



The impact of unsuccessful pirate attacks on financial markets: Evidence in support of Leeson's reputation-building theory[☆]



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ABSTRACT

This paper examines the effect of unsuccessful Somali pirate attacks on financial-market returns in the Arabian Peninsula. Specifically, it tests Leeson's (2010a) reputation-building theory of pirate signaling behavior postulating that unsuccessful pirate attacks may trigger subsequent future attacks by pirates as pirates attempt to maintain and build their reputation for effective piracy. We test this theory empirically by studying the relationship between pirate attacks and financial-market returns in the Arabian Peninsula. The result of our empirical test supports Leeson's theory: unsuccessful pirate attacks are associated with lower financial-market returns, suggesting that market participants expect unsuccessful pirate attacks to be followed by future pirate attacks.

1. Introduction

Pirates, outlaws, bandits, and highwaymen have preyed upon merchant vessels for millennia. Since the advent of large-scale sea-based shipping in the 16th Century, piracy has played a role in the economies of coastal nations. Some pirates, such as Sir Francis Drake and William Kidd, were sanctioned privateers by monarchs striving to broaden their colonial influence (Risso, 2001). Others, like Blackbeard, the notorious English pirate who plied lawlessly around the West Indies and the Eastern coast of the American colonies were renegades who did not operate under the jurisdiction of any crown. Today, most pirate attacks occur in one of three places: (1) The waters between the West African coastline and the Arabian Peninsula, specifically the Gulf of Aden which is a strategic transit point; (2) the waters around Indonesia; and (3) the open Arabian Sea and Western Indian Ocean. Almost all of the attacks during 2008–2010 were in the calm, target-rich waters of the Gulf of Aden—a passage for 20% of the world's commercial shipping (see Fig. 1). Somalia's 3025-km coastline is the longest in Africa. The *Institute for Economics and Peace*, the *Global Terrorism Index* (GTI), a composite score that ranks countries according to the impact of terrorism from 0 (no impact) to 10 (highest impact), indicates that during the period covered by the current study

(2005–2011), the scores for Somalia ranged from 3.75 to 6.97 respectively.¹

Gambardella (2011) reports that pirate attacks in the target region explored in this study bring in more than \$200 million annually – the equivalent of 20–25% of Somali's GDP. Over the last few years, Somali pirates have expanded their efforts and moved all the way eastward to the Western portion of the Indian Ocean. As discussed below, this progression also supports Leeson's (2010a) theories of signaling and reputation building for explaining pirate practices.

The vast majority of the literature is concerned with analyzing the impact of successful pirate attacks on financial-market returns.² The current study, however, tests Leeson's (2010a) theories by focusing on unsuccessful pirate attacks, which create the expectation of future pirate attacks, as pirates attempt to maintain and build their reputation for effective piracy. Specifically, we investigate the impact of the rise in Somali pirate attacks from 2005–2011 on the stock markets of the nations of the Arabian Peninsula: Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates (specifically Dubai and Abu Dhabi).³ In doing so, we control for daily fluctuations in the price of oil as well as global financial shocks as we examine the impact of piracy on stock returns of those markets from 1995–2012. Our findings support the validity of Leeson's theory, which explains the practices of pirates

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¹ See <http://www.tradingeconomics.com/somalia/terrorism-index>.

² See <http://piracy-studies.org/wp-content/uploads/2015/09/Piracy-Studies-Bibliography-September-2015.pdf>.

³ Note that Yemen is excluded because their financial market had not yet been launched during the duration of the data.

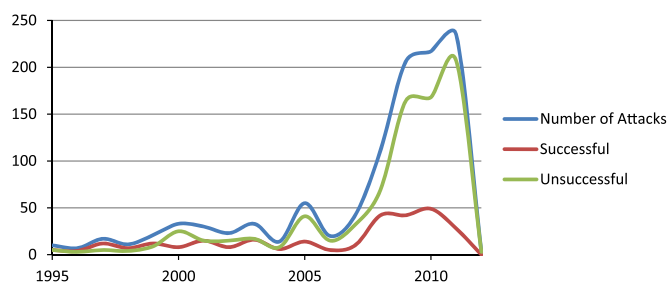


Fig. 1. Annual pirate attacks on oil tankers in the Arabian Sea (1995–2012).

based on signaling and reputation building (Leeson, 2010a, 2010b).

The paper is structured as follows: First, we provide historical and contextual information to examine the impact of pirate attacks on the financial markets of the Arabian Peninsula for the 2005–10, the timeline and focus of our study. Next, we address the notion of pirates as rational economic actors and as notorious public-image savvy drawing on Leeson's examples of pirate media manipulation. We test Leeson's (2010a) theory of pirate signaling and reputation building, hypothesizing an inverse relationship between pirate attacks (both successful and unsuccessful) and stock market returns. We argue that unsuccessful attacks may trigger future attacks aimed at restoring or sustaining pirates' "reputation" as well as causing an increase in "signaling" attempts to capture "expectations" of future pirate attacks. We also included an interaction term to see if shifts in Brent returns on days of pirate attacks have any additional marginal impact. Further, we conducted a series of robustness checks by examining financial market returns from Venezuela, confirming no statistical evidence of pirate attacks impacting the Venezuela financial market. The last section concludes the paper with the findings that pirates tend to increase the number of attempts after failure in support of Leeson's (2010a) reputation building theory. Implications for public policy are also provided.

