	milspend	unemploymisinvper	
-10.504638	0.027296	-133.318598	0.830403	

Overall model

```
=======================================================
                        Dependent variable:
                   ----------------------------
                     deaths          civper
                      (1)              (2)
-------------------------------------------------------
banksec             20.778***        0.495**
                    (7.978)          (0.197)


govtech              2.939           0.934***
                    (8.214)          (0.202)


banksecgovtech      -0.208**        -0.008***
                    (0.105)          (0.003)


finsec              -2.735           0.211**
                    (3.323)          (0.082)


finsecgni           -0.003***        0.00004**
                    (0.001)          (0.00002)


eg                   4.760***        0.117***
                    (0.989)          (0.024)


coal                -0.002           0.00002
                    (0.002)          (0.00004)


coalprice            0.569           0.038
                    (2.359)          (0.058)


oil                  0.001           0.0003***
                    (0.003)          (0.0001)


oilprice            -1.665          -0.259***
                    (2.669)          (0.066)
```

ng	-0.0001	-0.00002***
	(0.0001)	(0.00000)
ngprice	26.459	0.798
	(23.658)	(0.583)
steel	0.008	-0.001
	(0.045)	(0.001)
steelprice	-3.656	0.301***
	(2.650)	(0.065)
unemploy	-8.680	-1.068
	(47.171)	(1.162)
inflation	-5.882**	-0.147**
	(2.311)	(0.057)
exchange	0.004	0.003***
	(0.037)	(0.001)
unemploymisinvper	1.162***	0.040***
	(0.447)	(0.011)
cor	-3.649	-3.597***
	(38.452)	(0.948)
tax	-272.613**	-14.344***
	(130.503)	(3.216)
taxcor	7.280**	0.340***
	(3.167)	(0.078)
gni	0.530***	0.00005
	(0.117)	(0.003)
misinvper	-2.360	-0.233***
	(2.066)	(0.051)
milspend	313.865**	-2.466
	(135.924)	(3.349)

```
Constant                            -584.275          56.144

                                  (1,653.769)        (40.751)


-------------------------------------------------------
Observations                          385              385
R2                                    0.403            0.687
Adjusted R2                           0.363            0.666
F Statistic (df = 24; 360)    10.114***          32.872***
=======================================================
Note:                          *p<0.1; **p<0.05; ***p<0.01
```

Figure 51: Overall model (organization-level)

Unlike the combined model for the country-level effects, there are no substantial changes when the organization-level effects for the formal and informal models are combined.

Cochrane-Orcutt procedure:

Cumulative deaths

```
number of interaction: 13
 rho -0.079228

Durbin-Watson statistic
(original):    NA , p-value: NA
(transformed): 2.01489 , p-value: 3.521e-01

 coefficients:
     (Intercept)             banksec            govtech    banksecgovtech              finsec
     -323.194097           22.529276           2.793038         -0.224234           -2.612605
        finsecgni                  eg               coal         coalprice                 oil
        -0.002893            4.888826          -0.001337          1.007267            0.002260
          oilprice                  ng            ngprice             steel          steelprice
         -1.732149           -0.000133          26.926317         -0.010143           -3.695063
          unemploy           inflation           exchange unemploymisinvper                 cor
        -10.946263           -6.139388           0.004755          1.278575           -9.665492
              tax              taxcor                gni          misinvper            milspend
       -263.587942            7.040231           0.496054         -2.580423          304.493701
```

Civilian targeting

```
number of interaction: 16
 rho 0.006288
```

```
Durbin-Watson statistic
(original):    NA , p-value: NA
(transformed): 1.99974 , p-value: 3.243e-01

 coefficients:
     (Intercept)          banksec          govtech    banksecgovtech           finsec
       56.405284         0.492695         0.930634         -0.007886         0.210517
        finsecgni               eg             coal         coalprice              oil
        0.000044         0.117560         0.000021          0.037266         0.000298
         oilprice               ng          ngprice            steel        steelprice
       -0.258944        -0.000020         0.786668         -0.000652         0.302288
         unemploy        inflation         exchange unemploymisinvper              cor
       -1.047863        -0.146677         0.002615          0.039743        -3.598275
             tax           taxcor              gni         misinvper          milspend
      -14.376848         0.340440         0.000073         -0.233164        -2.556612
```

Drug model

```
=====================================================================================================
                                          Dependent variable:
             ----------------------------------------------------------------------------------------
                  deaths            civper           deaths            civper
                   (1)               (2)              (3)               (4)
-----------------------------------------------------------------------------------------------------
```

	deaths (1)	civper (2)	deaths (3)	civper (4)
Methtablets	0.016 (0.025)	0.002*** (0.0004)	0.030 (0.018)	0.002*** (0.0003)
Crystalmeth	-0.009 (0.050)	-0.001 (0.001)	-0.034 (0.036)	-0.0003 (0.001)
Methpowder	0.697 (0.550)	-0.008 (0.008)	1.484*** (0.394)	-0.011* (0.006)
Heroin	-0.711*** (0.211)	0.003 (0.003)	-0.527*** (0.129)	0.006*** (0.002)
Rawopium	0.116 (0.072)	0.001 (0.001)	0.142*** (0.042)	-0.0003 (0.001)
Brownopium	-0.278* (0.140)	-0.004* (0.002)	-0.353*** (0.102)	-0.003* (0.001)
Liquidopium	-0.907 (0.764)	0.037*** (0.011)	-0.756* (0.392)	0.025*** (0.006)
Lowgradeopium	-0.025 (0.029)	0.001** (0.0004)	-0.021 (0.021)	0.001*** (0.0003)
opiumlandarea	-0.004 (0.005)	0.00001 (0.0001)	-0.009*** (0.003)	-0.0001 (0.00005)

```
opiumpotential        -0.0003                -0.008                 0.401                  0.003
                      (0.527)                (0.008)                (0.353)                (0.005)


unemploy              296.196                -4.018                 472.699**              5.096*
                      (300.172)              (4.461)                (192.835)              (2.782)


inflation             -4.725                 -0.123**               -6.066**               -0.089**
                      (3.959)                (0.059)                (2.398)                (0.035)


--------------------------------------------------------------------------------------------------
Observations          58                     58                     77                     77
R2                    0.497                  0.773                  0.610                  0.792
Adjusted R2           0.245                  0.659                  0.419                  0.690
F Statistic   3.125*** (df = 12; 38) 10.768*** (df = 12; 38) 6.647*** (df = 12; 51) 16.162*** (df = 12; 51)
==================================================================================================
Note:                                                               *p<0.1; **p<0.05; ***p<0.01
```

Figure 52: Drug model (organization-level)

Regression 1 and 2 cover organizations that operate in the Northeast of Myanmar, i.e., in areas that grow poppies. Regression 3 and 4 cover non-Northeast Myanmese organizations.

Interestingly, there is little difference in the correlation between narcotics data and conflict intensity for known producers of drugs and those that are not. It is possible that narcotics revenue and the complicity mechanism from bargaining theory tempers Northeast Myanmese organization's MPA. The fact that unemployment is only significant for cumulative deaths for organizations not in drug-producing areas suggests that the labor market effect is stronger for non-narcotics organizations. This is plausibly because narcotics is the predominant source of income in drug-producing areas hence limiting what individuals can participate in besides the conflict intensity.

It is extremely likely that there is more than meets the eye: if the authorities and organizations are complicit in drug smuggling, the seizures data would necessarily be contaminated. This is an unfortunate product of the nature of the data rather than a methodological problem.

I fail to reject hypothesis 5 for organization-level effects.

Hypotheses evaluation summary

Hypothesis	Country-level cumulative deaths	Country-level civilian targeting	Organization-level cumulative deaths	Organization-level civilian targeting
1 (banksec, govtech, misinvper)	Strong evidence for bank secrecy and AML/CFT, weak evidence for misinvoicing	Strong evidence for misinvoicing; no evidence for bank secrecy and AML/CFT	Strong evidence for bank secrecy and AML/FT, little evidence for misinvoicing	Strong evidence for misinvoicing, rejected for AML/CFT
2 (finsec, gni, finsecgni)	Weak evidence for	Weak evidence for	Weak evidence for	Weak evidence for
3 (coalprice, ngprice, steelprice, oilprice)	Weak/contradictory evidence	Weak/contradictory evidence	Weak/contradictory evidence	Weak/contradictory evidence
4 (coal, ng, steel, oil)	Weak/contradictory evidence	Weak/contradictory evidence	Weak/contradictory evidence	Weak/contradictory evidence
5 (drug model)	Weak/contradictory evidence	Weak/contradictory evidence	Weak/contradictory evidence	Weak/contradictory evidence

Figure 53: Hypotheses evaluation

Random forest

Lastly, I conduct random forest analysis with a 10-fold cross-validation mechanism. While this method may be methodologically elegant, it is substantively questionable. For example, the most important variable in the variable importance plot for cumulative deaths is the exchange rate while substantively, the exchange rate is a control and should have no theoretical impact on cumulative deaths. Both models also have very high MSEs. Hence, when data is as spotty and imprecise as money laundering and conflict data, traditional big data approaches are unideal. It is possible, however, that the results of these random forests are more a product of the small dataset rather than the unreliability of the method itself. More research needs to be done to demonstrate the potential usefulness of these methods to conflict studies.

