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Fighting Maritime Piracy: Three Lessons from *Pompeius Magnus*

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Abstract

Piracy in international waters is on the rise again, in particular off the coast of Somalia. While the dynamic game between pirates, ship-owners, insurance firms and the military seems to have reached some kind of equilibrium, piracy risks generating significant negative externalities to third parties (e.g. in terms of environmental hazards and terrorism), justifying attempts to contain it. We argue that these attempts may benefit from a look back - through the analytical lens of public choice theory - to the most successful counter-piracy campaign ever undertaken, namely, the one led by the Roman general Gnaeus Pompeius Magnus (Pompey the Great) in 67 BC.

Keywords: Piracy, Somalia, Public Choice Theory

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1. Introduction

Piracy in international waters is on the rise again since the late 1990s. In recent years, this holds in particular for the areas off the coast of Somalia (Stavridis and LeBron, 2010; Kraska, 2011) and, hence, near one of the world's most important shipping lanes, the Gulf of Aden.[1] Piracy, though, not only threatens to disrupt international trade,[2] and to block the delivery of humanitarian aid, but may also end up causing significant environmental harm and providing funds for terrorist networks in the region (Gettleman, 2010; Middleton, 2008). For all these reasons, the international community attempts to contain it by a variety of mostly military measures, in particular multinational naval operations, albeit with limited success. As the jury is still out on how the problem might be solved most effectively, this paper suggests to take a look back to what is widely referred to as *the* most successful campaign against maritime piracy in recorded history, namely, the one led by the Roman general *Gnaeus Pompeius Magnus* (Pompey the Great) in 67 BC, in the Eastern Mediterranean. Through the lens of rational choice theory and political economy, it is possible to learn some valuable lessons from Pompeius that could be applied in today's campaign against the Somali pirates.

Somalia-based piracy takes the form of hijacking and extortion, rather than the more traditional *modus operandi* of armed robbery at sea. Starting with the attack on the luxury cruiser *Seabourn Sprit* in november 2005, pirates' activities off the coast of Somalia - a country that has lacked a central government for two decades now, being a paradigm example of 'stateless order' (Powell et al., 2008) - have intensified in terms of vessels attacked and ransoms paid. To illustrate, the

[1] An estimated 22,000 vessels pass through the Gulf every year, carrying about 20% of the world's commercial cargo and 11% of global oil supplies (Shortland & Percy, 2010; The Economist, 2011; Matt Arons, http://afpprinceton.com/2010/02/stopping-somali-piracy-addressing-the-hidden-environmental-causes/). The Gulf of Aden has experienced piracy before, e.g. in the late 17th century, when the "Red Sea Men" inflicted harm to the East India Company (Leeson, 2010).

[2] In 2011, more than 80% of world trade in goods was carried by sea, according to UNCTAD's Review of Maritime Transport. See `http://r0.unctad.org/ttl/`. About 60% of the world's crude oil moves by ship, see Hanson (2010).

number of attacks has risen from 35 in 2005 to 237 in 2011, with a total of 1,181 hostages being taken in that last year. Due to improved countermeasures, the number of ships actually seized has fallen to 28 in 2011 (down from 49 in 2010). As of april 17, 2012, 8 large vessels with an estimated 227 shipmen are being held hostage.[3] Average ransom (per vessel), however, continues to grow: It rose from around 150,000 USD in 2005 to approximately 4.7 million USD in 2011 (Foreign Policy Committee, 2012),[4] with the total of ransom payments having reached an all-time high of 135 million USD in 2011. Moreover, the raids have reportedly become more violent.[5] While absolute numbers may look relatively modest at first sight, it is the dynamics which are worrying and which could result in the generation of significant negative externalities. It could also rekindle pirate activities elsewhere, for instance off the coast of Nigeria. Modeling pirates as rational profit maximizers, Geopolicity (2011), a think tank, predicts that "incidents of piracy are set to expand substantially beyond Somali waters". The total "annual costs" generated by Somalia-based piracy are hard to estimate, but have been assumed to be between 7- and 16 billion USD in 2011.[6]

From the perspective of public choice theory, maritime piracy provides a fascinating object to study the behavioral impact of incentive structures (Leeson, 2007, 2009a, 2009b). It may be seen as a paradigm example of "destructive entre-

[3] See http://www.eunavfor.eu/wp-content/uploads/2012/04/Pirated-Vessel-17.04.20121.pdf.

