



Pirational choice: The economics of infamous pirate practices[☆]

Peter T. Leeson

Department of Economics, George Mason University, MSN 3G4, Fairfax, VA 22030, United States

ARTICLE INFO

Article history:

Received 30 July 2009

Received in revised form 18 August 2010

Accepted 24 August 2010

Available online 15 September 2010

JEL classification:

D20

D82

K42

N86

Keywords:

Pirates

Organized crime

Signalling

Reputation

ABSTRACT

This paper investigates the economics of infamous pirate practices. Two closely related economic theories—the theory of signaling and the theory of reputation building—explain these practices. First, I examine the pirate flag, “Jolly Roger,” which pirates used to signal their identity as unconstrained outlaws, enabling them to take prizes without costly conflict. Second, I consider how pirates combined heinous torture, public displays of “madness,” and published advertisement of their fiendishness to establish a reputation that prevented costly captive behaviors. Pirates’ infamous practices reduced their criminal enterprise’s costs and increased its revenues, enhancing the profitability of life “on the account.”

© 2010 Elsevier B.V. All rights reserved.

1. Introduction

Few characters in history inspire as much fascination or mystery as pirates. Pirate symbols, from skull-emblazed flags to eye patches and wooden legs, pervade modern popular culture. Despite this, or perhaps because of it, in many people’s minds pirate fantasy and reality are indistinguishable. Buried treasure, colorful captains, and salty sea talk are permanently part of pirates’ intriguing lore. Many infamous pirate practices are pure fiction. But a number of others not only have historical foundations. They have rational choice foundations as well.

This paper considers two such practices: pirates’ infamous flag of skull and bones, the “Jolly Roger,” and pirates’ infamous fondness for torture. Two closely-connected economic theories—the theory of signaling and the theory of reputation building—explain these practices. My discussion contributes to a small but growing literature that uses economics to analyze the profit-maximizing strategies of organized criminals. Its analysis is most closely connected to Gambetta’s (1993, 1994) and Smith and Varese’s (2001) important examinations of signaling and reputation building in the context of the Sicilian Mafia.¹

[☆] I’m especially grateful to seminar participants at the University of Chicago and New York University for their insightful and thorough comments on an earlier draft of this paper. I also thank the editor, two anonymous referees, Pete Boettke, Tyler Cowen, Chris Coyne, Edward Glaeser, Russ Sobel, Bill Trumbull, and Claudia Williamson for helpful remarks and suggestions, and the Becker Center on Chicago Price Theory at the University of Chicago and the Mercatus Center at George Mason University where this research was partly conducted. Doug Rogers provided excellent research assistance. This paper contains and extends material from the author’s book, *The Invisible Hook: The Hidden Economics of Pirates* (Princeton University Press, 2009).

E-mail address: pleeson@gmu.edu.

¹ See also, Reuter (1983). Becker (1968) was the first to apply the logic of rational choice decision making to criminals. Following him, a number of others extended this logic to decision making in the context of organized outlaws. See, for instance, Anderson (1979), Arlacchi (1986), Chang et al. (2005), Dick

I investigate signaling and reputation building in pirates' context and explore novel aspects of these theories' application that the unique features of pirates' criminal enterprise create. My analysis illuminates the strategies criminals use to establish their identities and how they coordinate on these strategies; the communication mechanisms criminals use to broadcast and manipulate their public images and thus propagate their reputations; and the obstacles criminals confront in dealing with their victims and how they overcome them.

2. Buried treasure: a note on sources

To explore the economics of infamous pirate practices, I consider late 17th- and early 18th-century (1660–1730) sea bandits who occupied the waterways that formed major trade routes surrounding the Bahamas, connecting Europe and the North American sea coast, between Cuba and Haiti, and around Madagascar. These areas encompass major portions of the Atlantic Ocean, Indian Ocean, Caribbean Sea, and Gulf of Mexico. The trade routes connecting the Caribbean, North America's Atlantic sea coast, and Madagascar formed a loop called the "Pirate Round" that many pirates traveled in search of prey.

My investigation draws on the most important primary source historical documents relating to pirates. The first of these is Captain Charles Johnson's *General History of the Pyrates* (1726–1728), which contains reports on a number of history's most famous pirates related by a pirate contemporary.² I also draw on Alexander Exquemelin's (1678) invaluable account of the 17th-century buccaneers. Exquemelin was a surgeon who sailed on a buccaneering vessel. He provides a detailed firsthand account of the buccaneers raids and profit-maximizing strategies. Buccaneers differ from "pure" pirates in that they frequently plundered ships with government sanction. However, other times they plundered without official permission, as full-blown pirates. These proto-pirates, many of whom turned to pure piracy when governments stopped issuing licences for plunder, influenced and anticipated pure pirates' practices in the "Golden Age" (1716–1726), which this paper focuses on.

Additionally, I draw extensively on court records from pirate trials, 18th-century newspaper accounts of pirate activity, which as I discuss below played an important role in publicizing pirates' reputation, and the *Calendar of State Papers, Colonial Series, America and West Indies (CSPC)*, which contains correspondence from colonial governors and others relating to piracy. I also rely on papers from London's Public Records Office (PRO), which is a veritable treasure trove of primary source historical materials relating to pirates.³ Finally, a few pirate captives, such as William Snelgrave (1734), published longer works describing their captivities. I also draw on these accounts, which provide important firsthand records describing infamous pirate practices.⁴

Like all economic histories of persons long dead, this one, too, is unavoidably conjectural. Historical persons rarely left detailed records telling us why they behaved in the ways they did, let alone explicating the economics that underlaid their behaviors. This is especially true of pirates, who are not only persons long dead, but were criminals, and largely illiterate ones to boot. The economist's job is to take the fragmentary, often indirect, historical data that are available and to put them together using the "glue" of economic logic, filling in the holes those data create with that logic along the way, to create a fuller, more informative historical picture than the data alone present.

3. Skull and bones: the economics of the Jolly Roger

3.1. Surrender or die

To maximize profits pirates had to minimize costs. Chief among these were the costs associated with battling potential prizes. Pirate ships often outmanned and outgunned their quarries by a factor of three or more. But merchant ships weren't defenseless. Most carried some armaments. Winning a battle with a pirate crew was unlikely. But damaging the pirates and their ship wasn't. Battle-sustained deaths or injuries were costly to pirates: dead or injured men made less able sea dogs than living or uninjured ones.

Battle-sustained damage to pirates' ship was costly too. It reduced pirates' effectiveness in chasing and defeating later prey. A pirate ship with a hole in it was slower and less agile than an undamaged one. Since pirates stole their ships, a

(1995), Fiorentini and Peltzman (1995), Garoupa (2000), Jankowski (1991), Jennings (1984), Konrad and Skaperdas (1998), Leeson (2007, 2009a,b, 2010a, 2010c), Leeson and Rogers (2010), Leeson and Skarbek (2010), Reuter (1987), Levitt and Venkatesh (2000), Venkatesh and Levitt (2000), Skaperdas (2001), Skarbek (2010), and Varese (2001, 2006a).

² "Captain Johnson" is a pen name used by the author of *A General History of the Pyrates*. His true identity remains unknown. In 1932, John R. Moore claimed that Johnson was in fact Daniel Defoe. In the late 1980s, however, this view was overturned (see Furbank and Owens, 1988) and today many pirate historians do not believe that Defoe is the author of this important book (see, for instance, Cordingly, 2006; Rediker, 2004; Woodard, 2007; for the opposing view see, Rogozinski, 2000). Whatever Johnson's true identity, it is agreed that he "had extensive first-hand knowledge of piracy" (Konstam, 2007, p. 12). While it's acknowledged that Johnson's work contains some errors and apocryphal accounts (such as the community of Libertalia), "Johnson is widely regarded as a highly reliable source for factual information" on pirates (Rediker, 2004, p. 180) and remains a definitive source historians rely on in constructing their accounts of late 17th- and early 18th-century piracy. As eminent pirate historian David Cordingly put it, this book "is the prime source for the lives of many pirates of what is often called the Golden Age of Piracy" (2006, p. xx).

³ With the exception of those from the *Boston New-Letter*, many of which I collected independently, unless otherwise noted all newspaper accounts are reprinted in Baer (2007, vol. 1).

⁴ Additionally, this paper relies on and is greatly indebted to a voluminous modern literature covering all aspects of piracy, including those considered here, written by contemporary historians. Some of the best discussions belong to Rediker (1987, 2004); Cordingly (2006); Gosse (1946); Rankin (1969); Pringle (1953); Konstam (2002) and Rogozinski (2000).

damaged ship also reduced pirates' ability to take undamaged ones as replacements.⁵ A damaged vessel required repair. But more time repairing meant less time plundering and a higher probability of capture. Walter Moore, for example, captain of the *Eagle*, captured George Lowther's pirate crew while it careened on an island off Venezuela.

Pirates also found battle costly because it could damage the prize. Pirates valued stolen ships since they sometimes "traded up" when they took a better vessel. A damaged ship was less useful to them than an undamaged one. In the extreme, if pirates inadvertently sunk their target, the entire prize would be lost. Thus violent conflict not only contributed to the cost side of pirating expeditions. It could diminish the revenue side as well.

To minimize these costs, pirates sought to overwhelm victims without violence. "[T]heir whole policy was directed towards taking prizes without having to fight for them" (Pringle, 1953, p. 113). Pirates' strategy was simple. First, promise to slaughter merchantmen that resisted them. As one pirate described this promise to a prisoner, "No Quarter should be given to any Captain that offered to defend his Ship" (Snelgrave, 1734, p. 206). Second, promise to show mercy to merchantmen that surrendered peacefully. By manipulating targets' incentive to yield to them—dramatically raising targets' cost of resistance while simultaneously raising the benefit of surrender—pirates hoped to capture merchantmen without violence.