Cumulative deaths

```
                          Call:
    randomForest(x = x, y = y, mtry = param$mtry, importance = TRUE)
                    Type of random forest: regression
                          Number of trees: 500
```

```
No. of variables tried at each split: 2


            Mean of squared residuals: 29092.28
                    % Var explained: 85.37
```

DEATHS$finalModel
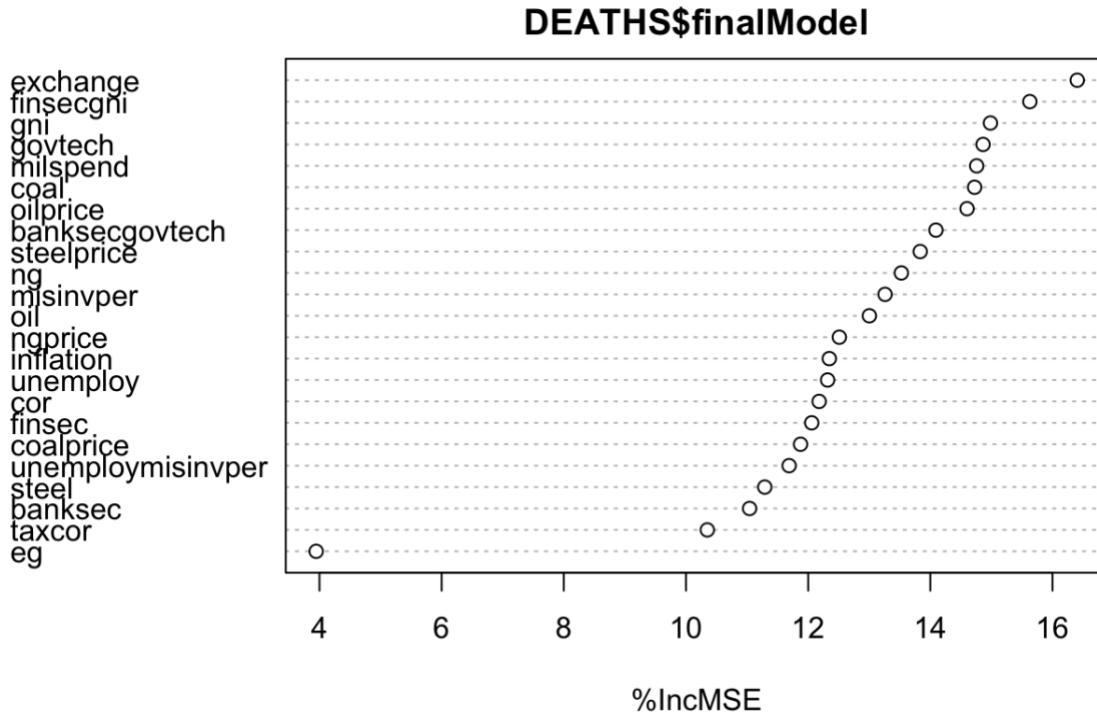
Figure 54: Variable importance plot for cumulative deaths

Civilian targeting

```
                          Call:
randomForest(x = x, y = y, mtry = param$mtry, importance = TRUE)
               Type of random forest: regression
                     Number of trees: 500
No. of variables tried at each split: 23


            Mean of squared residuals: 24.57952
                    % Var explained: 89.32
```

CIVPER$finalModel
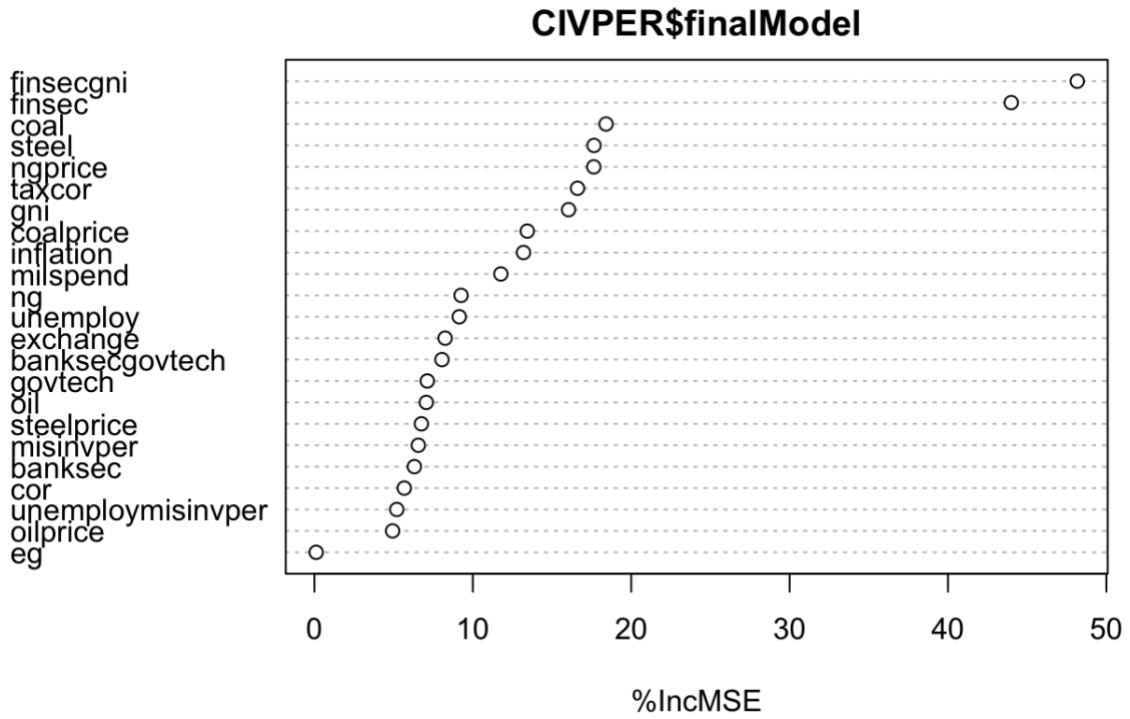
Figure 55: Variable importance plot for civilian targeting
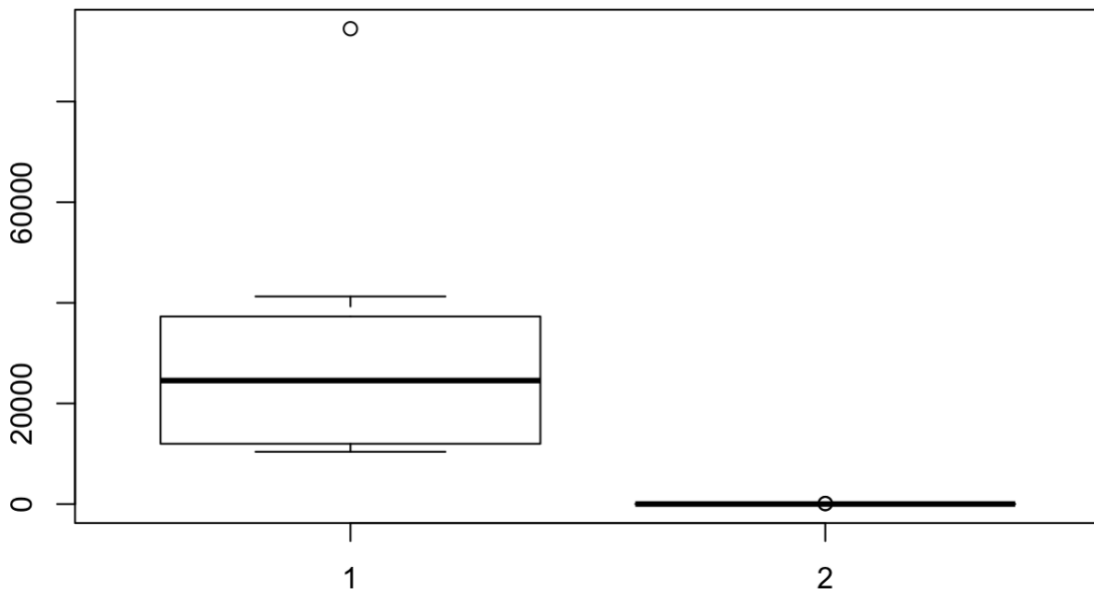
Figure 56:MSEs (1: cumulative deaths, 2: civilian targeting)

```
1: 94486.44 31873.44 17222.71 15759.17 11952.02 37291.38 41264.94 11982.17 10393.1
33230.85
```

```
2: 0.119806    5.530263    9.566641   10.628935   10.601929   29.620497    3.748734
   1.980044 132.017514   79.603615
```

Limitations and areas for future research

There is a clear trend in the results: the more precise the measure, the more consistent it is in explaining conflict intensity. Across the board, trade misinvoicing appears to be the most consistent predictor of conflict intensity. While bank secrecy and AML/CFT capabilities show potential, more needs to be done to disaggregate the measures. Significant additional theorizing needs to be done to consider how formal and informal sources interact, specifically how bank secrecy, AML/CFT measures, and trade misinvoicing affect proceeds from assets. Methodically, more needs to be done to separate informal financial sources from the labor market effect. In effect, the empirics urge the need for precise measures: while it may be theoretically interesting to link asset prices and broad regulatory indicators like bank secrecy to conflict intensity, the lack of precision renders results confusing and at times, contradictory. It is no surprise that cross-sectional studies like Blair, Christensen, and Rudkin, find diverging results from the natural resources approach.

Despite these limitations, this thesis has demonstrated the policy and theoretical motivations behind developing new measures that precisely link macro level indicators to organizational finances. The problem of money laundering in civil wars is best tackled through interdisciplinary approaches that meld ideas from economics, law enforcement, and political science.

10. Policy recommendations and conclusion

With the risk of violating Goodhart's Law, this thesis shows the importance of monitoring financial indicators of money laundering. There are two main applications to CT and COIN operations. On a theoretical level, the choice between using CT or COIN methods can be confusing given the tautological use of the Political in political violence. By analyzing an organization's specific correlations with these measures, however, policy-makers can empirically derive if the organization in question relies more on formal or informal sources. Empirical derivation is not enough, it is also important to consider spotty but important qualitative information--such as my argument that Northeast Myanmese organizations would,

by default, not use insurgency because of complicity between the Tatmadaw and the organizations. This renders pure statistical analysis, like the random forest analysis, substantively questionable. Rather, policy-makers need to iteratively inform policies using both qualitative intelligence and quantitative data. As demonstrated, data on civil wars is extremely messy. Combined with data on money laundering that is as or arguably, messier, one needs to treat statistical results with an air of healthy skepticism. This again harks back to Goodhart's Law as the social Heisenberg uncertainty principle. Rather than attempting to develop broad comprehensive models, more needs to be done to develop extremely precise measures.

Secondly, my thesis shows that the division between the criminal and the political actor is an artificial one. Political actors weave in and out between the paradigms of criminality, insurgency, and terrorism when it suits their purposes. Governments need to ensure that there is better interoperability between police departments and military intelligence that traditionally deal with criminals and politically violent actors respectively.

The fact that corruption is consistently negatively correlated with conflict intensity vindicates bargaining theory and indicates that state institutions have been complicit in aiding organizations become stronger. While this may temper conflict intensity in the short-term, it is an extremely myopic attitude since organizations merely become incrementally stronger in the long-term. At the risk of offering a typically Singaporean solution, it is important for countries to pay soldiers and police decent wages and to implement strong anti-corruption measures.