[4] There are cases where ransom payments have reportedly been significantly higher: Already in 2008, the "MV Faina", a Ukranian freighter carrying 33 battle tanks, was released after a ransom of 3.2 million USD had been paid. In early 2010, the Greek-owned tanker "Maran Centaurus", captured 800 miles off the coast of Somalia with 2 million barrels of oil onboard, fetched between 5.5 and 7 million USD: in november 2010, the South Korean tanker "Samho Dream" was released after its owners had agreed to pay the record sum of 9.5 million USD (The Economist 2011).

[5] See http://www.msnbc.msn.com/id/46466133/ns/world_news-africa/t/arms-race-somali-pirates-tankers-their-game/

[6] The lower bound indicates the immediate costs, including increased fuel consumption (due to higher speed to escape pirates), military and security expenses, re-routing, increased insurance premia, the costs of prosecuting pirates, ransoms, and related factors. See One Earth Foundation, The Economic Cost of Somali Piracy 2011 available at: http://oceansbeyondpiracy.org/sites/default/files/economic_cost_of_piracy_2011.pdf. See also http://securitydebrief.com/2012/03/29/as-somali-piracy-grows-bolder-nato-stays-the-course/ and http://www.telegraph.co.uk/travel/travelnews/8298095/Spirit-of-Adventure-Behind-the-rise-of-the-Somali-pirates.html.

preneurship" (Baumol, 1990) with pirates undergoing innovative technological and organizational-institutional change in order to adapt to new circumstances. For example, as a reaction to international naval operations they have significantly widened their area of operation, by (i) using "mother ships" (see below), and (ii) taking hostages also *on land*.[7] Their institutional infrastructure has been supplemented by, e.g., an informal stock exchange, located in the pirate stronghold of Haradheere, to fund pirational ventures.[8] At the same time, the impact of multinational naval operations in the area seems to be limited to deterring pirates from bonding with islamist groups (Shortland and Vothknecht, 2011; Bruton, 2010).

As we will argue in the following, any approach to combat piracy should follow the premise that "pirates are rational economic actors and that piracy is an occupational choice ... [they] respond to costs and benefits" (Leeson, 2009d). We show that this premise already inspired the campaign undertaken by the Roman general Pompeius Magnus, in 67 BC, off the coast of Cilicia, i.e., the southern coast of modern Turkey. Pompeius significantly reduced the incidence of piracy by a quite sophisticated carrot-and-stick approach, inspired by what (in light of modern economic theory) looks like a rational choice concept of human behavior. As Stavridis and LeBron (2010, p. 75) put it, his approach is "no less relevant and wise ... today than it was more than two milleniums ago". Of course, in order to learn from Pompeius, we have to understand *why* he was so successful. We will show that through the analytical lens of public choice theory it is possible to draw three valuable lessons from Pompeius' campaign, and to apply them to the current issue of piracy.

The argument proceeds as follows. Section 2 briefly outlines the current situation off the coast of Somalia and the country's historical background. Sec-

[7] See J. Bahadur, Somalia Pirates Adopt Troubling New Tactics. The Daily Beast, january 31, 2012. Available at: `http://www.thedailybeast.com/articles/2012/01/31/somalia-pirates-adopt-troubling-new-tactics.html`.

[8] See M. Ahmed, Somali sea gangs lure investors at pirate lair. Reuters, dec 1, 2009. See `http://www.reuters.com/article/2009/12/01/us-somalia-piracy-investors-idUSTRE5B01Z920091201`.

tion 3 describes the strategy adopted by Pompeius Magnus against the Cilician pirates, through the analytical lens of rational choice theory. Section 4 draws some key lessons for today's campaign against piracy, partly drawing on the information-theoretic analysis of screening devices, and section 5 concludes.