Crucial to this strategy's effectiveness was pirates' ability to credibly commit to their "surrender-or-die" policy. However, for reasons similar to those that made conflict costly for pirates in the first place, following through on their promise to slaughter resistant merchantmen after subduing them was also costly. Pirates didn't reap any immediate benefits by punishing a merchantman *after* they overcame it and controlled the prize. This was as true for vessels pirates had to fight for as it was for those they didn't. In contrast, pirates could incur immediate costs by fulfilling their deadly promise. Merchant sailors anticipating their execution might hazard a last, desperate hand-to-hand resistance that could maim or even kill one or two members of the pirate crew. Thus, in the short run at least, massacring resistant merchantmen yielded pirates net costs rather than benefits.

This created a commitment problem for pirates' promise to punish resisters reminiscent of incumbent firms' commitment problem in promising to punish entrants in Reinhard Selton's (1978) "chain store paradox." Pirates overcame this problem by invoking the same solution the Gang of Four identified for incumbent firms in this situation: reputation. Following Milgrom and Roberts (1982, p. 304), the theory of reputation building predicts that if pirate victims were multiple and could observe pirates' past actions, pirates could maximize their long-run payoff by building a reputation for mercilessness toward resisters that deterred *future* merchantmen from resisting.⁶

And that's what pirates did. Pirate captain Edward Low "had [a victim's] Ears cut off close to his Head, for only proposing to resist. . . [his] black Flag" (Johnson 1726–1728, p. 335). In another case, Low's crew came upon a ship, "and because at first they shewed Inclinations to defend themselves and what they had, the Pyrates cut and mangled them in a barbarous Manner" (Johnson 1726–1728, p. 324). Similarly, Bartholomew Roberts' pirate crew assaulted a Dutch interloper, which, after "maintaining an obstinate defence for four hours. . . killed a great many of the pirates." Ultimately, however, the interloper "being overpower'd was forced to submit and what men the pirates found alive on board they put to death after several cruel methods" (News from Barbadoes, Antigua and Jamaica – Sent April 25, 1721 from Governor Bennett to the Council of Trade and Plantations, CSPC, February 18, 1721: Item 463 iii, Vol. 32 (1720–1721), pp. 294–296).

The same costliness of following through on pirates' deadly promise to resistant merchantmen made pirates' commitment to follow through on their peaceful promise to compliant merchantmen credible. Because murdering a compliant merchant crew was costly and provided no offsetting reputational benefit, as murdering a resistant crew did, pirates had no incentive to slaughter compliant merchant crews. In fact, pirates had a strong incentive *not* to kill victims that surrendered. Rather than reducing pirates' cost of taking future prizes, slaughtering compliant merchant crews would increase pirates' cost of taking future prizes.

If merchantmen expected pirates to murder them whether they resisted or not, they would have an incentive to always resist pirate attacks, undermining pirates' purpose. Resisting would be no costlier than surrendering. Since there was at least a chance resistance might succeed, merchantmen would always want to do so. Thus the theory of reputation building predicts that pirates would fulfill their promise of mercy if merchantmen surrendered.

Consistent with this prediction, pirates reserved annihilation for resistant crews. They showed mercy to those that surrendered peacefully. As one pirate pointed out to his captive, pirates "observe strictly that Maxim established amongst them not to permit any ill usage to their Prisoners after Quarter given" (Snelgrave, 1734, p. 219). Victims who accepted pirates' offer (peaceful submission for your life) not only lived to tell the tale of pirate mercy. In some cases they lived to tell the tale of pirate generosity. This explains why the British government had to resort to legal sanctions to compel armed merchantmen to resist their pirate attackers, which it did, though unsuccessfully, in a 1721 statute (8 Geo. 1, c. 24). Because merchantmen received mercy when they surrendered to pirates, they didn't hesitate to do just that.

Fig. 1 depicts pirate–merchantman interaction diagrammatically. The game is dynamic. Merchantmen move first. They have two choices: resist pirate attack or surrender peacefully to their pirate attackers. Pirates move second. They also have two choices: slaughter the merchantman or spare its crewmembers' lives.

⁵ In the early 18th century pirates didn't fence ships they stole. Pirates valued vessels as means of piracy and on rare occasions for ransom. But pirates don't seem to have participated in anything like market for plundered ships.

⁶ See also, Kreps and Wilson (1982) and Kreps et al. (1982).

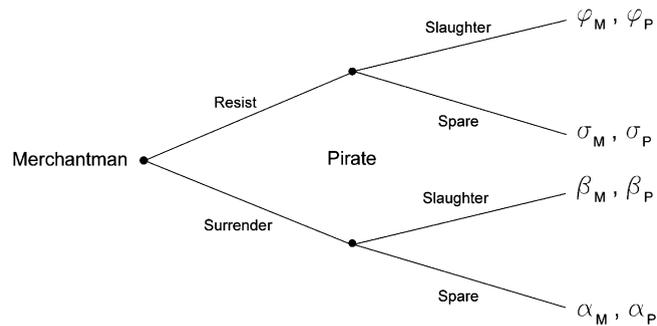


Fig. 1. Surrender or die.

The merchantman earns its largest payoff if it resists its pirate attacker and pirates don't punish it for doing so, σ_M . Merchant crewmembers enjoy a small chance of defeating or escaping their pirate attacker and suffer no consequences in the likely event that their resistance fails. The merchantman earns a smaller payoff if it surrenders to its pirate attacker and pirates spare its crewmembers in exchange, α_M . Sailors lose their ship's cargo but save their lives. The merchantman earns a still smaller payoff if it resists its attackers but pirates punish resistance with mercilessness, φ_M . In this case the merchantman's crewmembers enjoy a small chance that their resistance will succeed. But the dire consequences of the much likelier outcome—the merchantman's failure—dwarf this benefit. The merchantman earns its smallest payoff if it surrenders to its pirate attacker but pirates slaughter its crewmembers anyway, β_M . Sailors lose their cargo and their lives with certainty. So for the merchantman: $\sigma_M > \alpha_M > \varphi_M > \beta_M$.

Pirates earn their largest payoff when the merchantman doesn't resist them and they don't slaughter its crew, α_P . Pirates take the target without a costly fight. Further, they contribute to a reputation for kindness to cooperative targets. Pirates earn a smaller payoff if the merchantman surrenders but pirates slaughter its crewmembers anyway, β_P . Pirates take the target without a costly fight. But they damage their reputation for kindness to cooperative targets. Pirates earn a still smaller payoff if the merchantman resists and they slaughter its crew in response, φ_P . In this case pirates engage in a costly conflict. But they contribute to a reputation for mercilessness toward uncooperative targets. Pirates earn their smallest payoff if the merchantman resists but pirates "wimp out" and don't slaughter its crew as punishment, σ_P . Pirates suffer a costly conflict. Further, they damage their reputation for mercilessness toward resistant targets. So for pirates: $\alpha_P > \beta_P > \varphi_P > \sigma_P$.

This game of complete and perfect information has a unique subgame-perfect Nash equilibrium: merchantmen surrender to their pirate attackers and pirates spare merchant crewmembers' lives in return. Pirates' surrender-or-die policy maximizes piratical profit.

Pirates' surrender-or-die policy and their associated reputation for adhering to its terms spread to prospective prizes through word of mouth and newspaper reporting. An article published in the *Boston News-Letter* highlights how pirates' reputation for adhering to this policy was known to sailors and how newspaper reporting unwittingly contributed to and helped spread pirates' reputation by reiterating for sailors the consequences of resisting pirate assault. As the article reported, merchantmen "that have made Resistance have been most barbarously butchered, without any Quarter given them, which so intimidates our Sailors that they refuse to fight when the Pirates attack them" (*Boston News-Letter* June 16 to June 23, 1718).

Newspaper reporting also publicized pirates' commitment to treat merchantmen that surrendered peacefully with mercy. One paper published pirate captain Ned Low's company's articles, which enshrined pirates' peaceful promise in writing. This was "Good Quarters to be given when Craved," the newspaper pointed out (*Boston News-Letter* August 1 to August 8, 1723). Newspaper reporting on the consequences of acquiescing to or resisting pirate attack is just one way the 18th-century media unwittingly facilitated pirates' profit-enhancing strategies. Media coverage was also indispensable to helping pirates cultivate and cash in on a lucrative reputation for punishing uncooperative captives and rewarding cooperative ones. I discuss this in Section 4.

3.2. Bringing in the black flag

Pirates' desire to minimize the cost of overtaking prey explains their policy toward merchantmen. But, by itself anyway, it doesn't explain why pirates flew the Jolly Roger. To understand why pirates used this ominous flag and its connection to pirates' policy discussed above, we must turn to signaling theory. This theory predicts the use of costly signals when there are multiple "types" of agents whose identities are important in shaping some third party's decision about how to act toward them but whose identities aren't directly observable.

Pirates found themselves in precisely this situation. They were one of two major types of belligerent mariners that merchantmen traveling in and around the Caribbean might confront in the early 18th century. The Jolly Roger was the costly signal pirates used to distinguish themselves from the other type—the Spanish coast guard.

“Guarda Costa” were government-commissioned vessels charged with protecting Spanish territories from illicit foreign traders called “interlopers.” In theory, the coast guard was restricted to taking interlopers near the coasts it protected. In practice, these ships often cruised the waters far from shore in search of other countries’ merchant vessels carrying any goods they could use to justify seizing in alleged violation of the law that restricted trade with Spain’s possessions in the Caribbean.⁷ From the end of the War of Spanish Succession in 1713 through the end of the Golden Age of Piracy in the late 1720s, British colonial officials in the West Indies and North America complained of the overzealous coast guard, which was capturing and condemning British trading vessels against the peace created in the Treaty of Utrecht (see, for instance, *Boston Gazette*, July 6 to July 13, 1724; Governor Sir N. Lawes to the Council of Trade and Plantations, CSPC, May 18, 1722: Item 142, Vol. 33 (1722–1723), pp. 69–70; Deposition of John Kenney, CSPC, December 10, 1716: Item 425 i, Vol. 29 (1716–1717), pp. 230–231; Governor Sir N. Lawes to the Council of Trade and Plantations, CSPC, January 31, 1719: Item 34, Vol. 31 (1719–1720), pp. 12–21; Lt. Governor Spotswood to the Council of Trade and Plantations, CSPC, May 31, 1721: Item 513, Vol. 32 (1720–1721), pp. 326–329; Deposition of Richard Thompson, CSPC, April 22, 1725: Item 574 v, Vol. 34 (1724–1725), pp. 359–360; Lt. Governor Pulleine to the Council of Trade and Plantations, CSPC, April 22, 1714: Item 651, Vol. 27 (1712–1714), pp. 332–334; Governor Hart to the Council of Trade and Plantations, CSPC, April 9, 1723: Item 496, Vol. 33 (1722–1723), pp. 238–241; Lt. Governor Spotswood to the Council of Trade and Plantations, CSPC, May 31, 1717: Item 595, Vol. 29 (1716–1717), pp. 316–321).