Lastly, it goes without saying that there is an urgent need to develop counter trade misinvoicing mechanisms AML/CFT systems. While multinational banks have been responsible for BEPS schemes and may be negligently responsible for money laundering and the financing of terrorism., the results show that the alternative--informal value transfer systems--are significantly worse because of a total lack of regulatory standards. Financialization is neutral to the problem at hand. With strong AML/CFT systems, it can dramatically decrease the amount of money laundering in the system. With weak AML/CFT systems, financialization can exacerbate money laundering and the financing of terrorism threats.

Annex

Independent variable tables

Bank secrecy

	Philippines	Myanmar	Thailand	Malaysia	Indonesia
1997	87.88	81.82	93.94	90.91	90.91
1998	87.88	81.82	93.94	90.91	90.91
1999	87.88	81.82	63.65	90.91	90.91
2000	87.88	81.82	63.65	90.91	90.91
2001	81.83	81.82	63.65	62.13	75.26
2002	81.83	72.73	63.65	62.13	75.26
2003	60.63	72.73	63.65	62.13	59.61
2004	60.63	72.73	63.65	62.13	59.61
2005	60.63	72.73	63.65	62.13	59.61
2006	60.63	72.73	63.65	36.37	58.10
2007	60.63	72.73	63.65	36.37	54.56
2008	60.63	69.70	66.68	36.37	54.56
2009	60.63	69.70	66.68	36.37	54.56
2010	60.63	69.70	66.68	33.34	50.02
2011	60.63	69.70	57.59	33.34	42.44
2012	60.63	69.70	57.59	33.34	42.44
2013	60.63	69.70	48.50	33.34	42.44
2014	60.63	40.92	48.50	33.34	33.34
2015	60.63	40.92	48.50	33.34	33.34
2016	60.63	36.38	48.50	33.34	33.34
2017	60.63	36.38	48.50	33.34	33.34

2018	48.50	24.25	48.50	33.34	33.34
2019	39.40	24.25	48.50	33.34	33.34

AML/CFT capabilities

	Philippines	Myanmar	Thailand	Malaysia	Indonesia
1997	96.67	96.67	96.67	96.67	98.28
1998	96.67	96.67	97.92	96.67	97.51
1999	96.67	96.67	90.17	94.45	96.24
2000	93.01	96.67	89.51	91.95	95.82
2001	76.99	96.67	89.51	90.28	93.39
2002	76.01	85.51	83.29	74.18	90.83
2003	74.35	85.51	82.96	71.96	88.17
2004	72.27	80.60	81.32	70.29	84.95
2005	68.38	80.60	81.32	69.46	84.33
2006	65.27	75.68	80.43	65.29	80.96
2007	64.11	72.71	77.52	40.02	80.29
2008	63.69	70.02	75.85	36.69	76.35
2009	63.36	70.02	75.85	36.69	74.17
2010	63.36	70.02	74.18	35.85	71.68
2011	63.36	70.02	71.69	35.85	70.64
2012	63.36	70.02	54.20	35.85	69.04
2013	62.39	70.02	50.86	28.35	68.08
2014	61.97	53.08	50.86	21.68	65.93
2015	61.55	50.30	50.86	21.68	55.59
2016	48.63	49.19	49.19	21.68	53.38
2017	47.24	49.19	49.19	21.68	32.99
2018	36.69	51.68	46.70	21.68	32.57
2019	36.69	52.52	46.70	21.68	32.57

International cooperation

	Philippines	Myanmar	Thailand	Malaysia	Indonesia
1997	100.00	93.33	73.38	73.34	86.67
1998	100.00	100.00	73.38	73.34	86.67
1999	100.00	100.00	73.38	73.34	86.67
2000	100.00	100.00	73.38	73.34	86.67
2001	61.68	93.33	73.38	70.01	86.67
2002	58.35	93.33	66.72	56.68	83.34
2003	57.16	94.29	66.72	53.82	83.34
2004	49.78	84.77	63.86	50.97	80.48
2005	47.80	86.67	64.50	52.24	81.12
2006	43.35	77.79	64.50	52.24	60.01
2007	44.69	72.02	62.72	47.35	60.68
2008	44.69	72.02	54.05	45.35	57.35
2009	44.69	72.02	54.05	43.13	55.35
2010	44.69	72.02	54.05	43.13	55.35
2011	44.69	72.02	52.05	43.13	55.35
2012	44.69	68.02	52.05	40.93	53.35
2013	44.69	68.02	50.05	36.71	50.01
2014	44.69	58.02	50.05	36.71	34.68
2015	44.69	58.02	50.05	36.71	34.68
2016	41.35	58.02	30.04	36.71	34.68
2017	41.35	54.69	30.04	36.71	34.68
2018	38.02	54.69	30.04	36.71	34.68
2019	41.35	54.69	28.04	36.71	34.68

Corruption

	Philippines	Myanmar	Thailand	Malaysia	Indonesia
1997	37.80	-no data-	37.76	29.96	39.12
1998	36.80	-no data-	38.00	28.80	42.00
1999	35.60	-no data-	37.20	29.60	43.20

2000	38.80	-no data-	37.20	30.80	43.20
2001	38.40	-no data-	37.20	30.00	42.40
2002	39.60	-no data-	37.20	30.40	42.40
2003	40.00	-no data-	36.80	29.20	42.40
2004	39.60	43.20	35.60	30.00	42.00
2005	40.00	42.80	34.80	29.60	41.20
2006	40.00	42.40	35.60	30.00	40.40
2007	40.00	44.40	36.80	29.60	40.80
2008	40.80	44.80	36.00	29.60	39.60
2009	40.40	44.40	36.40	32.00	38.80
2010	40.40	44.40	36.00	32.40	38.80
2011	39.60	44.00	36.40	32.80	38.00
2012	36.40	44.00	35.20	30.40	37.20
2013	35.60	41.60	36.00	30.00	37.20
2014	34.80	41.60	34.80	29.20	36.40
2015	36.00	41.20	34.80	30.00	35.60
2016	36.00	38.80	36.00	30.40	35.20
2017	36.40	38.00	35.20	31.20	35.20
2018	35.60	38.40	35.60	31.20	34.80
2019	36.40	38.40	35.60	28.80	34.00

GNI per capita

	Philippines	Myanmar	Thailand	Malaysia	Indonesia
1997	1230	-no data-	2680	4620	1100
1998	1200	-no data-	2080	3640	660
1999	1180	-no data-	1980	3380	570
2000	1150	-no data-	1980	3460	580
2001	1160	-no data-	1960	3550	720
2002	1130	170	1990	3790	790
2003	1170	180	2180	4160	900
2004	1290	220	2530	4740	1080

2005	1380	270	2790	5270	1220
2006	1490	290	3100	5840	1380
2007	1720	350	3530	6630	1600
2008	2000	470	3970	7510	1940
2009	2170	640	4140	7600	2150
2010	2370	850	4580	8260	2530
2011	2520	1010	4950	9050	3010
2012	2860	1130	5520	10180	3580
2013	3160	1220	5720	10840	3730
2014	3330	1230	5760	11140	3620
2015	3380	1260	5710	10680	3430
2016	3450	1280	5700	10150	3400
2017	3530	1290	5960	9940	3530
2018	3710	1370	6600	10590	3850
2019	3850	1390	7260	11200	4050

Collated component scores

Philippines

	Bank Secrecy	Gov Att Tech	Gov Att Coo	Egmont	Corruption	GNP
1997	87.88	96.67	100.00	0.00	30.50	1230.00
1998	87.88	96.67	100.00	0.00	33.00	1200.00
1999	87.88	96.67	100.00	0.00	36.00	1180.00
2000	87.88	93.01	100.00	0.00	28.00	1150.00
2001	81.83	76.99	61.68	0.00	29.00	1160.00
2002	81.83	76.01	58.35	0.00	26.00	1130.00
2003	60.63	74.35	57.16	0.00	25.00	1170.00
2004	60.63	72.27	49.78	0.00	26.00	1290.00
2005	60.63	68.38	47.80	100.00	25.00	1380.00
2006	60.63	65.27	43.35	100.00	25.00	1490.00
2007	60.63	64.11	44.69	100.00	25.00	1720.00

2008	60.63	63.69	44.69	100.00	23.00	2000.00
2009	60.63	63.36	44.69	100.00	24.00	2170.00
2010	60.63	63.36	44.69	100.00	24.00	2370.00
2011	60.63	63.36	44.69	100.00	26.00	2520.00
2012	60.63	63.36	44.69	100.00	34.00	2860.00
2013	60.63	62.39	44.69	100.00	36.00	3160.00
2014	60.63	61.97	44.69	100.00	38.00	3330.00
2015	60.63	61.55	44.69	100.00	35.00	3380.00
2016	60.63	48.63	41.35	100.00	35.00	3450.00
2017	60.63	47.24	41.35	100.00	34.00	3530.00
2018	48.50	36.69	38.02	100.00	36.00	3710.00
2019	39.40	36.69	41.35	100.00	34.00	3850.00

Myanmar

	Bank Secrecy	Gov Att Tech	Gov Att Coo	Egmont	Corruption	GNP
1997	68.34	96.67	93.33	0.00	-no data-	-no data-
1998	68.34	96.67	100.00	0.00	-no data-	-no data-
1999	68.34	96.67	100.00	0.00	-no data-	-no data-
2000	68.34	96.67	100.00	0.00	-no data-	-no data-
2001	68.34	96.67	93.33	0.00	-no data-	-no data-
2002	58.34	85.51	93.33	0.00	-no data-	170.00
2003	48.34	85.51	94.29	0.00	-no data-	180.00
2004	48.34	80.60	84.77	0.00	17.00	220.00
2005	48.34	80.60	86.67	0.00	18.00	270.00
2006	48.34	75.68	77.79	0.00	19.00	290.00
2007	48.34	72.71	72.02	0.00	14.00	350.00
2008	48.34	70.02	72.02	0.00	13.00	470.00
2009	48.34	70.02	72.02	0.00	14.00	640.00
2010	48.34	70.02	72.02	0.00	14.00	850.00
2011	48.34	70.02	72.02	0.00	15.00	1010.00