2. The situation in and off Somalia

Since the fall of dictator Mohamed Siad Barre in 1991 and the ensuing years of civil war, Somalia, a country nearly the size of France with a population of 9.1 million, provides a paradigm case of stateless order.[9] The country has not had an operational central government since then (Menkhaus, 2008). Instead, it is characterized by a multitude of regional and local adaptive forms of "organic" governance structures (Powell and Nair, 2012). Given both their experiences with the repressive and predatory Barre regime, and the failed UN-led attempts at state-building between 1993 and 1995 (best known for the Black Hawk Down incident of 1993), most Somalis have come to favor traditional clan-based governance systems over centralized government (Menkhaus, 2003). About 75% of all Somalis belong to one of six major clan families.[10] To the extent that they provide order, clan networks can be seen as *protective agencies*, preventing the rise of genuine anarchy and providing for a living standard that is very low relative to the welfare levels of Western developed economies, but not necessarily so in comparison to Somalia's East African neighbors.[11] To be sure, there is an "official" Somali governmental body - created in 2004 as the "Transitional

[9] Since 2008, Somalia ranks first in the "Failed States Index", issued by Foreign Policy and the Fund for Peace. See `http://www.foreignpolicy.com/articles/2010/06/21/the_failed_states_index_2010` (retrieved april 19, 2012).

[10] These are the Darod, Digil, Dir, Hawiye, Isaaq, and Rahanwein (Shortland and Percy 2010, p. 6).

[11] Somalia's living standards have been analyzed by Nenova and Hartford (2004), Coyne (2006), Leeson (2007b) and Powell et al. (2008). Apparently, when compared to its African neighbors and to its own past, Somalia performs not too bad in terms of absolute poverty, life expectancy, and infrastructure provision (in particular telecommunications, which is widely seen as a success story). Regarding health and education, it performes relatively poorly. It fails terribly with respect to corruption (Transparency International, 2011) and vulnerability to famines, as proved by the devastating impact of the 2011 drought which killed 80,000 (The Economist, 2012).

Federal Government" (TFG) - that is recognized and heavily subsidized by the international community.[12] From its inception, though, the TFG has been widely perceived as corrupt, dysfunctional and isolated (Menkhaus 2008; Bruton, 2010; Gettleman, 2011), effectively ruling only "over a few checkpoints in [Somalia's former capital] Mogadishu" (Bahadur, 2010b).[13] In contrast, the three most important protective agencies - Somaliland in the north, Puntland in the center, and Galmudug in the southern center - have now evolved into proto-states. There are several other regional and local would-be "governments", though, ranging from the loose coalition of islamist groups (in particular the militant *Al-Shabaab*) in the south to authorities governing smaller areas such as *Himan iyo Heeb* ("Land and Water") in central Somalia, the latter stretching over 5,000 square miles with a population of about 500,000. It has been established by a Somali-born former IT counsellor from Minnesota.[14]

The emergence of modern Somali piracy can be seen as an unintended consequence of these conditions of stateless order. The lack of a formal coastguard and Navy after 1991 attracted foreign vessels into Somali waters for either exploiting the rich fish stock or for dumping toxic waste. Originally, the pirates' first organizational structures aimed at defending the local fishermen's waters - as a kind of informal coastguard - against these invaders. Local fishermen organized militias that tried to collect "licence money" from the foreigners. Gradually, these operations transformed into genuine piracy, based on hijacking and extortion. Hostages are usually held prisoner aboard their own captured vessels. In the

[12] See e.g. `http://www.usatoday.com/news/washington/2009-04-23-somalia-donors_N.htm`.

[13] As Bahadur (ibid.) puts it, "a collection of ex-warlords and self-styled moderate Islamists, this is a government that does not govern; its M.P.'s have no constituents, its ministers no portfolios, and it exercises nothing close to control of the violence within its supposed borders." The TFG's survival is widely perceived to depend on the protection provided by the African Union peacekeeping force AMISOM (Bruton, 2010; The Economist, 2012). Since 2011, it is run by prime minister Abdiweli Mohamed Ali, who holds a PhD in economics from GMU.

[14] See the website: `www.ximaniyoxeebaha.com`. See also See also J. Gettleman, Back From the Suburbs to Run a Patch of Somalia, New York Times, october 2, 2009, available at: `http://www.nytimes.com/2009/10/03/world/africa/03somalia.html?pagewanted=all`. See also W. Bauer, Der gefi£ · hrlichste Auftrag der Welt. Die Zeit, february 28, 2011, available at: `http://www.zeit.de/2011/09/DOS-Somalia`.

majority of reported cases they have been treated fairly well (there is even some anecdotal evidence about "manuals" prescribing how to deal with hostages).[15] Ransoms are paid in cash or, increasingly, by transferring funds electronically (The Economist, 2011). In the former case, once the negotiations –that can take from a few days up to several months– are completed, the money is typically dropped from a light aircraft.