In 1726 London’s merchants petitioned government officials imploring them to address the problem. “It has been a general practice, with the subjects of his Catholic Majesty in the West Indies,” they wrote, “for several years past to fit out vessels in a warlike manner, on pretence of guarding their coasts from unlawful traders: but, in reality under colour of such commissions have committed many deprivations, and other acts of hostility, on your Majesty’s subjects, on the high seas, and even on the coasts of Jamaica. . . . It is notorious those guarda de la costa’s, as they are called, never met with an English vessel, and could overcome, which they did not take, destroy or plunder” (Petition of the Merchants of London, CSPC, May 20, 1726: Item 152, Vol. 35 (1726–1727), pp. 74–75; see, also, Merchants trading to Jamaica to the Council of Trade and Plantations, CSPC, May 31, 1724: Item 195, Vol. 34 (1724–1725), pp. 104–105).

British merchant sailors and colonial officers criticized the Spanish coast guard for inhumanely treating prisoners they took under questionable commission. Nevertheless, as government-sanctioned cruisers, at least in principle, authorities limited the viciousness coast guard vessels could show toward merchant crews they assaulted.⁸ Unlike pirates whose outlaw status meant they weren’t even theoretically constrained in how they could treat merchantmen they encountered, coast guards weren’t permitted to wantonly slaughter merchantmen that resisted them once these crews cried for quarter. This important difference between pirates and legitimate belligerents points to the problem pirates faced. If a merchantman believed it was under coast guard, as opposed to pirate, attack, it would have a greater incentive to resist its attacker, undermining pirates’ ability to prevent costly conflict through their surrender-or-die policy.

This helps explain captain William Wyer’s crew’s response when Wyer asked his men if they would “defend their ship” from an unknown approaching belligerent. “[T]hey answered, if they were Spaniards they would stand by him as long as they had Life, but if they were Pirates they would not Fight.” When it turned out that Blackbeard’s pirate crew was the belligerent bearing down on them, consistent with the effectiveness of pirates’ reputation for adhering to their surrender-or-die policy discussed above, “Wyers Men all declared they would not Fight and quitted the Ship believing they would be Murdered by the Sloops Company” (*Boston News-Letter* June 9 to June 16, 1718).

To reap such rewards from their reputation, pirates needed a signal that distinguished them from coast guard attackers and communicated their piratical identity to prospective prizes. That signal was the Jolly Roger. Ironically, rather than an emblem of blood-thirsty pirates, the Jolly Roger reflected pirates’ strong desire to avoid violent conflict with prey.

The first recorded account of the Jolly Roger is on the pirate Emanuel Wynne’s ship in 1700. A witness described it as “A Sable Flag with a White Death’s Head and Crossed Bones in the Fly” (quoted in Grey, 1971, p. 17). Although, as I discuss below, it was but one of several similarly themed, though different, pirate flags, the skull-and-bones motif has received the most attention. Pirates coordinated on this theme for their flags through their common background in legitimate life. Nearly all sea scoundrels were ex-merchant or Royal Navy sailors.⁹ Even more so than today, in the early 18th century, seafaring was a dangerous occupation. Many sailors died from accident, disease, or violence. A common way of denoting sailors’ deaths in ship records was to draw a small skull and bones next to their names in the ship’s log. In a macabre twist on this shared experience, as pirates, former merchant and navy sailors adopted this well-known symbol of death to signal their identity (Rediker, 1987, p. 279).

⁷ I focus on the Spanish coast guard here because these ships were the most enthusiastic enforcers of their country’s trade monopoly in the Caribbean. However, French coast guard vessels also preyed on foreign merchant ships sailing in the West Indies. As merchant ship captain Brathwaite complained to the governor of Bermuda, for instance, hostile vessels “calling themselves guards of the coast. . . . pretend to a commission from the General of Martinique for that end. But under that pretence take all English vessels they can overcome whether near the coast or at sea” (Captain Brathwaite to Governor Hart, CSPC, February 14, 1723: Item 496 i, Vol. 33 (1722–1723), p. 240).

⁸ English privateers, for example, were instructed: “That no Person or Persons taken or surprised by you in any Ship or Vessel as aforesaid, though known to be of the Enemies side, be in cold Blood killed, maimed, or by Torture or Cruelty in humanly treated contrary to the Common Usage or Just Permission of War” (*The Arraignment, Tryal, and Condemnation, of Capt. John Quelch 1704*, p. 21).

⁹ Some pirates turned from merchant service to piracy via mutiny. Leeson (2010b) examines the economics of mutiny on 18th-century merchant ships.

Pirates' reliance on their shared experience as legitimate seamen as a focal point in coordinating the imagery that graced their flags is similar to Mafiosi's reliance on Hollywood movies about Mafia life to settle on the signals they use to establish their identity (see, Gambetta, 1994; Varese, 2006b).¹⁰ In both cases, behaviors and symbols that were common knowledge to each outlaw group's respective members—in the one case because of a common occupational history, and in the other because of popular and readily provided Hollywood stereotypes—assisted organized criminals in coordinating on useful signals of their respective identities.¹¹

As I discuss below, the familiar pirate logo, a “large black Flag, with a Death's Head and Bones a-cross,” was but a starting point for many crews, which modified their flags using this basic design as a template (*Trials of Eight Persons 1718*, p. 24; see also, *Boston News-Letter June 9 to June 16, 1718*; *Tryals of Major Stede Bonnet 1719: v, 16*). The specific images on Jolly Rogers varied. But the purpose was the same in each case. As one witness described it in the pages of the *White-hall Evening Post*, the “black Flag with a Death's Head in it. . . is their Signal to intimate, that they will neither give nor take Quarter” (*White-hall Evening Post October 18 to October 21, 1718*). By communicating “pirate” to merchantmen, the Jolly Roger helped merchantmen understand they were under attack by piratical belligerents who could and would devastate them if they resisted, as opposed to “legitimate” belligerents who were likely to be more restrained in how they responded to resistance.

There was one problem, however. For the Jolly Roger signal to create a separating equilibrium, which here refers to merchantmen's ability to perfectly infer whether their attacker is the piratical or legitimate variety based on whether it flies the pirate flag or not, the Jolly Roger must be cheap for pirates, but prohibitively expensive for coast guards, to use.

The Jolly Roger was inexpensive for pirates. Pirates were already outlaws. If they were caught, their punishment was the same whether they flew the black flag or not—hanging. In contrast, because legitimate belligerents weren't outlaws, but flying the Jolly Roger would make them so, the Jolly Roger was more expensive for them to use. While some coast guards operated in a legal grey area, absent what one group of British colonials called “due proof of the[ir] illegal captures and other depredations”—i.e., clear evidence they were engaged in piracy—coast guards enjoyed legal protection as legitimate, government-commissioned ships (Petition of the Merchants of London and Others Trading to and Interested in the British Colonies in America, CSPC, May 20, 1726: Item 152, Vol. 35 (1726–1727), pp. 74–75). This meant they couldn't be hunted and hanged as pirates.

In 1722 Jamaican governor Sir Nicholas Lawes wrote to the Council of Trade and Plantations to describe the trial and hanging of 50 Spanish coast guard sailors. In his letter Lawes is clear that since coast guards had government commissions, unless strong evidence of piracy could be adduced, their commissions protected them as legal enterprises and they couldn't be punished. Unfortunately for the coast guard sailors Lawes “brought to a trial, the Comander [only] pretended he had a commission. . . to be a guard de la coast but it having been plainly proved that he had taken two English vessels who were going on their lawful occasions and noways near to or within the sight of any part of Hispaniola, the Judges found them all guilty of piracy except seven” (Governor Sir N. Lawes to the Council of Trade and Plantations, CSPC, May 18, 1722: Item 142, Vol. 33 (1722–1723), pp. 69–70).

One of the clearest ways for a coast guard to “plainly prove” it was pirating was to fly a pirate flag. It wasn't the only way. Foreign authorities sought to capture and prosecute coast guards that exhibited any clear pirating behavior. But since the Jolly Roger was a well-known emblem of piracy, carrying it was *prima facie* evidence one had stepped beyond the bounds of legitimate cruising into the realm of sea banditry. As the court declared at the trial of Bartholomew Roberts' crew, the accused had acted “under a Black Flag, flagrantly by that, denoting your selves common Robbers, Opposers and Violators of all Laws, Human and Divine” (*A Full and Exact Account, of the Tryal of all the Pyrates 1723*, p. 5).

Thus, compared to coast guards that operated near their government's coasts and used national flags—i.e., coast guards that didn't behave like pirates—those that flew pirate flags increased the likelihood they would be hunted and executed as pirates. For example, Governor Hart of St. Christopher sent a man-of-war “who is now cruising among the French and Spanish Islands of these practices, of the Spanish guarda de la costa's; who is resolv'd to bring in all such pirates, where he shall find a black flag.” Similarly, “the Dutch Governor of Carassow was fitting out a vessel with 200 men to go in pursute” of a coast guard that “hoists a black flag, and acts like a pirate” (Governor Hart to Mr. Poppo, CSPC, November 30, 1726: Item 360, Vol. 35 (1726–1727), pp. 179–180). To retain at least a veneer of legitimacy, coast guards couldn't sail under pirate colors.