2012	48.34	70.02	68.02	0.00	15.00	1130.00
2013	48.34	70.02	68.02	0.00	21.00	1220.00
2014	48.34	53.08	58.02	0.00	21.00	1230.00
2015	48.34	50.30	58.02	0.00	22.00	1260.00
2016	48.34	49.19	58.02	0.00	28.00	1280.00
2017	48.34	49.19	54.69	0.00	30.00	1290.00
2018	45.01	51.68	54.69	0.00	29.00	1370.00
2019	45.01	52.52	54.69	0.00	29.00	1390.00

Thailand

	Bank Secrecy	Gov Att Tech	Gov Att Coo	Egmont	Corruption	GNP
1997	93.94	97.92	73.38	0.00	30.60	2680.00
1998	93.94	97.92	73.38	0.00	30.00	2080.00
1999	63.65	90.17	73.38	0.00	32.00	1980.00
2000	63.65	89.51	73.38	0.00	32.00	1980.00
2001	63.65	89.51	73.38	0.00	32.00	1960.00
2002	63.65	83.29	66.72	0.00	32.00	1990.00
2003	63.65	82.96	66.72	0.00	33.00	2180.00
2004	63.65	81.32	63.86	0.00	36.00	2530.00
2005	63.65	81.32	64.50	0.00	38.00	2790.00
2006	63.65	80.43	64.50	0.00	36.00	3100.00
2007	63.65	77.52	62.72	0.00	33.00	3530.00
2008	66.68	75.85	54.05	0.00	35.00	3970.00
2009	66.68	75.85	54.05	10.00	34.00	4140.00
2010	66.68	74.18	54.05	10.00	35.00	4580.00
2011	57.59	71.69	52.05	10.00	34.00	4950.00
2012	57.59	54.20	52.05	10.00	37.00	5520.00
2013	48.50	50.86	50.05	10.00	35.00	5720.00
2014	48.50	50.86	50.05	10.00	38.00	5760.00

2015	48.50	50.86	50.05	10.00	38.00	5710.00
2016	48.50	49.19	30.04	10.00	35.00	5700.00
2017	48.50	49.19	30.04	10.00	37.00	5960.00
2018	48.50	46.70	30.04	10.00	36.00	6600.00
2019	48.50	46.70	28.04	10.00	36.00	7260.00

Malaysia

	Bank Secrecy	Gov Att Tech	Gov Att Coo	Egmont	Corruption	GNP
1997	90.91	96.67	73.34	0.00	50.10	4620.00
1998	90.91	96.67	73.34	0.00	53.00	3640.00
1999	90.91	94.45	73.34	0.00	51.00	3380.00
2000	90.91	91.95	73.34	0.00	48.00	3460.00
2001	62.13	90.28	70.01	0.00	50.00	3550.00
2002	62.13	74.18	56.68	0.00	49.00	3790.00
2003	62.13	71.96	53.82	100.00	52.00	4160.00
2004	62.13	70.29	50.97	100.00	50.00	4740.00
2005	62.13	69.46	52.24	100.00	51.00	5270.00
2006	36.37	65.29	52.24	100.00	50.00	5840.00
2007	36.37	40.02	47.35	100.00	51.00	6630.00
2008	36.37	36.69	45.35	100.00	51.00	7510.00
2009	36.37	36.69	43.13	100.00	45.00	7600.00
2010	33.34	35.85	43.13	100.00	44.00	8260.00
2011	33.34	35.85	43.13	100.00	43.00	9050.00
2012	33.34	35.85	40.93	100.00	49.00	10180.00
2013	33.34	28.35	36.71	100.00	50.00	10840.00
2014	33.34	21.68	36.71	100.00	52.00	11140.00
2015	33.34	21.68	36.71	100.00	50.00	10680.00
2016	33.34	21.68	36.71	100.00	49.00	10150.00
2017	33.34	21.68	36.71	100.00	47.00	9940.00
2018	33.34	21.68	36.71	100.00	47.00	10590.00

2019	33.34	21.68	36.71	100.00	53.00	11200.00

Indonesia

	Bank Secrecy	Gov Att Tech	Gov Att Coo	Egmont	Corruption	GNP
1997	90.91	98.28	86.67	0.00	2.72	1100.00
1998	90.91	97.51	86.67	0.00	2.00	660.00
1999	90.91	96.24	86.67	0.00	1.70	570.00
2000	90.91	95.82	86.67	0.00	1.70	580.00
2001	75.26	93.39	86.67	0.00	1.90	720.00
2002	75.26	90.83	83.34	0.00	1.90	790.00
2003	59.61	88.17	83.34	0.00	1.90	900.00
2004	59.61	84.95	80.48	100.00	2.00	1080.00
2005	59.61	84.33	81.12	100.00	2.20	1220.00
2006	58.10	80.96	60.01	100.00	2.40	1380.00
2007	54.56	80.29	60.68	100.00	2.30	1600.00
2008	54.56	76.35	57.35	100.00	2.60	1940.00
2009	54.56	74.17	55.35	100.00	2.80	2150.00
2010	50.02	71.68	55.35	100.00	2.80	2530.00
2011	42.44	70.64	55.35	100.00	3.00	3010.00
2012	42.44	69.04	53.35	100.00	3.20	3580.00
2013	42.44	68.08	50.01	100.00	3.20	3730.00
2014	33.34	65.93	34.68	100.00	3.40	3620.00
2015	33.34	55.59	34.68	100.00	3.60	3430.00
2016	33.34	53.38	34.68	100.00	3.70	3400.00
2017	33.34	32.99	34.68	100.00	3.70	3530.00
2018	33.34	32.57	34.68	100.00	3.80	3850.00
2019	33.34	32.57	34.68	100.00	4.00	4050.00

Unemployment

	Philippines	Myanmar	Malaysia	Thailand	Indonesia
1997	3.7	0.82	2.45	0.87	4.68
1998	3.7	0.82	3.2	3.4	5.78
1999	3.73	0.83	3.43	2.97	6.36
2000	3.71	0.82	3	2.39	6.08
2001	3.7	0.82	3.53	2.6	6.08
2002	3.63	0.83	3.48	1.82	6.6
2003	3.53	0.83	3.61	1.54	6.66
2004	3.55	0.82	3.54	1.51	7.3
2005	3.8	0.79	3.53	1.35	7.95
2006	4.05	0.75	3.32	1.22	7.55
2007	3.43	0.72	3.23	1.18	8.06
2008	3.72	0.71	3.34	1.18	7.21
2009	3.86	0.78	3.69	0.93	6.11
2010	3.61	0.79	3.25	0.62	5.61
2011	3.59	0.79	3.05	0.66	5.15
2012	3.5	0.79	3.04	0.58	4.47
2013	3.5	0.8	3.11	0.21	4.34
2014	3.6	0.78	2.88	0.58	4.05
2015	3.07	0.77	3.1	0.6	4.51
2016	2.69	1.14	3.44	0.69	4.3
2017	2.55	1.56	3.41	0.83	3.88
2018	2.34	0.87	3.3	0.77	4.4
2019	2.24	0.5	3.31	0.72	3.62

Inflation

	Philippines	Myanmar	Malaysia	Thailand	Indonesia
1997	5.59	29.70	2.66	5.63	6.23

1998	9.23	51.49	5.27	7.99	58.45
1999	5.94	18.40	2.74	0.28	20.48
2000	3.98	-0.11	1.53	1.59	3.69
2001	5.35	21.10	1.42	1.63	11.50
2002	2.72	57.07	1.81	0.70	11.90
2003	2.29	36.59	1.09	1.80	6.76
2004	4.83	4.53	1.42	2.76	6.06
2005	6.52	9.37	2.98	4.54	10.45
2006	5.49	20.00	3.61	4.64	13.11
2007	2.90	35.02	2.03	2.24	6.41
2008	8.26	26.80	5.44	5.47	10.23
2009	4.22	1.47	0.58	-0.85	4.39
2010	3.79	7.72	1.62	3.25	5.13
2011	4.72	5.02	3.17	3.81	5.36
2012	3.03	1.47	1.66	3.01	4.28
2013	2.58	5.64	2.11	2.18	6.41
2014	3.60	4.95	3.14	1.90	6.39
2015	0.67	9.45	2.10	-0.90	6.36
2016	1.25	6.93	2.09	0.19	3.53
2017	2.85	4.57	3.87	0.67	3.81
2018	5.21	6.87	0.88	1.06	3.20
2019	2.48	8.83	0.66	0.71	3.03

Size of the financial sector

	Philippines	Myanmar	Malaysia	Thailand	Indonesia
1997	56.46	10.32	154.89	166.50	60.82
1998	43.32	9.70	152.85	153.41	53.21
1999	38.52	8.10	141.67	127.72	20.48
2000	35.61	9.52	126.73	105.12	19.45

2001	36.27	11.00	127.23	93.08	18.16
2002	33.66	10.34	121.35	96.87	19.34
2003	31.95	4.10	118.59	94.13	21.19
2004	31.01	4.74	111.63	95.14	24.72
2005	27.90	4.66	106.29	93.83	25.54
2006	27.47	3.88	103.49	88.91	23.87
2007	27.64	3.42	101.42	86.23	25.16
2008	27.88	3.12	96.60	87.71	26.30
2009	27.90	3.47	111.45	90.34	24.89
2010	28.33	4.77	107.04	90.68	24.36
2011	30.50	6.75	108.35	101.43	26.88
2012	31.91	9.31	114.05	106.37	29.89
2013	34.34	12.84	119.79	111.52	32.37
2014	37.58	15.56	120.53	113.99	32.93
2015	39.90	17.75	123.07	115.86	33.09
2016	42.86	21.21	121.94	113.72	33.13
2017	45.61	23.64	117.13	112.10	32.42
2018	47.56	24.96	120.31	112.19	32.74
2019	47.98	25.74	120.84	111.37	32.48

Federal tax

Year	Philippines	Myanmar	Malaysia	Thailand	Indonesia
1997	16.98	4.42	19.75	16.11	16.01
1998	14.11	3.52	16.73	13.79	15.03
1999	13.31	2.75	14.09	12.89	16.32
2000	12.44	2.97	13.67	12.98	
2001	12.27	2.26	17.79	13.07	11.58
2002	11.67	2.00	17.45	13.47	11.83
2003	11.67	2.21	15.50	14.48	12.39