2. Piracy in the Gulf of Aden

Pirate attacks are still common on the high seas and can play a disruptive economic role (Besley et al., 2015). It is estimated that the global cost of piracy in 2011 was between \$6.6 and \$6.9 billion.⁴ Somalia, in particular, became a major source for maritime piracy after 2005. Following decades of political and economic strife, impoverished subsistence farmers and fishermen turned to piracy as a means to increase their income.⁵ As the success rate of pirate incursions increased, they attracted the attention of local militants who joined in. In Somalia, as the monsoon season subsides and the seas calm, attacks typically resume in frequency and intensity and the number of hijackings of ships and hostages taken off the coast of Somalia continue to climb (Cook and Garrett, 2013).

This expansion of pirate attacks took many by surprise. For example, Blair and Lieberthal (2007) focus on pirate attacks in the Persian Gulf and the Strait of Hormuz in particular. While they posit that oil tankers are not very susceptible to risk, they did not anticipate the surge in pirate attacks as increasing numbers of Somalis took to the seas. Within the subsequent years, with the number of pirate attacks on the rise – including attacks on oil tankers – the world began to take notice. Schuman (2009) reports that piracy in the Strait of Malacca had been wiped out by 2009 because of three factors: (1) Military force; (2) Political resolution; and (3) Economic growth. Schuman points out, however, that the same resolution would not be possible in Somalia due to the presence of a weak central government and inconsequential law

enforcement. Onuoha (2009) examined the Somali piracy surge and concluded that "pirate attacks have increased both horizontally and vertically. Horizontally, pirates have acquired the weaponry and high-tech gadgetry ... automatic weapons, rocket-propelled grenades, faster attack craft with longer ranges, satellite phones, and global positioning systems (GPS) in their attacks" (p35). Onuoha (2009) explains that the vertical increase relates to attacks on all types of vessels, a stark contrast to the early part of the last decade. Among the Somali pirates' successful attacks was the November 18, 2008 hijacking of the Saudi oil tanker *Sirius Star* which carried over \$100 million worth of oil. The ship was ransomed for \$25 million.⁶ This brazen success led to even more attempted hijackings of oil tankers; and while few attacks were successful, the attempts alone have led to regional economic disruptions.

Treves (2009) points out that the global responses to the rise in Somali pirate attacks had been insufficient because of limitations in the Law of the Sea. For instance, Gittleman (2008) notes that Jama Ali, a notorious Somali pirate, was not worried about international law at all. The punishments were relatively toothless, with little more than fines and seizures of pirate vessels. This prompted the UN Security Council to pass Resolution 1816 in 2008 on acts of piracy and armed robbery against vessels in territorial waters and the high seas off the coast of Somalia.

Following this resolution, France conducted a military mission in Somali waters to free the captured passengers of the cruise ship *Le Ponant*. The successful action by France triggered the passage of Resolution 1851 which authorized "all necessary measures that are appropriate in Somalia for the purpose of suppressing acts of piracy and armed robbery at sea" (Treves, 2009: p.401). This expanded upon Resolution 1816 by further allowing for military attacks against pirates on Somali soil. According to Kontorovich (2010), this passage also led to the formation of a joint naval force under US command that included contributions from thirteen nations, which set forth to arrest and capture Somali pirates under international law. Though very few pirates were prosecuted, the successes of their missions greatly reduced the number of pirate attacks over the course of a few months, and by 2012, the number of attacks had reverted to pre-escalation levels. Fig. 1 illustrates the 2005–10 upswings in pirate attacks on oil tankers, the timeline and focus of our study.⁷

Historically, the economic impact of pirate attacks on private financial markets has been relatively limited in terms of temporary or unexpected oil supply disruptions in the Middle East. A good example is the Tanker War in the Persian Gulf in the 1980s where even during times when oil tankers were attacked daily, the price of oil continued to fall because oil supplies surpassed demand for oil (Report European Union, 2009). Kilian (2009) finds that exogenous political events in the Middle East played a role in the oil markets in the early 1990s through 2007. It appears as though that as the number of attacks decreased, the financial impact became negligible.⁸

3. The rationality of pirate behavior

Following Milgrom and Roberts (1982), Kreps and Wilson (1982), and Kreps et al. (1982), Leeson (2007, 2009a, 2009b, 2010a, 2010b) have laid out the economic principles that explain the behavior of pirates based on the theories of signaling and reputation building. The theory of reputation building predicts that if the number of pirate victims was high enough and their high cost of resistance visible, pirates could raise the benefits of surrender and maximize their long-term payoff by building a reputation for mercilessness toward resistors

⁴ See http://oceansbeyondpiracy.org/sites/default/files/economic_cost_of_piracy_2011.pdf.

⁵ See Hassani-Mahmoei and Parris (2013) for more on the impact of resource shortages on personal decisions.

⁶ See <http://www.digitaljournal.com/article/262509>.

⁷ Fig. 1 is constructed based on data collected from the International Criminal Court and the International Maritime Bureau. For details, see the section on data description.

⁸ Note that Kilian's (2009) data only run through 2007 – before the majority of the upturn in piracy occurred between 2005 and 2010.

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