Despite the Jolly Roger's higher cost for legitimate belligerents, it proved unable to secure the separating equilibrium pirates sought. Instead it generated a semi-separating equilibrium in which pirates used the pirate flag but some coast guards did as well. For example, one such coast guard, “when he finds any vessel he can overpower, hoists a black flag, and acts

¹⁰ Varese's (2006b) fascinating paper discusses the Mafia's participation in the creation of its Hollywood image—a manipulation of popular perception similar in many respects to pirates' manipulation of their image through 18th-century newspaper reporting, discussed in this paper.

¹¹ Another interesting similarity between pirate and Mafia signaling practices relates to their names. As Gambetta (1994) points out, with varying degrees of success, Mafiosi adopt colorful nicknames for themselves and even give attention to the way they name their criminal outfits. Pirates displayed similar behaviors. Several pirate captains had special nicknames, for instance, Blackbeard being the most famous, but also “Calico” Jack Rackam, “Black Bart” Roberts, and so on. Similarly, pirates named their vessels with particular, and memorable themes in mind. The names of nearly 20 percent of a sample of 44 early 18th-century pirate ships, for instance, refer to revenge (Rediker, 1987, p. 269). Unlike other pirate and Mafia signals, these naming signals are cheap and easily appropriated by fakers. Still, it seems reasonable to conclude that they must have provided some, at least temporary, benefit or else these organized criminals wouldn't have resorted to them.

like a pirate. But if he meets any ship of war, or others that are too strong for him, he then produces a Commission from the Governor of Porto Rico, as a Guarda de la Costa" (Governor Hart to Mr. Popple, CSPC, November 30, 1726: Item 360, Vol. 35 (1726–1727), pp. 179–180; see also, Petition of the Merchants of London, CSPC, May 20, 1726: Item 152, Vol. 35 (1726–1727), pp. 74–75).¹²

In the same way that, as Gambetta (1994) and Smith and Varese (2001) point out, the success of Mafia signals, such as pinstripe suits and dark sunglasses, encourages fakers to appropriate them, partly undermining these signals' effectiveness, so too did the pirate flag's effectiveness in facilitating easier merchantman surrender encourage some coast guards to appropriate the Jolly Roger, in effect faking pirate status. The primary factor reducing the cost of the Jolly Roger for some coast guards was a lower probability of capture. British resources were limited. Not all colonial governors had the same ability to send ships after pirate flag-hoisting coast guards. Further, some coast guards, because of better ships or more competent crews, could evade authorities more easily than others. Not all coast guards were equally susceptible to capture if they flew the Jolly Roger. The lower the chance a coast guard had of facing punishment for cruising under the pirate flag, the closer its cost of using the Jolly Roger was to pirates' cost of doing so. The inconsistencies and imperfection of maritime enforcement, which lowered the cost of flying the Jolly Roger sufficiently for some coast guard vessels to make doing so profitable, contributed to the semi-separating nature of the resulting signaling equilibrium.

Because some coast guards also used the pirate flag, merchant ships couldn't determine their attackers' identity with certainty. So, while the Jolly Roger was positively correlated with attackers' "fearsomeness" (i.e., their ability to annihilate resistors), it wasn't perfectly so. As a result, some merchantmen surely resisted pirate attack under the belief their attacker was a poseur. Despite its cleverness, the Jolly Roger couldn't eliminate pirates' cost of merchant ship resistance.

But neither was it totally ineffective. If it had been, neither pirates nor coast guards would have bothered to use it. Indeed, by all accounts the Jolly Roger worked extremely well in preventing violent conflict with merchantmen. As one pirate historian notes, "In the great majority of cases merchant ships surrendered without a fight when attacked by pirates" (Cordingly, 2006, p. 121). This suggests the number of pirate poseurs was modest, which explains how the Jolly Roger managed to remain "so effective" for pirates "that they hardly ever needed to kill" (Pringle, 1953, p. 113). For example, Captain Johnson describes a case in which two French cruisers chased Bart Roberts' crew, mistakenly believing Roberts' vessel to be a foreign merchant ship prohibited by French monopoly from trading in such waters. "[S]upposing him to be one of these prohibited Traders, [the cruisers] chased with all the Sail they could make, to come up with him; but their Hopes, which had brought them very nigh, too late deceived them, for on hoisting of *Jolly Roger*, (the Name they give their black Flag) their *French Hearts* failed, and they both surrendered without out any, or at least very little Resistance" (1726–1728, p. 226).

Most merchant crews responded to pirate attack in the way Benjamin Edwards' crew did when George Lowther's pirates assaulted them. "[F]earing the Consequence of too obstinate a Resistance against those lawless Fellows," they peacefully submitted to their pirate attackers (Johnson 1726–1728, p. 312). Pirate captain Ned Low simultaneously attacked several vessels and managed to take them all without spending so much as a bullet. "He threaten'd all with present Death who resisted, which stuck such a Terror to them, that they yielded themselves up a Prey to the Villains, without firing a Gun" (Johnson 1726–1728, p. 323). The Jolly Roger's success explains the surprising confidence one tiny pirate crew exhibited. Though they had only five crewmembers among them, they "sail'd away down the Coast, making them a black Flag, which they merrily said, would be as good as fifty Men more, i.e. would carry as much Terror" (Johnson 1726–1728, p. 371).¹³

3.3. Trademark Yer terror: overcoming pirate free riding, part I

Coast guards weren't the only mariners who threatened to undermine the Jolly Roger's effectiveness. Certain members of the pirate community threatened to as well. Not all pirate crews were equally strong or effective. Some had more crewmembers. Others had more firepower or better ships. Further, some pirate captains were more capable leaders than others. The "gentleman pirate," Major Stede Bonnet, had all he could do to figure out how to pirate at all. Bonnet was so clueless he actually purchased his first pirate ship (whereas proper pirates stole theirs) and paid his crewmembers fixed wages (whereas proper pirates were compensated in shares of booty).

A weaker, inept pirate crew could ruin the Jolly Roger's effectiveness for stronger, more able ones. If a merchantman happened to resist despite seeing the pirate flag, the weak crew might be forced to flee, or worse yet, be defeated. If this happened often enough, the Jolly Roger's toothy grin would cease to operate as a symbol to be feared and submitted to. Even stronger pirate crews would then confront resistance more often, resulting in the costs they devised the Jolly Roger to avoid.

Pirates' solution to this dilemma was simple: they customized their flags. The classic skull-and-bones on black pattern was but one of a large variety of crew-specific Jolly Rogers pirates used. Other Jolly Rogers featured hourglasses, full skeletons,

¹² Coast guards that flew the pirate flag may have had an incentive to slaughter the merchantmen they overtook to prevent witnesses from blowing their cover. If this were the case, pirates would have an additional reason to want to distinguish themselves from coast guards: to make sure their targets knew that if they surrendered their lives would be spared.

¹³ Consistent with my theory for why 18th-century pirates flew the Jolly Roger, modern-day pirates, who predominantly ply the waters off the Horn of Africa, fly no flag at all. Unlike their Caribbean predecessors, modern pirates face no problem in communicating their identity to targets. They have no need for a signal to distinguish their identity because, unlike in the 18th century, today, there are no other belligerents that merchant ships may be accosted by on the sea. If a vessel approaches with crewmembers pointing guns, the target can conclusively determine that that vessel is a pirate.

flexing arms, swords, bleeding hearts, and related symbols of strength, death, and destruction. A pirate crew discussed by Captain Johnson “let fly her Jack, Ensign and Pendant, in which was the Figure of a Man, with a Sword in his Hand, and an Hour-Glass before him, with a Death’s Head and Bones.” Another “had the Figure of a Skeleton in it, and a Man pourtray’d with a flaming Sword in his Hand, intimating a Defiance of Death itself” (Johnson 1726–1728, p. 68; 245). Pirate captain Francis Spriggs’ crew favored a “Jolly Roger, (for so they call their black Ensign)” that had “in the middle of . . . [it] a large white Skeleton, with a dart in one hand, striking a bleeding Heart, and in the other an Hour Glass” (*British Journal* August 22, 1724; see also, *Boston Gazette* March 21 to March 28, 1726; *New England Courant* July 22, 1723).

Some pirate crews took customizing their flags still further. Bart Roberts tailored his ship’s flag to send a pointed message to the governors of Barbados and Martinique who dared to send warships to bring the notorious pirate captain to justice. “Roberts was so enraged at the Attempts that had been made for taking him, by the Governors of *Barbadoes* and *Martinico*, that he ordered a new Jack to be made, which they ever after hoisted” (Johnson 1726–1728, p. 221). Thereafter this crew had “a black Silk Flag flying at their Mizen-Peek, and a Jack and Pendant of the same: The Flag had a Death’s Head on it, with an Hour-Glass in one Hand, and cross Bones in the other, a Dart by it, and underneath a Heart dropping three Drops of Blood—The Jack had a Man pourtray’d in it, with a flaming Sword in his Hand, and standing on two Skulls, subscribed *A.B.H.* and *A.M.H.* i.e. a *Barbadian’s* and a *Martinican’s* Head” (Johnson 1726–1728, p. 234; see also, 352).

Because they tended to share basic color schemes and themes, pirate flags were similar enough to signal “pirate,” but different enough to communicate the identities of the particular crews that sailed under them. This permitted stronger or more effective pirate crews to internalize the benefits of their strength and aptitude, preventing weaker and less able crews from free riding on their strength and undermining the Jolly Roger’s effectiveness. Eighteenth-century newspapers, which published pirate victims’ accounts, sometimes described the particular flag the crew they encountered sailed under, as well as its manpower and fire power, and even the disposition of the captain or other crewmembers (see, for instance, *Boston News-Letter*, May 28 to June 4, 1724; *New England Courant* July 22, 1723; *Boston Gazette* March 21 to March 28, 1726; *British Journal* August 22, 1724; Baer, 2007 I: 282). This helped merchantmen who confronted a particular Jolly Roger have an idea about the crew that sailed under it.