2004	11.36	3.27	15.20	14.85	12.33
2005	11.92	3.88	14.83	16.06	
2006	13.13		14.52	15.64	
2007	12.96		14.30	15.14	
2008	13.03		14.66	15.38	13.31
2009	11.70		14.94	14.19	11.06
2010	11.64		13.33	14.93	10.54
2011	11.85		14.79	16.36	11.16
2012	12.31	4.52	15.61	15.44	11.38
2013	12.74	5.53	15.31	17.01	11.29
2014	13.02	5.84	14.84	15.81	10.84
2015	13.02	5.88	14.06	16.14	10.75
2016	13.09	6.91	13.55	15.36	10.34
2017	13.59	5.87	12.95	14.78	9.88
2018	14.05	2.63	12.03	14.93	10.23
2019	14.49	5.81	11.95	14.67	9.75

Military spending as a % of GDP

	Philippines	Myanmar	Malaysia	Thailand	Indonesia
1997	1.91	2.31	2.09	2.16	1.50
1998	1.70	2.01	1.61	1.89	1.02
1999	1.62	1.73	2.10	1.68	0.81
2000	1.61	2.00	1.63	1.53	0.68
2001	1.47	1.56	2.08	1.49	0.57
2002	1.47	1.13	2.22	1.43	0.70
2003	1.55	1.67	2.61	1.32	0.91
2004	1.36	1.66	2.26	1.15	0.95
2005	1.33	1.35	2.17	1.12	0.75
2006	1.32		2.01	1.18	0.66

2007	1.35		2.05	1.43	0.71
2008	1.30		1.91	1.64	0.58
2009	1.26		1.96	1.82	0.57
2010	1.22		1.51	1.56	0.62
2011	1.21		1.57	1.59	0.65
2012	1.16		1.43	1.38	0.71
2013	1.24		1.52	1.40	0.92
2014	1.09		1.46	1.41	0.78
2015	1.14		1.53	1.43	0.88
2016	1.09		1.41	1.62	0.79
2017	1.31		1.12	1.58	0.87
2018	0.86		0.98	1.36	0.73
2019	0.96		1.03	1.34	0.67

Exchange rate (compared to USD)

	Philippines	Myanmar	Malaysia	Thailand	Indonesia
1997	29.47	6.24	2.81	31.36	2909.38
1998	40.89	6.34	3.92	41.36	10013.62
1999	39.09	6.29	3.80	37.81	7855.15
2000	44.19	6.52	3.80	40.11	8421.78
2001	50.99	6.75	3.80	44.43	10260.85
2002	51.60	6.64	3.80	42.96	9311.19
2003	54.20	6.14	3.80	41.48	8577.13
2004	56.04	5.81	3.80	40.22	8938.85
2005	55.09	5.82	3.79	40.22	9704.74
2006	51.31	5.84	3.67	37.88	9159.32
2007	46.15	5.62	3.44	34.52	9141.00
2008	44.32	5.44	3.34	33.31	9698.96

2009	47.68	5.58	3.52	34.29	10389.94
2010	45.11	5.63	3.22	31.69	9090.43
2011	43.31	5.44	3.06	30.49	8770.43
2012	42.23	640.65	3.09	31.08	9386.63
2013	42.45	933.57	3.15	30.73	10461.24
2014	44.40	984.35	3.27	32.48	11865.21
2015	45.50	1162.62	3.91	34.25	13389.41
2016	47.49	1234.87	4.15	35.30	13308.33
2017	50.40	1360.36	4.30	33.94	13380.83
2018	52.66	1429.81	4.04	32.31	14236.94
2019	51.80	1518.26	4.14	31.05	14147.67

Trade misinvoicing

	Value of misinvoicing	% of CIF
1997	$2,686,655,730	6.96
1998	$2,783,227,592	8.83
1999	$5,170,349,305	15.88
2000	$8,297,707,613	22.42
2001	$4,893,459,728	14.00
2002	$1,172,785,283	2.85
2003	$1,833,889,969	4.31
2004	$4,266,293,618	9.25
2005	$2,058,080,593	4.16
2006	$2,745,348,169	5.08
2007	$6,440,210,126	11.10
2008	$12,003,344,684	19.87
2009	$21,355,000,688	46.55

Year	Value	%
2010	$31,668,455,209	54.16
2011	$37,303,315,789	58.57
2012	$31,537,279,533	48.26
2013	$36,144,568,763	55.01
2014	$41,659,131,481	61.52
2015	$32,455,533,673	46.26
2016	$22,783,427,884	26.52
2017	$17,562,568,034	17.24
2018	$14,476,983,546	12.58
2019	$10,469,735,243	8.93

	Value of misinvoicing	% of CIF
1997	$175,950,254.00	6.15
1998	$125,236,735.00	5.31
1999	$190,057,030.00	7.52
2000	$367,349,169.00	11.51
2001	$81,962,854.00	3.39
2002	$225,200,897.00	7.64
2003	$120,875,799.00	4.26
2004	$425,625,558.00	14.58
2005	$335,616,049.00	11.54
2006	$415,984,427.00	13.31
2007	$899,198,863.00	22.02
2008	$1,290,701,230.00	25.40
2009	$2,242,057,519.00	53.18
2010	$4,311,775,116.00	88.61

2011	$4,096,462,221.00	47.79
2012	$7,935,888,952.00	101.10
2013	$7,073,501,385.00	58.90
2014	$6,405,125,123.00	39.46
2015	$6,078,697,021.00	35.94
2016	$6,507,052,582.00	41.46
2017	$4,131,291,560.00	21.46
2018	$6,361,053,381.00	32.88
2019	$8,338,338,309.00	44.88

	Value of misinvoicing	% of CIF
1997	$3,788,126,218.00	6.06
1998	$13,720,432,340.00	32.38
1999	$11,215,939,112.00	22.29
2000	$13,019,953,485.00	21.03
2001	$9,475,963,303.00	15.05
2002	$10,149,968,698.00	15.47
2003	$12,007,473,486.00	15.61
2004	$13,577,382,912.00	14.22
2005	$4,794,107,098.00	4.01
2006	$15,243,267,024.00	11.72
2007	$23,641,246,156.00	16.23
2008	$17,105,766,088.00	9.46
2009	$31,302,513,106.00	23.05
2010	$29,891,577,739.00	16.19
2011	$16,541,927,161.00	7.17

2012	$7,461,104,194.00	2.99
2013	$11,517,814,068.00	4.55
2014	$71,776,696,380.00	31.18
2015	$33,185,941,323.00	16.16
2016	$46,912,194,967.00	23.79
2017	$41,028,830,389.00	18.24
2018	$29,666,761,893.00	11.74
2019	$54,939,646,092.00	24.96

	Value of misinvoicing	% of CIF
1997	$12,961,234,905.00	16.53
1998	$25,587,786,770.00	44.30
1999	$27,596,623,486.00	42.50
2000	$31,040,017,656.00	37.57
2001	$35,332,391,155.00	47.85
2002	$29,499,977,275.00	34.25
2003	$49,751,018,372.00	59.50
2004	$53,004,000,000.00	49.97
2005	$61,022,000,000.00	52.93
2006	$68,490,000,000.00	52.23
2007	$76,368,000,000.00	51.83
2008	$93,664,000,000.00	60.17
2009	$75,358,000,000.00	60.98
2010	$99,358,000,000.00	60.32
2011	$116,179,000,000.00	61.93
2012	$104,815,000,000.00	53.41

2013	$96,488,000,000.00	46.84
2014	$95,869,000,000.00	45.88
2015	$99,104,000,000.00	56.25
2016	$94,110,000,000.00	55.88
2017	$99,555,000,000.00	51.12
2018	$115,091,000,000.00	52.93
2019	$125,665,000,000.00	61.30

	Value of misinvoicing	% of CIF
1997	$12,394,748,731.00	29.74
1998	$23,654,233,383.00	86.53
1999	$30,658,719,848.00	127.73
2000	$32,252,089,231.00	95.39
2001	$31,971,700,791.00	102.38
2002	$33,460,435,765.00	106.17
2003	$49,010,515,747.00	149.19
2004	$49,017,437,882.00	104.93
2005	$49,613,000,000.00	85.55
2006	$64,940,000,000.00	105.64
2007	$69,288,000,000.00	93.04
2008	$41,827,000,000.00	32.36
2009	$41,816,000,000.00	43.18
2010	$44,491,000,000.00	32.76
2011	$49,380,000,000.00	27.80
2012	$28,596,000,000.00	14.91
2013	$26,549,000,000.00	14.21

2014	$24,777,000,000.00		13.89
2015	$35,076,000,000.00		24.56
2016	$34,265,000,000.00		25.24
2017	$40,081,000,000.00		25.54
2018	$142,467,000,000.00		75.48
2019	$26,421,000,000.00		15.43

Steel

	Price ($USD)	Philippines	Myanmar	Malaysia	Thailand	Indonesia
1997	$126.46	980	25	2962	2101	3816
1998	$122.51	880	25	1903	1814	2699
1999	$114.04	530	25	2770	1532	2891
2000	$116.60	426	25	3650	2100	2848
2001	$109.68	500	25	4100	2127	2781
2002	$114.06	550	25	4722	2538	2462
2003	$121.49	500	25	3960	3551	2042
2004	$162.41	400	25	5698	4533	3682
2005	$171.14	470	25	5296	5161	3675
2006	$186.53	558	25	5834	5210	3759
2007	$201.06	718	25	6895	5565	4160
2008	$246.42	711	25	6423	5211	3915
2009	$184.00	824	25	5354	3646	3501
2010	$223.53	1050	25	5694	4145	3664
2011	$253.23	1200	25	5941	4238	3621
2012	$240.71	1260	25	5612	3328	2254
2013	$226.43	1308	30	4693	3579	2644

2014	$232.11	1196	35	4316	4095	4428
2015	$195.58	968	35	3784	3718	4854
2016	$186.98	1075	35	2764	3825	4746
2017	$211.99	1378	250	3215	6762	5195
2018	$237.77	1475	300	4108	6403	6183
2019	$222.23	1915	350	6820	4246	7783