The pirate business is now among the most lucrative ventures available for young male Somalis. On the one hand, costs of market entry are very low: You essentially need a skiff, i.e., a slim speedboat, weapons (that are in plentiful supply in the country) and two 100 bhp-outboard motors, costing between 6,000 and 12,000 USD (Shortland & Percy, 2010). On the other hand, the return on investment tends to be high and growing. Note that GDP per capita in Somalia was an estimated 220 USD in 2009.[16] Bahadur (2010a) gives a detailed account of how a pirate gang from the city of Eyl (Puntland) allocated the proceeds from a typical 1.8 million USD ransom: In what amounts to a pyramid allocation pattern (not unlike those observed with ordinary land-based crime gangs), the commander-in-chief received 900,000 USD in return for a typical investment of about 40,000 USD (financing the boat, outboard motors, weapons, fuel and food). Middle ranks, including an interpreter, an accountant, and a supplies logistics officer (providing crew members with *khat*, a popular stimulant) received between 30,000 and 60,000 USD. Ordinary "attackers" were paid 41,000 USD, with an additional bonus for the crew member first to jump on the targeted ship. Finally, the guards who watched the hijacked ship once it had been brought to a safe haven were paid about 12,000 USD each, which still amounts to an average hourly wage of about 10 USD, an enormous sum for Somali standards. Operating expenses incurred during the hijacked ship's two-month captivity would

[15] Shortland and Vothknecht (2010, p. S135) report a "strict code of conduct". As of february 2012, this appears however to have lost its impact on pirates' behavior. See `http://www.msnbc.msn.com/id/46466133/ns/world_news-africa/t/arms-race-somali-pirates-tankers-their-game/`. As Leeson (2009d) explains, rational pirates should be expected to treat their hostages well, except when meeting resistance.

[16] `http://data.un.org/CountryProfile.aspx?crName=Somalia`.

total 230,000 USD. All in all, the yearly average income of Somali pirates is estimated to lie between 33,000 and 79,000 USD, i.e., 67 to 157 times the national average (Geopolicity, 2011).

As the average ransoms continue to rise quickly, all these figures can be expected to increase as well. Regarding the attackers, i.e. those doing the actual piratical work, the share of the loot has to be put in relation to the risk they are facing: "The moment he stepped into a pirate skiff, an attacker accepted a 1-2 per cent chance of being killed ... By comparison, the deadliest civilian occupation in the US, that of the king-crab fisherman, has an on-the-job fatality rate of about ... 0.4 per cent" (Bahadir, 2010a).[17] Besides the considerable earnings offered to the pirate crew themselves, on a macro level piracy provides work for tens of thousands of non-pirates as well, such as "middle-managers, translators, bookkeepers, mechanics, gunsmiths, guards, boat builders, women who sell tea to pirates, others who sell them goats" (Gettleman, 2011).

Assuming that the 1.500-3.000 pirates currently active[18] are responsive to rational cost-benefit calculations, counter-piracy efforts have focused on increasing the costs (i.e., the expected risk) of their activities by essentially three means. First, institutional tools may be used to combat pirates. Most importantly, international maritime law empowers foreign naval vessels off the coast of Somalia to pursue, arrest and eventually prosecute pirates. A total of nine UN Security Council resolutions have been issued to that effect (Kraska, 2011), gradually extending the legitimate scope of operations of foreign navies. Their rules of engagement have been adapted accordingly. Navies can now even pursue pirates on land. For instance, in february 2012 a U.S. Navy commando freed two

[17] A more appropriate reference number would of course be the risk of being killed on the job as a low-rank member ("foot soldier") of a land-based crime gang. For the typical drug-selling gang they studied, Levitt and Venkatesh (2000) found that hourly wages for street-level sellers roughly equal the US minimum wage. In return, they accept a per-person likelihood of violent death ranging from 1-2 percent a month (during one of the frequent gang wars).