Weaker crews don’t seem to have attempted appropriating the particular flags of stronger ones. There’s a good reason for this. Even at its peak, in any year during piracy’s Golden Age (1716–1726), the pirate population was relatively small—about 2000 men. Further, according to Marcus Rediker, more than 70 percent of these pirates can be connected to only three pirate captains (1987, p. 267). Many of these rogues lived on and operated from a small number of land bases. The most important of these was the one Woodes Rogers went to squelch at New Providence in the Bahamas, which most pirates called home in the early 18th century. The pirate population was modestly sized and close knit. Thus a weak crew that tried to steal a stronger crew’s flag would have faced a strong likelihood of being discovered and punished by the stronger crew. Besides, at least in some cases there was a better, much safer, way of enjoying the benefit of a stronger, more effective pirate crew. If it could convince a stronger crew to allow it, a weaker crew might sail in consort with the stronger one. This is ultimately what Major Stede Bonnet’s pirate crew did, joining Blackbeard’s crew briefly as it plied North America’s Atlantic coast.

4. Walk the plank: the economics of pirate torture

Unfortunately for pirates, even after they boarded a prize that peacefully surrendered to the Jolly Roger, their job was far from finished. After taking control of their prey, pirates needed to locate the loot. The problem they faced in doing so was simple enough: victims weren’t keen to give it up.

Merchantmen readily submitted to their pirate attackers at the sight of the Jolly Roger. Per pirates’ surrender-or-die policy, they knew their fate if they didn’t: death. This policy worked because pirates could easily observe resistance. It’s hard to miss gunfire and canon shot coming in one’s direction from a target, or to miss the fact that the target is running after it has been commanded to heave to. But pirates’ surrender-or-die policy wasn’t effective in preventing forms of resistance that were typically much harder to observe, such as hiding valuables, or throwing them overboard.

For example, the cook aboard one of Roberts’ prizes attempted to stash away his “Rings and Buckles” so that Roberts’ men wouldn’t take them (*A Full and Exact Account, of the Tryal of all the Pyrates* 1723, p. 14). Other passengers destroyed booty to prevent pirates from taking it. A merchant captain whom Edward Low attacked “hung eleven thousand moydores of gold in a bag out of the cabbin window, and as soon as he was taken by the said Lowe, cutt the rope and lett them drop into the sea” (Governor Hart to the Council of Trade and Plantations, CSPC, March 25, 1724: Item 102, Vol. 34 (1724–1725), pp. 71–73).

Unlike gunfire, booming canons, or running, it’s much harder to observe a captive squirreling away his valuables or throwing booty overboard. This posed a problem for pirates. Uncooperative captives who engaged in such behaviors reduced pirates’ haul.

To prevent captives from engaging in behaviors that were harder to observe but equally damaging to their profit, pirates sought to develop a reputation as men who would unleash unspeakable savagery on those who crossed them. To successfully create this reputation pirates needed to achieve three closely related goals. First, they needed to establish their image as men who could easily be pushed over the edge. Second, they needed to establish a reputation for going berserk when this occurred. Finally, they needed to advertise their reputation.

Pirates achieved their first goal by behaving like men on the brink of sanity in front of those they overtook. One way they did this was by fostering a “devil-may-care” image among the legitimate persons they interacted with. Pirates loudly proclaimed to those they overwhelmed that they feared neither death nor the law. As the *British Journal* reported, the

members of one pirate crew declared to their captives that “They have no Thoughts of ever being taken, but swear, with the most dire Imprecations, that if ever they should find themselves over-power’d, they would immediately blow their Ship up, rather than do *Jolly Roger* the Disgrace to be struck, or suffer themselves, to be hang’d like Dogs” (*British Journal* August 22, 1724). As the *Boston News-Letter* reported, according to another pirate prisoner, his captors went about “often saying they would not go to Hope Point in the River of Thames to be hung up in Gibbets a Sundrying. . . for if it should chance they should be Attacked by any Superiour Power or Force, which they could not master, they would immediately put fire with one of their Pistols to their Powder, and go all merrily to Hell together!” (*Boston News-Letter* August 15 to August 22, 1720).

Pirates projected this attitude to such an extent that it became something of a sea-dog slogan. As Bartholomew Roberts famously boasted, “a merry Life and a short one, *shall be my Motto*” (Johnson 1726–1728, p. 244). The pirate motto was a useful way for pirates to signal they had high discount rates. This was a helpful tactic since, if potential pirate victims (or authorities) viewed pirates as reckless with their own lives, they would be less willing to risk raising pirates’ ire.

This helps shed light on pirate comments, like the remark one of William Snelgrave’s pirate captors made, that “as to his part, he hoped he should be sent to Hell one of these days by a Cannon Ball” (Snelgrave, 1734, p. 210). Even the melodramatics of Blackbeard’s last stand against Lieutenant Robert Maynard, reported in the *Boston News-Letter*, helped solidify pirates’ image as men on the edge, devilishly hoping for someone to push them over. As the newspaper described it, before engaging Maynard, “Teach called for a Glass of Wine, and swore Damnation to himself if he either took or gave Quarters” (*Boston News-Letter* February 23 to March 2, 1719).

Pirates further cultivated their image as madmen who could snap and be propelled into a violent rage at the slightest transgression by destroying cargo, throwing parcels of goods overboard, and torching ships that weren’t up to their piratical standards after overtaking prizes. Consider how a victim of Bartholomew Roberts’ crew described his predators’ antics in the *Boston News-Letter*. According to the victim, Roberts’ men proceeded “with madness and rage to tare up the Hatches” and then “enter[ed] the Hould like a Parcel of Furies, where with Axes, Cutlashes, &c they cut, tore, and broke open Trunks, Boxes, Cases, and Bales, and when any of the Goods came upon Deck which they did not like to carry with them aboard their Ship. . . they threw them over board into the Sea. . . There was nothing heard among the Pirates all the while but Cursing, Swearing, Damning, and Blaspheming to the greatest degree imaginable” (*Boston News-Letter* August 15 to August 22, 1720).¹⁴

Richard Hawkins, whom pirate captain Francis Spriggs victimized, described a similar scene of madness about his encounter in the *British Journal*, noting “every Thing that please them not they threw over board. . . every individual Thing they destroy’d; broke all my Windows, knock’d down the Cabbin. . . and then deliver’d me my Ship in a despicable Condition” (*British Journal* August 8, 1724). One pirate victim’s account, published in the *Boston News-Letter*, spoke specifically to the pirates’ apparent godlessness and confirmed the popular perception that pirates were “in the Possession of the Devil” and “laughing at the very thunders of God” (*An Account of the Behaviour and Last Dying Speeches of the Six Pirates 1704*; Colman, 1726, p. 22). “In ravaging the Vessel,” this victim reported, “they met with two or three Bibles, at the sight whereof some started and said, They had nothing to do with them; or with God, nor any thing Above” (*Boston News-Letter* August 4 to August 11, 1718). Those who witnessed such behavior or read about it in newspapers were terrified to make any moves that might unleash the pirates’ devilish appetites. Pirate “madness” had precisely the effect pirates desired.

Pirates achieved their second goal—establishing a reputation for going berserk when they were pushed over the edge by prisoners hiding or destroying booty—by responding to such behavior in the most brutal way they could: with heinous torture. This is the primary reason pirates spent so much time, as one court remarked, “making their Hellish Inventions for unheard of Barbarities” (*Tryals of Sixteen Persons for Piracy* 1726, p. 14).¹⁵

There were two types of pirate torture that affected pirates’ reputation. The first, “torture-for-information,” contributed to pirates’ reputation only indirectly. As its name suggests, torture-for-information aimed at extracting information about the location of hidden valuables from prisoners. If pirates suspected a prisoner was holding back valuable loot, they would torture him until he figuratively or literally spilled his guts—whichever came first. As I discuss below, torture-for-information’s helpful effect on pirates’ reputation was a beneficial by-product, or side effect, of torture pirates used to extract information from stubborn victims.

An important and distinguishing feature of torture-for-information was its potential immediate profitability. Like slaughtering resistant merchantmen, torturing captives who hid or destroyed valuables could be costly to pirates. A prisoner who realized torture was forthcoming might fight back, injuring, or even killing, his torturer. Perhaps more important, torture took time—especially the slow and painful varieties pirates were partial to described below. Time pirates spent torturing captives was time they couldn’t spend searching for their next prize. Despite these costs, because torture-for-information enabled pirates to uncover hidden booty—booty potentially valuable enough to more than offset torture’s costs—torture-for-information could yield pirates immediate net benefits.

The second kind of pirate torture, “torture-for-reputation,” contributed to pirates’ reputation directly and, as its name suggests, was administered for this purpose. Unlike torture-for-information, torture-for-reputation always generated imme-

¹⁴ In the same way that 18th-century pirates don’t seem to have been able to fence ships, it’s likely they had difficulty fencing bulky cargo in some cases as well. In other cases pirates simply didn’t have room on their ships for additional cargo. In such cases, burning vessels, throwing cargo overboard, and so on was therefore not as costly a form of cultivating an image as “hair triggers” as it seems.

¹⁵ Although pirates chiefly used torture for profit-serving purposes, as in any population, in the pirate population, too, there were some psychopaths who inflicted harm on others for entertainment.

diate net costs. Torturing a prisoner whom pirates suspected of destroying loot involved the costs of torture discussed above but couldn't create the offsetting benefits that torture-for-information could: destroyed booty was unrecoverable. This presented a problem for pirates because, to establish the reputation they sought, pirates needed to brutally punish *all* uncooperative captive behaviors relating to loot, including those that destroyed booty. Thus, similar to pirates' policy to massacre merchantmen that resisted the Jolly Roger, pirates confronted a credible commitment problem when it came to torture-for-reputation.