Coal

	Price ($USD)	Philippines	Myanmar	Malaysia	Thailand	Indonesia
1997	$33.22	569	12	153	6784	31347
1998	$28.04	612	12	221	5847	34997
1999	$25.08	529	89	174	5297	42151
2000	$26.41	716	320	242	5135	45455
2001	$33.09	650	366	344	5689	53526
2002	$25.67	803	288	223	5685	58297
2003	$28.16	1056	509	110	5465	67029
2004	$53.82	1310	254	245	5818	82614
2005	$46.91	1520	318	497	6055	98231
2006	$49.89	1243	400	568	5510	135070
2007	$64.19	1791	427	678	5289	143590
2008	$123.85	1905	378	791	5215	142503
2009	$68.26	2474	357	1348	5158	166802
2010	$95.29	3510	409	1511	5320	186314
2011	$118.87	3632	411	1838	6185	245153
2012	$94.64	3879	500	1860	5240	256680
2013	$82.40	3743	342	1824	5102	268273
2014	$71.23	4012	410	1694	4622	264581
2015	$57.82	3894	445	1613	3858	243722
2016	$65.04	5917	209	1424	4306	248852

2017	$86.83	6298	287	1884	4105	262705
2018	$102.33	6204	508	1672	3750	287537
2019	$74.91	5917	275	2180	3554	323171

Natural gas

	Price ($USD)	Philippines	Myanmar	Malaysia	Thailand	Indonesia
1997	$2.61	210	66445	1626107	581984	2911315
1998	$2.25	357	108430	1643796	634917	2846614
1999	$2.20	274	181499	1704353	691059	3044078
2000	$4.08	407	240807	1979891	727539	2845363
2001	$4.01	5365	244015	1926816	706874	2745060
2002	$3.20	67402	252967	1987351	748144	3023609
2003	$4.70	102727	306893	2079981	788481	3166273
2004	$5.09	94872	400544	2372896	815219	3027787
2005	$7.62	125654	479082	2575834	86021	3050791
2006	$7.60	117680	494789	2539270	88533	3015884
2007	$7.77	141089	530917	2526100	94540	2903165
2008	$11.13	148512	486936	2655260	1071448	2993197
2009	$6.33	149499	453164	2417059	998176	3121762
2010	$6.34	141915	473191	2372939	1150367	3480020
2011	$7.26	153223	467694	2450767	1023706	3307161
2012	$7.11	146887	471228	2393966	1219151	3131982
2013	$7.75	135296	483794	2706600	1320549	3104946
2014	$7.21	142290	594533	2737051	1348418	3055983
2015	$4.72	133765	687208	2690871	1199937	3046488
2016	$3.53	153257	744589	2662298	1176806	3003198
2017	$4.34	151181	741899	2609388	1098964	2908199
2018	$5.42	16883	724321	2751881	1063777	2912067
2019	$3.68	17363	714421	2826163	1092390	2701686

Crude oil

	Price ($USD)	Philippines	Myanmar	Malaysia	Thailand	Indonesia
1997	$18.79	2710	1367	51786	42188	124563
1998	$12.64	2468	1341	52372	39611	123559
1999	$17.68	2406	1444	50405	42299	121815
2000	$27.53	2611	1547	51610	43562	119277
2001	$23.83	2573	1534	55188	44776	116052
2002	$24.54	2808	1713	55995	49082	109409
2003	$28.16	2674	1729	58496	53735	105679
2004	$36.50	1957	1795	59649	57899	102382
2005	$52.37	2213	1862	57019	58459	99374
2006	$63.70	2151	1859	57026	61488	95855
2007	$70.73	2262	1837	58814	61782	92594
2008	$96.13	2370	1749	59963	63609	95745
2009	$61.79	1699	1685	56932	66353	95407
2010	$78.91	2909	1748	53872	68640	92432
2011	$106.99	2802	1603	52819	67969	91579
2012	$108.63	2440	1498	55438	72557	87897
2013	$106.12	2327	1513	52803	76202	84440
2014	$97.28	2652	1457	52550	73102	86178
2015	$51.43	3234	1153	56118	78364	84743
2016	$42.69	2152	1015	58222	78223	88171
2017	$53.44	3133	873	59999	79023	87405
2018	$69.52	2054	719	56855	79634	88016
2019	$62.87	711	476	30424	18584	37254