[18] As estimated by the UK Foreign Affairs Committee's report on "Piracy off the coast of Somalia", see `www.publications.parliament.uk/pa/cm201012/cmselect/cmfaff/1318/131805.htm`.

aid workers who had been held hostage in the Somali countryside. [19] So far, this approach has proved ineffective, though. When a ship is hijacked, many nations typically have a vested interest in the case.[20] To be sure, foreign navies manage to apprehend many pirates at sea, but "the vast majority are typically released unless they are caught in the act of hijacking a ship - which is a very narrow window because once pirates control a vessel, it's extremely dangerous to intervene" (Gettleman, 2011).[21] According to UN estimates, 90% of those arrested are released quickly and without any sanction whatsoever (The Economist, 2011).[22] An alternative institutional tool would involve the outlawing of ransom payments.[23] Obviously, this approach suffers from heavy Prisoners' Dilemma issues and is widely agreed to be impossible to be enforced in practice.[24]

Second, military instruments can be employed. In fact, apart from several national navies engaged in counterpiracy efforts, there are currently three multinational naval missions operating off the coast of Somalia, namely, the US-led "Combined Task Force 151", the European Union's "Operation Atalanta", and NATO's "Operation Ocean Shield". At any given time, 25-30 ships are patrolling the area. The naval forces have established the "International Recommended Transit Corridor" within the Gulf of Aden.

[19] http://topics.nytimes.com/top/reference/timestopics/p/piracy_at_sea/index.html.

[20] The legal dilemma is vividly illustrated with a typical case: "The pirates are Somali. They attacked the motor vessel Sunshine, which is Greek-owned but operates under a Bahaman flag. They were detained in international waters, but in the so-called exclusive economic zone of Oman. And they had commandeered an Iranian fishing vessel and held the crew hostage for more than a month ... So which country should take the case?" See Chivers (2012).

[21] As of january 2012, the multinational naval forces in the area hold a total of 71 captured pirates. See Chivers (2012).

[22] Anderson (1995) and Kontorovich (2010) discuss the various difficulties in prosecuting pirates. As of june 2011, more than 1,000 suspected and convicted pirates were held in 20 countries; pirates have been sentenced to jail terms ranging from 5 to 20 years (http://www.unodc.org/documents/Piracy/UNODC_Brochure_Issue_6_WV.pdf)

[23] In april 2010 US president Obama signed a presidential order outlawing payments (possibly including ransoms) to a group of specifically named terrorist groups and pirate leaders. See http://www.articlesbase.com/law-articles/piracy-us-presidential-order-on-payment-of-ransoms-and-recent-developments-3264291.html.

[24] Leeson (2010, p. 1224) describes a related legal rule embodied in the English "Act for the More Effectual Suppression of Piracy" (first enacted in 1700) that after 1721 declared that any "armed merchantmen that did not try to defend themselves against pirate aggression" would be punished!

Third, ship-owners and crews increasingly apply various self-defense measures, such as employing private armed security guards, ringing the ship's deck with razor wire, using dazer lasers, fire hoses, even carpet tacks, or establishing a "citadel" deep inside the ship (a functional equivalent to a "panic room").[25] One report says that "the most effective measure involves trailing lengths of heavy-gauge steel cables from the stern. When a pirate craft rides over them its propellers are ripped off."[26] Armed security guards also have proved effective in countering pirate attacks.[27] As of april 2012, they patrol 40% of the large vessels in the area (The Economist, 2012b). Their use, though, raises complex legal issues as well as worries that the pirates may react by starting an arms race and becoming more violent towards hostages.[28]

Pirates have generally reacted to these efforts by substituting their business model. Thanks to the use of "mother ships", i.e., hijacked vessels that are transformed into mobile sea-borne bases for attacks, they have greatly enhanced their zone of operation, which now includes almost the entire area between the Gulf of Aden, India, the Maldives, and the Seychelles: The red zone now covers more than 3.2 million square miles (8.3 million square kilometers), an area larger than the contiguous 48 U.S. states, and impossible to patrol. Due to improved technology, pirates also seem to be able to extend the temporal scope of their operations, increasingly attacking during the monsoon season (i.e., december through february, and june through august) that so far blocked pirate action due to rough waters. As a rule of thumb, wind strengths in excess of 18 knots were usually seen as providing protection against pirates.[29]

Consequently, it has become a truism in the literature that "the solution"

[25] Using the "citadel" runs of course the risk that it may be blasted. The authoritative guide in this respect is the handbook "Best Management Practices to deter Piracy", issued by a group of international shipping and trading organizations. See `http://www.imo.org/MediaCentre/HotTopics/piracy//Pages/default.aspx`. See also Hanson (2010).