As in the case of the Jolly Roger, here too, the theory of reputation building explains how pirates were able to overcome this problem. Although torture-for-reputation involved more immediate costs than benefits, by contributing to pirates' reputation for brutalizing uncooperative captives, it could dissuade future captives from revenue-eroding behaviors, enhancing pirates' profit. Torturing a victim whom pirates suspected of destroying booty was a piratical investment that prevented future captives from doing so. In the same way that pirates' larger long-run payoff of developing a reputation for slaughtering resistant merchantmen enabled them to credibly commit to this policy despite the immediate net costs that doing so created, pirates' larger long-run payoff of developing a reputation for brutalizing prisoners who destroyed booty enabled them to credibly commit to torturing resistant captives even when this created immediate net costs.

Credibly committing *not* to torture compliant prisoners was more straightforward. As noted above, torture always yielded immediate net costs when pirates didn't suspect a prisoner of hiding anything. So it wasn't in pirates' short-run interest to torture compliant captives. Further, wantonly brutalizing prisoners would render torture ineffective for pirates' purpose, undermining the reputation they sought to build rather than contributing to it. If pirates developed a reputation for assured torture, and thus captives expected to be savaged whether they delivered up their valuables or not, captives wouldn't find hiding or destroying loot costly. So it wasn't in pirates' long-run interest to torture compliant captives either. The theory of reputation building therefore predicts that pirates would show mercy to compliant captives, reserving barbarity for those they suspected of hiding or destroying booty.

Pirates' use of torture is consistent with this prediction. Far from abusing compliant captives, pirates sometimes showed kindness toward them. William Snelgrave's pirate captors were so pleased with him that by the end of Snelgrave's captivity they offered to gift him a ship loaded with valuable cargo (Snelgrave, 1734, pp. 220–228). Merchant ship captain Knott similarly enjoyed pirate "gifts" following his crew's capture in 1720. The pirates "took what they wanted out of the merchantman and gave him money and goods of a very considerable value for the same" (CSPC, May 31, 1720: Item 33 i, vol. 32 (1720–1721), pp. 18–19). Rather than brutalizing prisoners indiscriminately, pirates reserved torture for resistant captives as the theory of reputation building predicts. As pirate captain Sam Bellamy put it, "*I scorn to do any one a Mischief, when it is not for my Advantage*" (Johnson 1726–1728, p. 587).¹⁶

As discussed above, pirate "*Mischief*" was "*for [pirates'] Advantage*" when it yielded information about the whereabouts of hidden booty (torture-for-information) or contributed to a reputation for punishing uncooperative captives who destroyed booty, preventing costly captive behaviors on future ships (torture-for-reputation). For example, in response to the merchant captain discussed above who threw a bag of gold into the ocean to prevent Edward Low's pirate crew from taking it, "Low cutt off the said Masters lipps and broyl'd them before his face, and afterwards murder'd the whole crew being thirty two persons" (Governor Hart to the Council of Trade and Plantations, CSPC, March 25, 1724: Item 102, Vol. 34 (1724–1725), pp. 71–73). In a newspaper article in the *American Weekly Mercury*, a witness described how Low's crew treated other resistant prisoners: "They cut and whiped some and others they burnt with Matches between their Fingers to the bone to make them confess where their Money was." Apparently it worked. Low's pirates "took to the value of a Thousand Pistoles from Passengers and others," the article noted (*American Weekly Mercury* June 13, 1723).¹⁷

This response to passive prisoner resistance wasn't specific to Low. Pirate captain Charles Vane "bound [one captive's] hands and feet and ty'd (upon his back) down to the bowspritt with matches to his eyes burning and a pistol loaded with the muzzle into his mouth, thereby to oblige him to confess what money was on board" (Deposition of Edward North, CSPC, May 22, 1718: Item 551 ii, Vol. 30 (1717–1718), p. 263). Pirate captain George Lowther also resorted to torture to reveal the location of hidden valuables, "placing lighted matches between the fingers of" his prisoners "to make them discover where the gold was" (Deposition of John Wickstead, CSPC: Item 754 iv, Vol. 33 (1722–1723), p. 365).

The buccaneers had a particular skill for inflicting pain on prisoners who refused to surrender booty. Their practice of "woolding" illustrates this well. Alexander Exquemelin vividly describes this torture, which the buccaneers administered to one recalcitrant prisoner: "they strappado'd him until both his arms were entirely dislocated, then knotted the cord so tight round the forehead that his eyes bulged out, big as eggs. Since he still would not admit where the coffer was, they hung him up by his male parts, while one struck him, another sliced off his nose, yet another an ear, and another scorched him with fire" (1678, p. 200; see, also, John Style to 'the Principal Secretary of State, Whitehall,' CSPC, January 4, 1670: Item 138, Vol. 7 (1669–1674), pp. 49–51).

¹⁶ Of course, pirates could, and did in some cases, wrongly torture on suspicion of a captive having hidden or destroyed valuables. In one case, for instance, an unfortunate woman whom several buccaneers captured "was by some set bare upon a baking stone and roasted, because she did not confess of money which she had only in their conceit" (John Style to 'the Principal Secretary of State, Whitehall,' CSPC, January 4, 1670, Item 138, Vol. 7 (1669–1674), pp. 49–51). But pirates couldn't afford to make this mistake too often lest torture's ability to improve their profit be destroyed.

¹⁷ Reprinted in Dow and Edmonds (1996, p. 206).

To another pitiful fellow who refused to divulge the whereabouts of booty, “they tied long cords to his thumbs and his big toes and spreadeagled him to four stakes. Then four of them came and beat on the cords with their sticks, making his body jerk and shudder and stretching his sinews. Still not satisfied, they put a stone weighing at least two hundred-weight on his loins and lit a fire of palm leaves under him, burning his face and setting his hair alight” (Exquemelin, 1678, p. 150). The French buccaneer Francois L’Ollonais added a special flair to his torture of several stubborn Spanish prisoners who refused to lead him to their hiding compatriots and money. L’Ollonais, “being possessed of a devil’s fury, ripped open one of the prisoners with his cutlass, tore the living heart out of his body, gnawed at it, and then hurled it in the face of one of the others” (Exquemelin, 1678, p. 107).

Eighteenth-century pirates developed their own special tortures. Consider “the sweat.” “The Manner of a Sweat,” one pirate prisoner explained in the pages of the *British Journal*, “is thus: Between the Decks they stick Candles round the Mizzen-Mast, and about twenty five Men surround it with Points of Swords, Penknives, Compasses, Forks, &c. in each of their Hands: *Culprit* enters the Circle; the Violin plays a merry Jig, and he must run for about ten Minutes, while each Man runs his Instrument into his Posteriors” (*British Journal* August 8, 1724).

Understanding pirate torture as a rationally-chosen means of recovering hidden booty and developing a reputation to prevent booty destruction provides a rather different interpretation to Captain Johnson’s comment that “In the Commonwealth of Pyrates, he who goes the greatest Length of Wickedness, is looked upon with a certain kind of Envy amongst them” (Johnson 1726–1728, p. 85; see also, 121). Because the reputation this “wickedness” created contributed to a piratical brand name, heinous pirate torture reduced costly captive behaviors, enhancing pirates’ revenue.

Pirates achieved the final goal required to establish their reputation—communicating their reputation to others—by relying on word of mouth and newspaper coverage to publicize this status. For word of mouth to be effective, pirates required survivors who could relay the consequences of resisting their demands to others. Thus, although in some cases it was “good Policy” to sink a captured vessel after relieving her of plunder “to prevent her returning to tell Tales at Home,” pirates often released compliant crewmembers to return home where they could communicate what they witnessed (Johnson 1726–1728, p. 298). Pirate captain John Phillips established a reputation as a “bloody, merciless ruffian” with the “diabolical disposition of an infernal fiend” this way. When Phillips captured John Fillmore, Fillmore was “dread to fall into [Phillips’] hands,” as he later recorded, “having heard of the cruelties committed by that execrable pirate” (Moseley, 1790, p. 355; 358; 354).

Pirates similarly relied on word of mouth to communicate their civility toward captives who complied with their demands. This helps explain why Philip Ashton’s pirate captors informed Ashton “that it was one of their Articles Not to Draw Blood, or take away the Life of any Man, after they had given him Quarter” (Barnard, 1715, p. 7). As noted above, to make their point, pirates sometimes even made gifts to their compliant victims, a fact they surely hoped their captives would tell others when they were released. And many of their captives did just that. According to Virginia governor Alexander Spotswood, “it is a common practice among the Pirats to make presents to Masters of Ships and Seamen of such Commodities they have less use of, in lieu of what they take away” (Spotswood May 20, 1720 [1882–1885] II: 340; see also, Johnson 1726–1728, p. 597). Since Spotswood was never himself taken by pirates, he could have only arrived at this conclusion after hearing about pirate generosity from sailors pirates had taken.

Perhaps the most effective means of spreading pirates’ reputation was through newspaper reporting. In addition to relating information about pirate movements, captures, and facts about crew composition, newspapers also related information from pirate victims and released pirate prisoners. Many of the reputation-building incidents described above—from pirates’ aversion to Blackbeard’s toast to death—were published in newspapers for the public to consume.

So were the dire consequences of hiding or destroying booty and the sometimes quite amiable consequences of complying with pirate demands. The fact that pirates “barbarously used [merchant captain] Mac Clenan for hiding his Money” was published in the news (*Boston News-Letter* August 11 to August 18, 1718; see also, *Boston News-Letter* June 24 to July 1, 1717). So too was the fact that pirate captain James Feiff “was very Civil” toward a compliant crew “in not abusing any of their men by rude treatment” (*Boston News-Letter* April 7 to April 14, 1718). The *Boston News-Letter* also duly noted pirate captain Henry Jennings’ kindness toward compliant captives. According to merchant captain Stone’s experience, published in the paper, Jennings’ crew “took. . . from him but 20 Gallons of Rum, for which they gave him some Shoats more than the value, [and] treated him civilly” (*Boston News-Letter* October 29 to November 5, 1716). Similarly, the news published pirate captain John Martel’s mercy toward cooperative prisoners. Toward one of his victims, the paper reported, Martel “was so civil as to make an Exchange in giving Him his Pyrate Sloop, and otherwise was very kind to him. . . He also gave him a New-London Sloop to come home in” (*Boston News-Letter* November 5 to November 12, 1716).

