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# Maritime piracy confrontations across the globe: Can crew action shape the outcomes?

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ABSTRACT

The recent tightening of military budget constraints has called into question the feasibility of costly multilateral naval intervention used to combat maritime piracy off the eastern coast of Africa. Though past studies agree that the transformation of the Somali economy and government is crucial for a long-term solution to piracy in this part of the world, short to medium-run solutions are needed to bridge the gap. Such solutions should be fiscally sensible and serve as effective deterrents, as well as be applicable in addressing the problem of piracy and maritime armed robbery in other parts of the globe. This paper builds upon the foundations laid in Mejia et al. [12] and Mileski et al. [13] by examining the following question: given that a ship is engaged by pirates, what factors help shape the outcome of the confrontation? This study finds that observable action taken on the part of a ship's crew is extremely effective in decreasing the risk of a ship being successfully robbed or hijacked. There has yet (as of May 2014) to be a reported incident where pirates successfully hijacked a vessel that had a security team on board, and so though the effectiveness of security in this matter can be inferred, it cannot be empirically tested (the same is true – in this study's dataset – of the effect of onboard security on deterring robberies). This may provide some guidance for policymakers; if naval intervention is to be scaled back, the encouragement and oversight of shipping companies' crew response procedures (and perhaps of onboard security measures) by international governments could pose a valid alternative.



## 1. Introduction

Maritime piracy[1] is a consequential global issue, but within the context of more dire and fundamental challenges facing the international community such as poverty, terrorism, healthcare and education, it is a relatively small one.[2] In the face of tightening budget constraints on the part of governments that combat piracy, finding the most cost-effective solutions becomes an important concern [11].

Existing research has provided insight into the economic theory and political economy of maritime piracy as well as what helps shape pirates' decisions, but questions remain as to how effective different measures are in expelling pirate attacks across the globe. Using the International Maritime Organization's *Reported Incidents of Piracy and Armed Robbery* dataset, which provides background information on vessels that were attacked as well as the type of actions taken by pirates and crews, this paper employs a multinomial logistic model to examine how crew action and naval intervention impact the probability that pirates disengage a vessel instead of conducting a successful robbery or hijacking.

This study's findings indicate that both crew action and naval intervention play a large and statistically significant role in preventing pirates from being successful once they have engaged a vessel, after accounting for other important factors such as geographic area of the incident, vessel type, and waters type (international, territorial, or in port). This may speak towards crew response procedures being practical alternatives or complements to costly naval deployments.

The paper proceeds as follows. Section 2 examines relevant maritime piracy research, while Section 3 proceeds to discuss empirical framework and underlying intuition. Section 4 describes and illustrates key characteristics of the dataset employed. Section 5 presents and provides a general discussion of the results, and Section 6 concludes with a summary and recommendations for future research.

## 2. Literature review

There is a strong body of existing research related to maritime piracy, that the following sections acknowledge in an effort to frame the context of the analysis presented in Section 3 and onward.

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[1] For the sake of brevity, the word "piracy" throughout refers to both the formal definition of piracy as well as armed robbery against ships unless specified. See: http://www.imo.org/OurWork/Security/PiracyArmedRobbery/Pages/Default.aspx

[2] The economic consequences of Somali piracy amounted to an estimated $5.7–6.1 billion (USD) in 2012 [3].

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Fu et al. [7] estimate the basic economic impact of naval intervention in trade lanes on the Far East-Europe route, and find that without the current naval intervention to curb Somali piracy trade along this route would decrease by ~30%, with only ~18.4% of it being rerouted, leading to an annual economic welfare loss of approximately $30 billion USD.

Hallwood and Miceli [8] extend economics-of-crime intuition to the issue of piracy, and develop a strategic interaction[3] framework (based on factors that shape expected outcomes) that leads to equilibrium and provides insight into what may comprise an "optimal enforcement policy". Such an optimal policy would likely vary greatly from the policy currently in place, where naval enforcement is handled by multiple entities. Enforcement action taken by any individual entity leads to uncompensated external benefits, the authors argue, and, relative to a single entity system, the status quo is likely to lead to free-riding and underinvestment in enforcement.

Hastings [9] analyzes the problems of maritime piracy – and the motivations of participants – at an institutional level. The author finds that pirates whose operations are based in failed states are more likely to engage in "unsophisticated" attacks involving kidnapings or ransom, since there exists little to no chance of intervention (enforcement) from their respective state. However, pirates based out of weak states are shown to carry out more "sophisticated" attacks where entire ships and cargoes are commandeered and sold, since there still exists the necessary "markets and transportation infrastructure" to make such undertakings possible and worthwhile.