PCA

Overall PCA: Contributory variables to first three dimensions

Contribution of variables to Dim-1
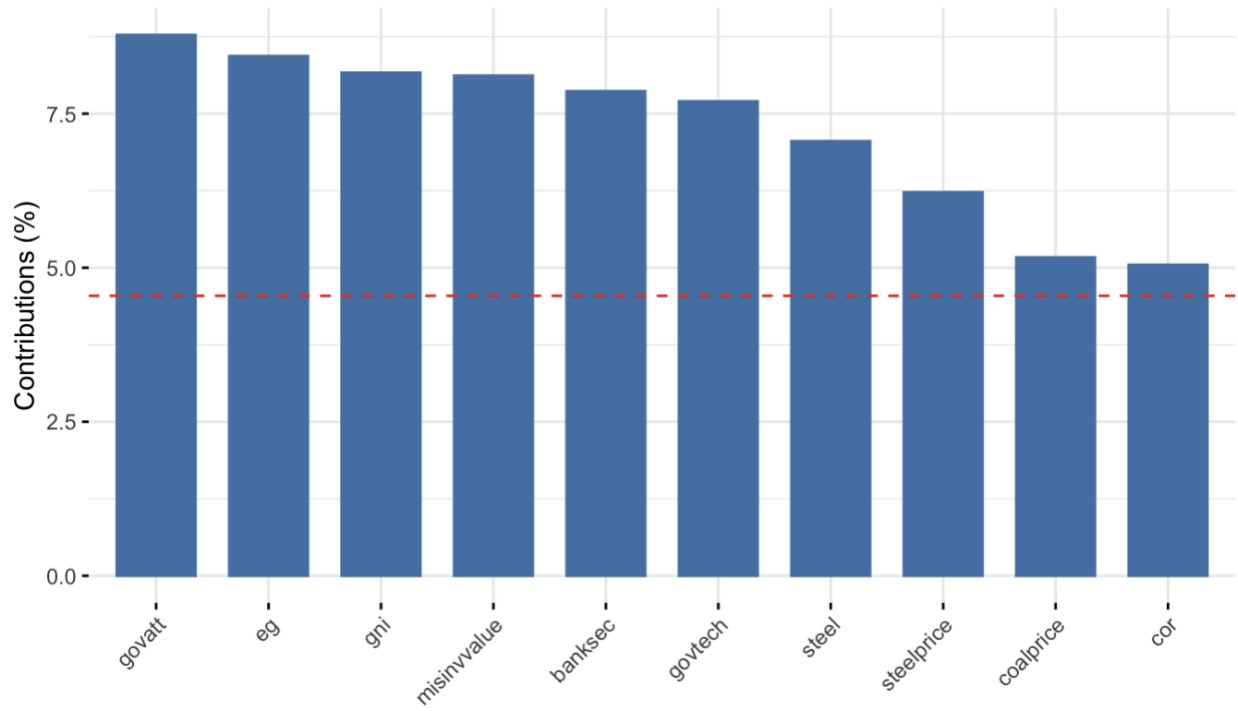
Contribution of variables to Dim-2
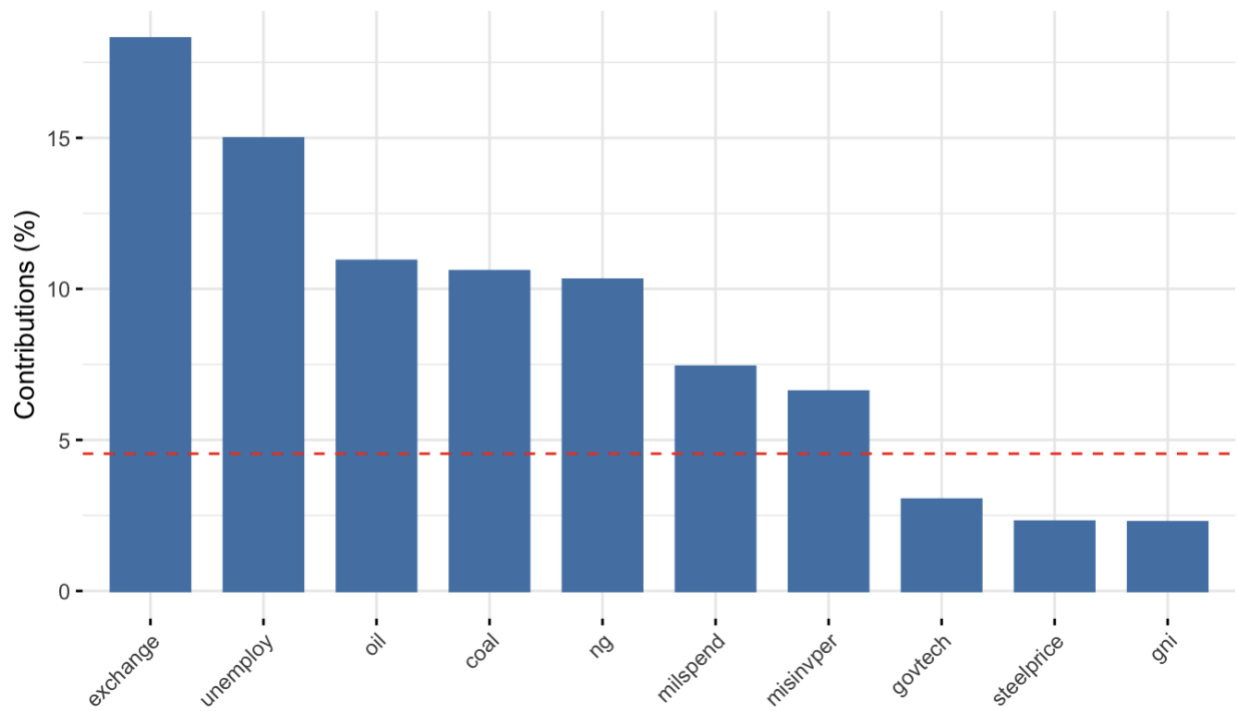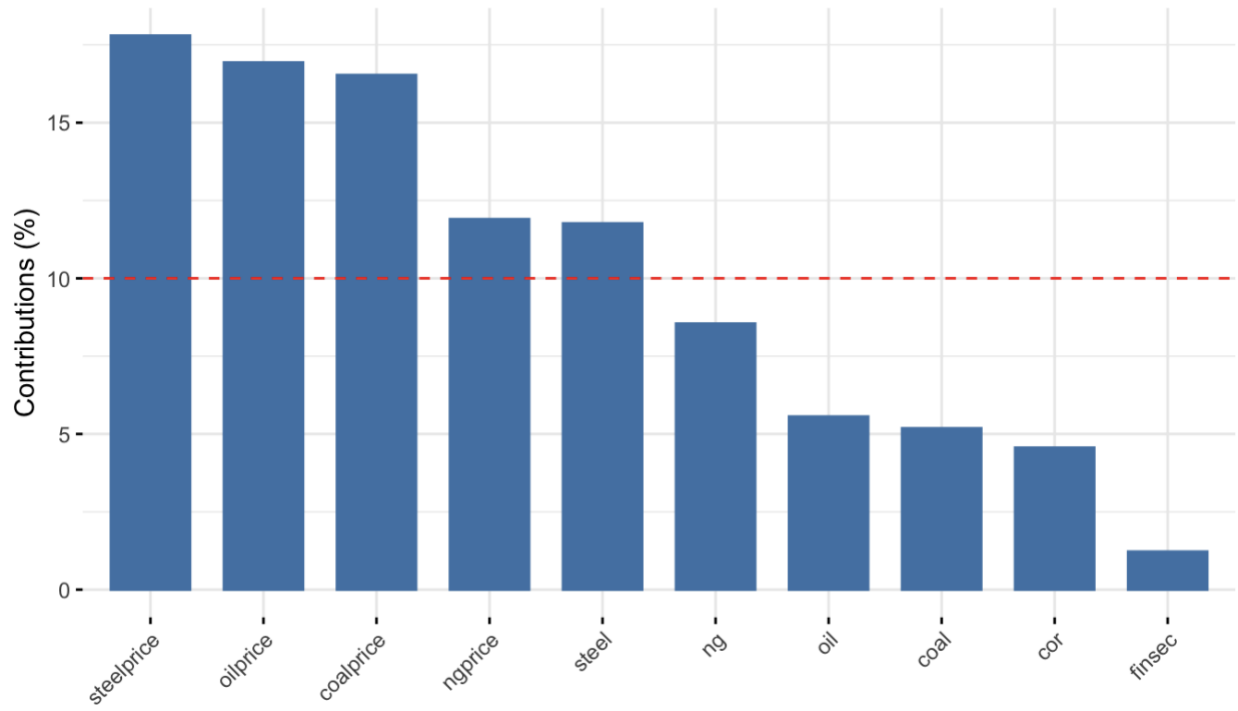
Contribution of variables to Dim-3
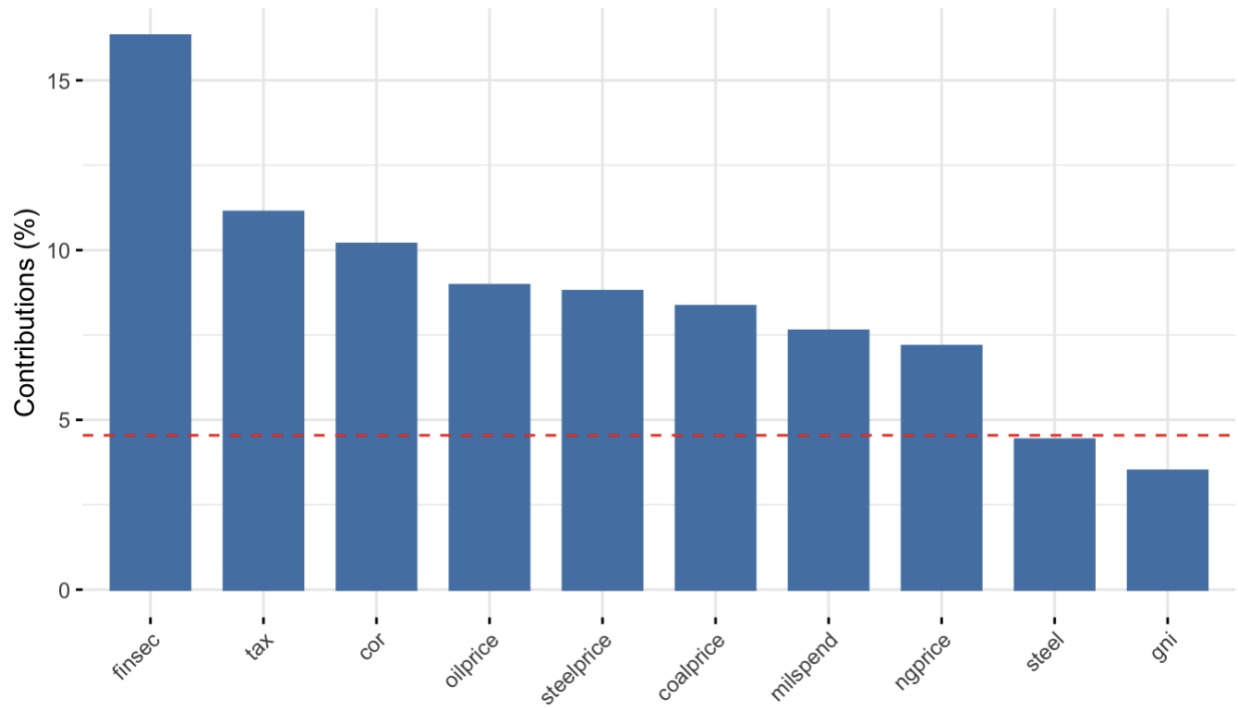
Formal sources: contribution to first dimension
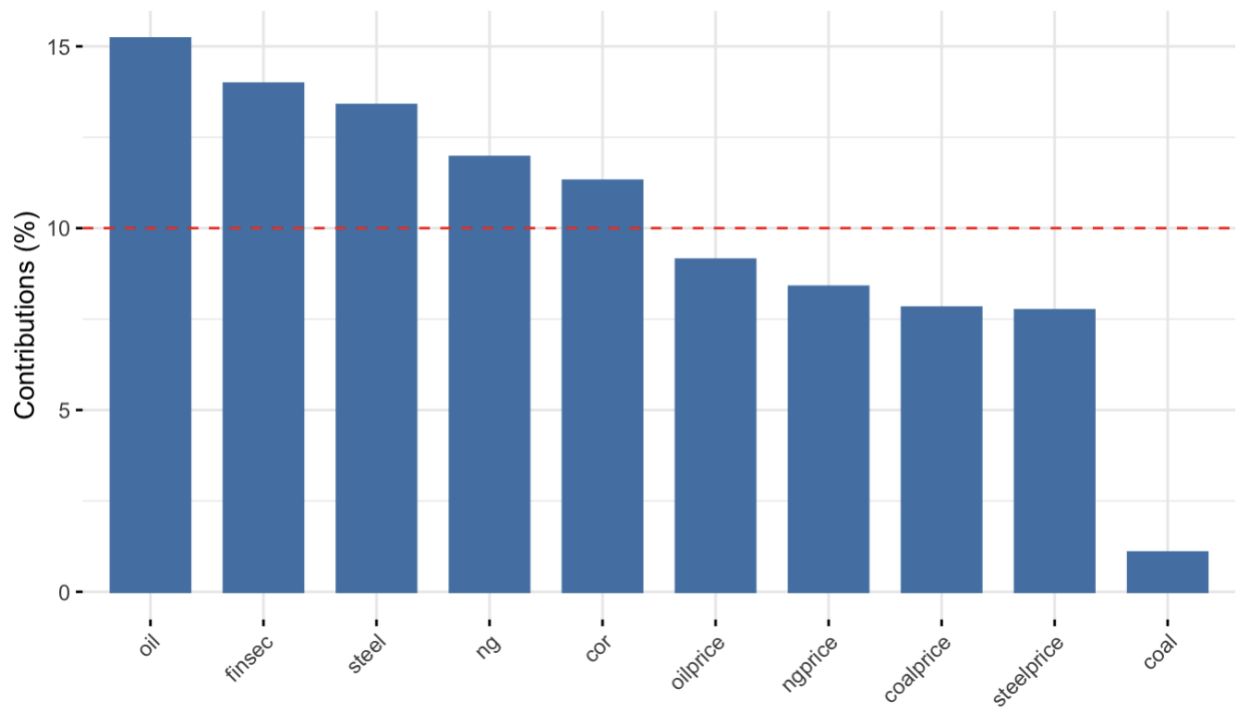
Contribution of variables to Dim-1
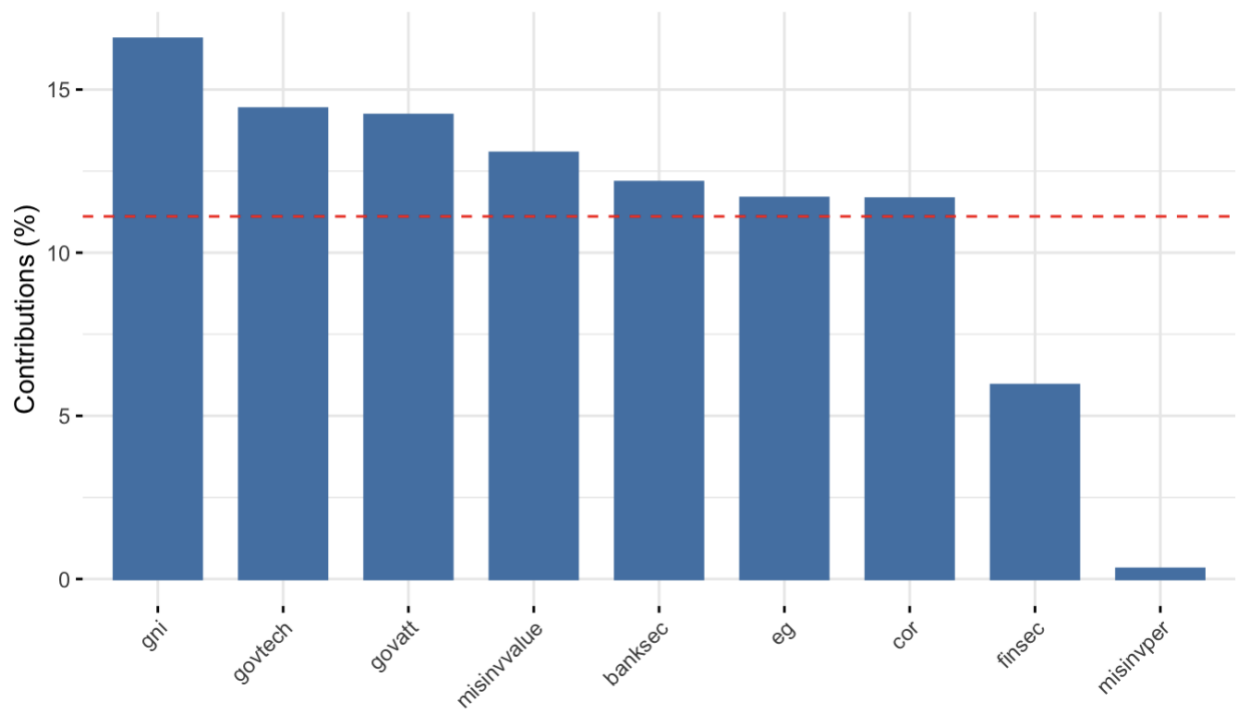
Informal sources: contribution to first two dimensions