Establishing a reputation for brutalizing captives suspected of hiding or destroying booty supported pirates’ reputation for mercilessly dealing with resistant merchantmen and vice versa. By murdering resistant merchantmen and brutalizing prisoners whom pirates suspected of hiding or destroying booty, pirates strengthened their reputation for responding savagely to any kind of uncooperative behavior—even the kind that was difficult to observe. In this way pirates’ reputation for punishing merchantmen that refused to surrender to them, and their closely related reputation for punishing prisoners who hid or destroyed booty, mutually reinforced one another.

4.1. Blackbeard and by-products: overcoming pirate free riding, part II

Similar to the Jolly Roger, the reputational benefits of pirate torture also created a potential free-riding problem within the pirate community. If weaker crews could free ride on the reputations built by stronger ones, stronger crews’ incentive to

torture, and with it, the reputational benefits of such torture, could be destroyed. Two factors militated against this outcome. First, in the same way that, as Section 3 discussed, different pirate crews had their own pirate flags, helping stronger crews internalize the benefit of their strength, different pirate crews—and in particular pirate captains—had their own reputations, which helped them internalize the benefit of activities that contributed to them.

Edward Teach, the “notorious pyrate better known by the name of Blackbeard,” is the best example of this (Petition of the Council and Assembly of the Settlements in South Carolina to the King, CSPC, February 3, 1720: Item 541, Vol. 31 (1719–1720), pp. 332–343). By creating a horrible and intimidating physical appearance, Teach cut an image so terrifying that it created a bloodcurdling reputation. Over time, this image evolved into something of a Blackbeard brand name. As Captain Johnson points out, “his Beard. . . did not a little contribute towards making his Name so terrible” (1726–1728, p. 84). Johnson describes the effect Blackbeard achieved with his appearance as follows:

Captain *Teach*, assumed the Cognomen of *Black-beard*, from that large Quantity of Hair, which, like a frightful Meteor, covered his whole Face, and frightened *America* more than any Comet that has appeared there in a long Time. This Beard was black, which he suffered to grow of an extravagant Length; as to Breadth, it came up to his Eyes; he was accustomed to twist it with Ribbons, in small Tails. . . and then turn them about his Ears: three Brace of Pistols, hanging in Holsters like Bandaliers; and stuck lighted Matches under his Hat, which appearing on each Side of his Face, his Eyes naturally looking fierce and wild, made him altogether such a Figure, that Imagination cannot form an Idea of a Fury, from Hell, to look more frightful (1726–1728, pp. 84–85).

“There is no doubt,” one Blackbeard historian notes, “that Blackbeard was conscious of the public image he had created” and worked diligently to maintain it (Lee, 1974, p. 22). As discussed above, in newspaper coverage of pirates’ activities “Something about their temper might be included to help persons that confront them in the future,” which, together with word of mouth, helped spread such captain- or crew-specific reputations (Baer, 2007 I, p. 282). Specific temperaments were attached to specific pirate crews similar to the way specific flags were. This helped particular pirate crews internalize the benefit of their reputational investments.

For Blackbeard this certainly seems to have worked. According to historian Angus Konstam, who has investigated Blackbeard’s life and piratical career extensively, until Blackbeard’s final battle with the lieutenant of HMS *Pearl*, Robert Maynard, who took the bearded icon’s life, the world’s most notorious and fearsome pirate hadn’t so much as killed a single man (2006, p. 157). His reputation meant he didn’t need to.

The second factor that helped ameliorate the destructive effect of reputational free riding is the fact that torture-for-information, which pirates engaged in for extra-reputational purposes, produced reputation-enhancing effects as a side effect, or by product. By torturing captives who withheld information about the location of hidden valuables, pirates not only extracted information that immediately increased their revenue. They also contributed indirectly to their reputation as men who would respond with violent rage toward any uncooperative prisoner behavior. This supported the reputation pirates sought when they tortured specifically for this purpose, as well as the reputation they sought when they murdered resistant merchantmen. Critically, the direct benefit of torture-for-information—recovered booty—was enjoyed exclusively, and thus fully internalized, by the torturing pirate crew. Thus, even in the face of potential reputational free riding, pirates retained an incentive to torture-for-information, which contributed to their reputation indirectly as well.

5. Concluding remarks

My analysis of the economics of infamous pirates practices leads to several conclusions. First, like both legitimate persons and other organized criminals, pirates pursued profit in a world of asymmetric information. Merchantmen had difficulty observing the kind of belligerent that was attacking them, which might be pirate but also might not. This asymmetry created a problem for pirates who relied on their outlaw identity to shape targets’ incentive to resist them through a surrender-or-die policy. To deal with this problem, pirates developed a signaling device—their infamous flag, the Jolly Roger. Also like for other actors, reputation was crucial to pirates’ profit maximization. Merchant sailors were tempted to hide or destroy their valuables, leaving pirates with less to show for their efforts. To prevent such behaviors from eroding their profit, pirates worked hard to develop a reputation for punishing uncooperative captives and rewarding cooperative ones, increasing their haul.

These lessons from studying the economics of infamous pirate practices echo and strengthen our understanding of lawful firm behavior and, in particular, the industrial organization of legitimate industry.¹⁸ The particulars are of course quite different. But lawful firms face information problems similar to those that pirates faced. It should not be surprising then that these lawful firms’ fundamental practices are similar to the ones that pirates used. For example, pirate signaling as a way to distinguish themselves from “competitors” who threatened to hurt pirates’ profit has its parallel among legitimate firms that seek to make sure that a few “bad apples” in their industries don’t spoil things for everyone. To distinguish themselves from such spoilers, legitimate firms make costly up-front investments in their buildings, signage, and so on—investments that signal the reputation of the firms that undertake them since they’re too costly for fly-by-night firms to imitate (see, for instance, Williamson, 1996).

¹⁸ For an economic analysis of the divergent industrial organizations of Caribbean pirates and the Sicilian Mafia, see Leeson and Rogers (2010).

Lawful firms' costly investments of this sort signal their credibility to otherwise under-informed consumers. These investments are costly in the short run but profitable from a longer-run perspective. Such investment behavior mirrors pirates' investment in their policy of death for resisters and mercy for cooperators, which was costly to employ in the short run but, by contributing to a useful reputation, proved important to pirate profit-making in the longer run.

Pirate crews' ability to preserve the value of their individualized reputations also has modern, legitimate industry analogs. The small number of pirate crews operating in the Caribbean and close-knit nature of the pirate community facilitated monitoring and the credibility of the threat of punishment for weaker pirate crews that tried to free ride on stronger ones. These features of the piracy industry—smallness and social closeness—are also important for inter-firm cooperation in legitimate industries. For example, cartels in the legitimate business world are often found in industries with relatively few firms that exhibit important homogeneities (see, for instance, Fraas and Greer, 1977; Levenstein and Suslow, 2006).

These features of legitimate industrial organization may also be important to lawful firms in ensuring that competitors don't copy important aspects of their brand name, logos, and so on. Although, unlike for pirates, the government enforces legitimate firm trademarks, litigation is costly and slow. Thus the ability to monitor and punish competitors who violate such rules informally, for example through industry-wide boycott or similar measures, which pirates enjoyed, is important even in lawful industries.

Second, my analysis highlights the fact that organized criminals in general, and pirates in particular, are public relations-savvy. To spread and strengthen the reputations they build, organized criminals rely on word of mouth and cleverly capitalize on mass media. Pirates, for example, demonstrated an ability to control or "spin" popular perception of themselves by strategically engaging in certain behaviors in front of others and releasing captives who promoted the image pirates sought. By relaying stories about pirates directly to one another through word of mouth and indirectly to each other through newspaper reporting, pirate captives and early 18th-century mass media unwittingly contributed to pirates' reputation, facilitating pirates' ability to avoid profit-eating costs.

Third, my analysis points to the importance of shared experience as a mechanism organized criminals use to coordinate on specific signals (such as flags) and the symbolism attached to these signals (such as skulls and bones), to communicate their identity to prey where that identity is otherwise difficult to observe. Common cultural, occupational, or other backgrounds within a particular criminal population provide useful focal points for signaling behavior. To the extent that important elements of these backgrounds are widely recognized and understood by the legitimate persons that criminals prey on—such as Mafiosi stylings, publicized and partially created by Hollywood, or skulls and bones, well-known as an emblem of death to the maritime community pirates preyed on—this usefulness is further strengthened.

Finally, this paper highlights that pirates' behavior has a rational choice explanation at its foundation. Economists, and even many non-economists, accept this proposition about criminals in general. However, when it comes to pirates, the rational choice foundation underlying observed behavior is easily forgotten or ignored. In large part this is because pirate practices are often entertaining, outlandish, and, owing to their popular treatment, even appear mysterious. In reality, however, the colorful features of pirate practice derive from the unique context that early 18th-century pirates operated in rather than any difference in, or dearth of, pirate rationality or self-interest. Pirates' infamous practices were rationally chosen responses to the conditions they confronted in their pursuit of profit and can be understood using insights from basic economic theory.