Kraska [10] provides a variety of perspectives critical to understanding the issue of piracy. The author gives a primarily qualitative but highly insightful treatment of the political economy of Somali piracy that covers ground in not only describing the socioeconomic climate of coastal Somalia but also in explaining the incentives that have caused piracy to be an issue there in the first place. These are: the extreme instability of the Somali government over the past two decades, a history of poverty, and a crippled fishing industry which once played a key role in the Somali economy. Kraska (2009)'s conclusion calls for a "strengthening of local and regional authorities (to)…stabilize the economy, create productive jobs for the legions of Somalia's unemployed young men, and rehabilitate the social structure in society." This perspective is likely to be of great importance when considering what might comprise a long-term solution to piracy.

Beckman [2], while not an empirical study, provides useful insight into the relationship between exclusive economic zones (EEZ's[4]) and maritime piracy. In enforcement actions against crimes at sea, jurisdiction becomes an issue; "Only (the) coastal State can exercise police power in waters under its sovereignty… Foreign warships have no right to patrol or board ships in waters subject to sovereignty." However, "The warships of any State can board pirate ships in the EEZ and arrest the pirates" and "The State which made the arrest can charge them (sic) offenders with piracy under their national laws." An understanding and awareness of EEZ's would be important in crafting any type of policy designed to combat piracy in different areas across the globe.

Beloff [4] turns the lens in another useful direction; we have an intuitive understanding of how piracy could affect the shipping industry, but what piracy activity means for the country in which it is practiced is perhaps more ambiguous. Beloff [4] argues that piracy has a negative impact upon the Somali economy in the way that merchant ships are deterred from calling at ports. (In essence, the aggregate supply of goods decreases as ships refuse to call while aggregate demand remains the same, resulting in stagflation.) Pirates' corrupt influence upon enforcement entities is said to keep this issue from being addressed.

The primary foundation for the investigation carried out below is Mejia et al. [12]. It is thus far the principal investigation into whether or not ship or scenario specific characteristics impact whether or not a merchant marine vessel is attacked by pirates in the first place. The authors examine whether acts of piracy are randomly determined – or rather that targets are randomly selected – or if factors such as year, type of vessel, or flag of origin play an important role. Their results indicate that both a vessel's type and its flag of origin have statistically significant impacts upon its likelihood of being engaged by pirates. Specifically, containerships are "significantly more exposed" and so are vessels registered under the Indian, Malaysian, and Singaporean flags. The authors' approach provides compelling evidence as to the potentially nonrandom nature of maritime piracy.

Mileski et al. [13] stems from Mejia et al. [12]. The authors examine how different situational factors (including actions taken by the crew) impact the probability that different outcomes occur given that a ship is attacked, but with key differences from the research presented below. Mileski et al. [13] run five separate logistic regressions: one for each dependent variable (hostages taken, property stolen, ransom was paid, pirates escaped, or any combination of these). Unlike in the specification described in Section 3, hijacking is not treated as a dependent outcome, but as an independent variable. The independent variable of crew action is divided up into several categories.[5] In addition, Mileski et al. [13] use ship's flag as an independent variable, which is logical given the conclusions of Mejia et al. [12].[6] The study presented below does not include ship's flag in its model because this variable is not available as part of the dataset employed. This is acceptable primarily because de Groot et al. [5] state that although vessel flag is likely to play an important role in hostage situations where the interaction between crew and pirates can be lengthy and transparent, registry is quite often "opaque" (selected for convenience and not representative of much real information on its own). The study presented below assumes that vessel flag is not likely to have a causal link with anything other than the outcome of hostage negotiations, even though a statistically significant relationship has been shown to exist between vessel flag and other outcomes. If this is assumption is valid, vessel flag's relationship with other piracy outcomes may just as well be contained in the error term of a regression model.

Mileski et al. [13] find that "defense" strategies significantly lower the probability of hostages being taken, but that no other types of crew action can be said to impact the success of any of the other piracy outcomes. In addition, their results indicate that hijacking has a significant and positive relationship with hostages

[3] "Of the efforts of pirates to locate potential targets, and of shippers to avoid pirates".

[4] See OECD [14] "An Exclusive Economic Zone (EEZ) is a concept adopted at the Third United Nations Conference on the Law of the Sea (1982), whereby a coastal State assumes jurisdiction over the exploration and exploitation of marine resources in its adjacent section of the continental shelf, taken to be a band extending 200 miles from the shore."

[5] Defense': firing warning shots or fire hoses, retreating to citadel, authority intervention, etc.

'Deterrence': sounding alarm, mustering crew, conducting evasive maneuvers, etc.

'Cooperation': alerting authorities, sending distress signals, firing flares, "investigating by authorities, capturing pirates by authorities, rescuing crew and/or taking other action" *, etc.

'Intelligence': whether ship Best Practices were employed* It is perhaps logical to question the appropriateness of the measures in quotations as explanatory variables, since they occur after the attack. Even though this could be a logical instrument for the concept of Cooperation, it may suffer a causality loop issue.

[6] i.e., that vessel flag exhibits a statistically significant relationship with piracy behavior