Contribution of variables to Dim-1

Contribution of variables to Dim-2

i "Overview," United Nations : Office on Drugs and Crime, accessed April 2, 2021, https://www.unodc.org/unodc/en/money-laundering/overview.html.

ii "How Terrorists Fund Their Attacks - and How to Stop Them." n.d. World Economic Forum. Accessed April 2, 2021. https://www.weforum.org/agenda/2017/11/terror-attacks-are-increasingly-self-funded-how-can-we-stop-them/.

iii Noack, Rick. n.d. "The Islamic State's 'Business Model' Is Failing, Study Says." *Washington Post*. Accessed April 2, 2021. https://www.washingtonpost.com/news/worldviews/wp/2017/02/17/the-islamic-states-business-model-is-failing-study-says/.

iv Shotter, James. "Deutsche Bank Pays $630m to Settle Russian Mirror Trades Probe." Subscribe to Read | Financial Times. January 31, 2017. Accessed April 02, 2021. https://www.ft.com/content/5bc8008a-e722-11e6-967b-c88452263daf.

v Boland-Rudder, Hamish. "FinCEN Files." ICIJ. February 07, 2021. Accessed April 02, 2021. https://www.icij.org/investigations/fincen-files/.

vi "Fire and Ice: Conflict and Drugs in Myanmar's Shan State." Crisis Group. January 17, 2019. Accessed April 02, 2021. https://www.crisisgroup.org/asia/south-east-asia/myanmar/299-fire-and-ice-conflict-and-drugs-myanmars-shan-state.

vii Boland-Rudder, Hamish. "FinCEN Files." ICIJ. February 07, 2021. Accessed April 02, 2021. https://www.icij.org/investigations/fincen-files/.

viii "Basel AML Index 2019." Basel Institute on Governance. Accessed April 02, 2021. https://baselgovernance.org/publications/basel-aml-index-2019.

ix "GDP (current US$)." Data. Accessed April 02, 2021. https://data.worldbank.org/indicator/NY.GDP.MKTP.CD.

x "Basel AML Index 2019." Basel Institute on Governance. Accessed April 02, 2021. https://baselgovernance.org/publications/basel-aml-index-2019.

xi "Account Ownership at a Financial Institution or with a Mobile-money-service Provider (% of Population Ages 15)." Data. Accessed April 02, 2021. https://data.worldbank.org/indicator/FX.OWN.TOTL.ZS.

xii "Personal Remittances, Received (% of GDP)." Data. Accessed April 02, 2021. https://data.worldbank.org/indicator/BX.TRF.PWKR.DT.GD.ZS.

xiii Wong, Loong. "Money-laundering in Southeast Asia: Liberalism and Governmentality at Work." Contemporary Politics 19, no. 2 (2013): 221-33. doi:10.1080/13569775.2013.785832.

xiv Walker, John, and Brigitte Unger. "Measuring Global Money Laundering: The 'Walker Gravity Model'." Research Handbook on Money Laundering: 159-71. doi:10.4337/9780857934000.00023.

xv Kugler, Maurice, Thierry Verdier, and Yves Zenou. "Organized Crime, Corruption and Punishment." Journal of Public Economics 89, no. 9-10 (2005): 1639-663. doi:10.1016/j.jpubeco.2004.05.005.

xvi Becker, Gary S. "Crime and Punishment: An Economic Approach." The Economic Dimensions of Crime, 1968, 13-68. doi:10.1007/978-1-349-62853-7_2.

xvii Ferwerda, Joras, Mark Kattenberg, Han-Hsin Chang, Brigitte Unger, Loek Groot, and Jacob A. Bikker. "Gravity Models of Trade-based Money Laundering." Applied Economics 45, no. 22 (2013): 3170-182. doi:10.1080/00036846.2012.699190.

xviii Ferwerda, Joras, Alexander Van Saase, Brigitte Unger, and Michael Getzner. "Estimating Money Laundering Flows with a Gravity Model-based Simulation." Scientific Reports 10, no. 1 (2020). doi:10.1038/s41598-020-75653-x.

xix Ruggiero, Vincenzo. "Hybrids: On the Crime–terror Nexus." International Journal of Comparative and Applied Criminal Justice 43, no. 1 (2017): 49-60. doi:10.1080/01924036.2017.1411283.

xx Makarenko, Tamara. "Foundations and Evolution of the Crime–Terror Nexus." Routledge Handbook of Transnational Organized Crime. doi:10.4324/9780203698341.ch15.

xxi Grabosky, Peter N., and Michael Stohl. Crime and Terrorism. London: SAGE, 2010.

xxii Piazza, James A. "The Illicit Drug Trade, Counternarcotics Strategies and Terrorism." Public Choice 149, no. 3-4 (2011): 297-314. doi:10.1007/s11127-011-9846-3.

xxiii Norton, Simon. Chadderton, Paula. "Detect, disrupt and deny: Optimising Australia's counterterrorism financing system". https://www.aspi.org.au/report/detect-disrupt-and-deny-optimising-australias-counterterrorism-financing-system. Accessed: 2nd April 2021.

xxiv Boyle, Michael J. "Do Counterterrorism and Counterinsurgency Go Together?" International Affairs 86, no. 2 (2010): 333-53. doi:10.1111/j.1468-2346.2010.00885.x.

xxv Dube, O., and J. F. Vargas. "Commodity Price Shocks and Civil Conflict: Evidence from Colombia." The Review of Economic Studies 80, no. 4 (2013): 1384-421. doi:10.1093/restud/rdt009.

xxvi Blair, Graeme, Darin Christensen, and Aaron Rudkin. "Do Commodity Price Shocks Cause Armed Conflict? A Meta-Analysis of Natural Experiments." American Political Science Review 115, no. 2 (2021): 709-16. doi:10.1017/s0003055420000957.

xxvii "Illicit Financial Flows." Global Financial Integrity. March 15, 2021. Accessed April 02, 2021. https://gfintegrity.org/issue/illicit-financial-flows/#:~:text=Illicit financial flows (IFFs) are,utilized across an international border.

xxviii "Illicit Financial Flows (IFFs)." World Bank. Accessed April 02, 2021. https://www.worldbank.org/en/topic/financialsector/brief/illicit-financial-flows-iffs#:~:text="Money illegally earned, transferred,,illicit financial flows (IFFs).

xxix "Illicit Financial Flows." OECD. Accessed April 02, 2021. http://www.oecd.org/gov/pcsd/pcsd-framework-iffs.htm.

xxx Isard, Walter (May 1954). "Location Theory and Trade Theory: Short-Run Analysis". Quarterly Journal of Economics. 68 (2): 305–320. doi:10.2307/1884452. JSTOR 1884452.

xxxi Chenoweth, Erica. "Terrorism and Democracy." Annual Review of Political Science 16, no. 1 (2013): 355-78. doi:10.1146/annurev-polisci-032211-221825.

xxxii Kalyvas, Stathis N. "The Paradox of Terrorism in Civil War." The Journal of Ethics 8, no. 1 (2004): 97-138. doi:10.1023/b:joet.0000012254.69088.41.

xxxiii Scheffler, Samuel. "Is Terrorism Morally Distinctive?" Journal of Political Philosophy 14, no. 1 (2006): 1-17. doi:10.1111/j.1467-9760.2006.00242.x.

xxxiv *Goodhart, Charles (1975). "Problems of Monetary Management: The U.K. Experience". Papers in Monetary Economics. **1**. Sydney: Reserve Bank of Australia.*

xxxv Strathern, Marilyn (1997). "'Improving ratings': audit in the British University system". *European Review*. John Wiley & Sons. **5** (3): 305–321. doi:10.1002/(SICI)1234-

xxxvi There are many reports by the UNODC about the matter. For example: "Myanmar Opium Cultivation Drops Again as the Regional Drug Economy Continues to Evolve." United Nations : Office on Drugs and Crime. Accessed April 02, 2021. https://www.unodc.org/unodc/en/frontpage/2020/February/myanmar-opium-cultivation-drops-again-as-the-regional-drug-economy-continues-to-evolve.html.

xxxvii "Fighting Drug Trafficking in the Golden Triangle: A UN Resident Coordinator Blog | | UN News." United Nations. Accessed April 02, 2021. https://news.un.org/en/story/2020/09/1071192.

xxxviii Croicu, Mihai. Sundberg, Ralph. "UCDP Georeferenced Event Dataset Codebook Version 5.0"
xxxix FATF. Accessed April 02, 2021. https://www.fatf-gafi.org/.

xl View 2020 Results. Accessed April 02, 2021. https://fsi.taxjustice.net/en/introduction/fsi-results.

xli "Corruption Perceptions Index 2020." Transparency.org. Accessed April 02, 2021. https://www.transparency.org/en/cpi/2020/index/nzl.