References

- A Full and Exact Account, of the Tryal of all the Pyrates, Lately Taken by Captain Ogle, 1723 [2007]. London: J. Roberts. In: Baer, J.H. (Ed.), *British Piracy in the Golden Age: History and Interpretation, 1660–1730*, vol. 3. Pickering and Chatto, London, 67–166.
- American Weekly Mercury, June 13, 1723.
- An Account of the Behaviour and Last Dying Speeches of the Six Pirates, 1704 [2007]. Boston: Printed for Nicholas Boone. In: Baer, J.H. (Ed.), *British Piracy in the Golden Age: History and Interpretation, 1660–1730*, vol. 4. Pickering and Chatto, London, 91–92.
- An Act for the More Effectual Suppressing of Piracy, 1721. 8 Geo. 1, c. 24.
- Anderson, A., 1979. *The Business of Organized Crime: A Cosa Nostra Family*. The Hoover Institution, Stanford.
- Arlacchi, P., 1986. *Mafia Business: The Mafia Ethic and the Spirit of Capitalism*. Verso, London.
- Baer, J.H., 2007. *British Piracy in the Golden Age: History and Interpretation, 1660–1730* 4 vols. Pickering and Chatto, London.
- Barnard, J., 1715. *Ashton's Memorial*. Printed for Samuel Garrish, Boston.
- Becker, G., 1968. Crime and punishment: an economic approach. *Journal of Political Economy* 76, 675–700.
- Boston Gazette, various issues.
- Boston News-Letter, various issues.
- British Journal, various issues.
- Calendar of State Papers, Colonial Series, America and West Indies, 1574–1739, CD-ROM. In: Ordahl Kupperman, K., Appleby, J.C., Banton M. (Consultant Eds.). Routledge, Published in Association with the Public Record Office, London.
- Chang, J.-J., Lu, H.-C., Chen, M., 2005. Organized crime or individual crime? Endogenous size of a criminal organization and the optimal law enforcement. *Economic Inquiry* 43, 661–675.
- Colman, B., 1726. *It is a Fearful Thing to Fall into the Hands of a Living God: A Sermon Preached to Some Miserable Pirates*. John Phillips and Thomas Hancock, Boston.
- Cordingly, D., 2006. *Under the Black Flag*. Random House, New York.
- Dick, A.R., 1995. When does organized crime pay? A transaction cost analysis. *International Review of Law and Economics* 15, 25–45.
- Dow, G.F., Edmonds, J.H., 1996. *The Pirates of the New England Coast 1630–1730*. Dover, New York.
- Exquemelin, A.O., 1678 [2000]. *The Buccaneers of America*. Brown, A. (Trans.). Dover, Mineola.
- Florentini, G., Peltzman, S. (Eds.), 1995. *The Economics of Organized Crime*. Cambridge University Press, Cambridge, UK.
- Fraas, A.G., Greer, D.F., 1977. Market structure and price collusion: an empirical analysis. *Journal of Industrial Economics* 26, 21–44.
- Furbank, P.N., Owens, W.R., 1988. *The Canonisation of Daniel Defoe*. Yale University Press, New Haven.

- Gambetta, D., 1993. *The Sicilian Mafia: The Business of Private Protection*. Harvard University Press, Cambridge.
- Gambetta, D., 1994. Inscrutable markets. *Rationality and Society* 6, 353–368.
- Garoupa, N., 2000. The economics of organized crime and optimal law enforcement. *Economic Inquiry* 38, 278–288.
- Gosse, P., 1946. *The History of Piracy*. Tudor Publishing Company, New York.
- Grey, C., 1971. *Pirates of the Eastern Seas*. Kennikat Press, London.
- Jankowski, M.S., 1991. *Islands in the Streets: Gangs and American Urban Society*. University of California Press, Berkeley.
- Jennings, W.P., 1984. A note on the economics of organized crime. *Eastern Economic Journal* 10, 315–321.
- Johnson, C., 1726–1728 [1999]. In: Schonhorn, M. (Ed.), *A General History of the Pyrates*. Dover, New York.
- Konrad, K.A., Skaperdas, S., 1998. Extortion. *Economica* 65, 461–477.
- Konstam, A., 2007. *Scourge of the Seas: Buccaneers, Pirates and Privateers*. Osprey, New York.
- Konstam, A., 2006. *Blackbeard: America's Most Notorious Pirate*. John Wiley and Sons, Hoboken.
- Konstam, A., 2002. *The History of Pirates*. The Lyons Press, Guilford.
- Kreps, D.M., Wilson, R., 1982. Reputation and imperfect information. *Journal of Economic Theory* 27, 253–279.
- Kreps, D.M., Milgrom, P., Roberts, J., Wilson, R., 1982. Rational cooperation in the finitely repeated prisoners' dilemma. *Journal of Economic Theory* 27, 245–252.
- Lee, R.E., 1974. *Blackbeard the Pirate: A Reappraisal of His Life and Times*. John F. Blair, Winston-Salem.
- Leeson, P.T., 2010a. Rationality, pirates, and the law: a retrospective. *American University Law Review* 59, 1219–1230.
- Leeson, P.T., 2010b. Rational choice, round robin, and rebellion: an institutional solution to the problems of revolution. *Journal of Economic Behavior and Organization* 73, 297–307.
- Leeson, P.T., 2010c. Opportunism and organization under the black flag. *Organizational Dynamics* 40.
- Leeson, P.T., 2009a. The calculus of piratical consent: the myth of the myth of social contract. *Public Choice* 139, 443–459.
- Leeson, P.T., 2009b. The invisible hook: the law and economics of pirate tolerance. *NYU Journal of Law and Liberty* 4, 139–171.
- Leeson, P.T., 2007. An-arrgh-chy: the law and economics of pirate organization. *Journal of Political Economy* 115, 1049–1094.
- Leeson, P.T., Rogers, D.B., 2010. *Organizing Crime*. Mimeo.
- Leeson, P.T., Skarbek, D.B., 2010. Criminal constitutions. *Global Crime* 11, 279–298.
- Levenstein, M.C., Suslow, V.Y., 2006. What determines cartel success? *Journal of Economic Perspectives* 44, 43–95.
- Levitt, S.D., Venkatesh, S.A., 2000. An economic analysis of a drug-selling gang's finances. *Quarterly Journal of Economics* 115, 755–789.
- Milgrom, P., Roberts, J., 1982. Predation, reputation, and entry deterrence. *Journal of Economic Theory* 27, 280–312.
- Moseley, I., 1790 [1996]. A narration of the captivity of John Fillmore and his escape from the pirates. Bennington: Haswell and Russell. In: Stephens, J.R. (Ed.), *Captured by Pirates: 22 Firsthand Accounts of Murder and Mayhem on the High Seas*. Fern Canyon, Cambria, 351–369.
- New England Courant, July 22, 1723.
- Pringle, P., 1953. *Jolly Roger: The Story of the Great Age of Piracy*. W.W. Norton, New York.
- Rankin, H.F., 1969. *The Golden Age of Piracy*. Colonial Williamsburg, Williamsburg.
- Rediker, M., 2004. *Villains of All Nations: Atlantic Pirates in the Golden Age*. Beacon, Boston.
- Rediker, M., 1987. *Between the Devil and the Deep Blue Sea: Merchant Seamen, Pirates and the Anglo-American Maritime World, 1700–1750*. Cambridge University Press, Cambridge, UK.
- Reuter, P., 1987. *Racketeering in Legitimate Industries: A Study in the Economics of Intimidation*. The RAND Corporation, Santa Monica.
- Reuter, P., 1983. *Disorganized Crime: The Economics of the Visible Hand*. MIT Press, Cambridge.
- Rogozinski, J., 2000. *Honor Among Thieves: Captain Kidd, Henry Every, and the Pirate Democracy in the Indian Ocean*. Stackpole Books, Mechanicsburg.
- Selten, R., 1978. The chain store paradox. *Theory and Decision* 9, 127–159.
- Skaperdas, S., 2001. The political economy of organized crime: providing protection when the state does not. *Economics of Governance* 2, 173–202.
- Skarbek, D.B., 2010. Putting the 'con' into constitutions: the economics of prison gangs. *Journal of Law, Economics and Organization* 26, 183–211.
- Smith, A., Varese, F., 2001. Payment, protection, and punishment: the role of information and reputation in the mafia. *Rationality and Society* 13, 349–393.
- Snelgrave, W., 1734 [1971]. *A New Account of some Parts of Guinea, and the Slave Trade*. F. Cass, London.
- Spotswood, A., 1882–1885. *The Official Letters of Alexander Spotswood*, 2 vols. Virginia Historical Society, Richmond.
- The Arraignment, Tryal, and Condemnation, of Capt. John Quelch, 1704 [2007]. London: Ben. Bragg. In: Baer, J.H. (Ed.), *British Piracy in the Golden Age: History and Interpretation, 1660–1730*, vol. 2. Pickering and Chatto, London, 257–288.
- The Trials of Eight Persons Indited for Piracy, 1718 [2007]. Boston: John Edwards. In: Baer, J.H. (Ed.), *British Piracy in the Golden Age: History and Interpretation, 1660–1730*, vol. 2. Pickering and Chatto, London, 289–320.
- The Tryals of Major Stede Bonnet, 1719 [2007]. London: Benj. Cowse. In: Baer, J.H. (Ed.), *British Piracy in the Golden Age: History and Interpretation, 1660–1730*, vol. 2. Pickering and Chatto, London, 321–380.
- The Tryals of Sixteen Persons for Piracy, 1726 [2007]. Boston: Joseph Edwards. In: Baer, J.H. (Ed.), *British Piracy in the Golden Age: History and Interpretation, 1660–1730*, vol. 3. Pickering and Chatto, London, 231–260.
- Varese, F., 2006a. How mafias migrate: The case of the 'Ndrangheta' in northern Italy. *Law and Society Review* 40, 411–444.
- Varese, F., 2006b. The secret history of Japanese cinema: The Yakuza movies. *Global Crime* 7, 105–124.
- Varese, F., 2001. *The Russian Mafia: Private Protection in a New Market Economy*. Oxford University Press, New York.
- Venkatesh, S., Levitt, A.S.D., 2000. Are we a family or a business? History and disjuncture in the urban American street gang. *Theory and Society* 29, 427–462.
- White-hall Evening Post, October 18–21, 1718.
- Williamson, O.E., 1996. *The Mechanisms of Governance*. Oxford University Press, New York.
- Woodard, C., 2007. *The Republic of Pirates*. Harcourt, New York.