[26] `http://www.telegraph.co.uk/travel/travelnews/8298095/Spirit-of-Adventure-Behind-the-rise-of-the-Somali-pirates.html`.

[27] See Chivers (2012).

[28] `http://www.msnbc.msn.com/id/46466133/ns/world_news-africa/t/arms-race-somali-pirates-tankers-their-game`.

[29] See `www.bergenrisksolutions.com/index.php?dolument=844` (june 17, 2011).

to the piracy problem is to be found "on land" (Stavridis and LeBron, 2010, p. 80). The absence of adequate governance structures is generally recognized as the root of the problem. It has been suggested to rebuild Somalia's government institutions (including a formal coast guard). But given the country's history for being "the world's foremost graveyard of externally sponsored state-building initiatives" (Menkhaus, 2007, p. 74) and the history of misguided foreign interventions (Menkhaus, 2008), these ideas should be treated with caution. Generally, direct foreign interference, including permanent foreign aid, may prove counterproductive. There are plans to assist the country in creating a federal structure with more or less autonomous regional governments (The Economist, 2012a). All this is still highly uncertain. We therefore suggest looking for inspiration from a counter-piracy campaign conducted more than 2,000 years ago, some 3,500 kilometers from Somalia.

3. Pompeius' campaign

What was the economic and institutional background of Pompeius' campaign against the pirates? There is evidence from shipwrecks that "interregional trade was higher in the period from 200 BC to AD 200 than either before or during any time in the following millenium" (Malmendier, 2009, p. 1079, referring to Hopkins, 1980). In particular, the grain supply of Rome - a city of approximately 1 million at that time - depended on the unfettered access to the seas. Pirates had generally been a nuisance throughout the first half of the first century BC.[30] They were considered "hostis humani generis" ("enemies of mankind"), and several Roman generals had been assigned the task to combat them, but to no avail (Ormerod, [1924] 1997; De Souza, 1999).

The region of Cilicia, in the southern part of modern Turkey, became a hotbed for pirates. Informally, it was then under Syrian influence. As in today's

[30] Pirates even kidnapped the young Gaius Julius Caesar in 75 or 74 BC on his way to Rhodes. Having been released after 40 days, he organized a small fleet and went after the pirates, captured them and had them crucified (De Souza, 1999, pp. 140-41; Kraska 2011, p. 13). Anderson (1995, p. 184) describes the evolution of pirates' organizational structures at that time.

Somalia, the establishment of pirate bases there was facilitated by "political chaos ... as the Syrien kings fought amongst each other" (De Souza, 1999, p. 98). As the Roman historian Strabo reports, fiefdoms emerged, ruled by autocratic leaders (ibid., p. 99) - presumably a kind of stationary bandits. Most of the time, Rome remained rather indifferent to the issue, delegating the task to suppress piracy to its allies in the affected regions.[31] Whether pirates played a "vital" part in the Mediterranean slave trade and to Rome's slave supply, as suggested by Pohl (1993) and Ormerod ([1924] 1997, pp. 206-207) remains unclear (De Souza, 1995). Roman indifference changed dramatically, when, in 68 BC, Rome's harbor city Ostia was sacked and torched by pirates. According to literary sources, a consular fleet was destroyed, and even two senators were kidnapped (Ormerod, [1924] 1997; Harris, 2006). More importantly, the city's grain supply appears to have been disrupted, driving up the price of bread (Seager, 2002, p. 44; Ormerod, [1924] 1997, p. 233). The ensuing panic among the metropolitan population gave Gnaeus Pompeius Magnus, a 38-year-old general, widely regarded as a promising military strategist, the opportunity to acquire unprecedented powers. Under the *Lex Gabinia*, - named after the tribune who proposed it - he was given proconsular powers over the whole Mediterranean and the Black Sea for three years, his authority running concurrently with that of the regional governors for a distance of up to 50 miles inland (Ormerod, [1924] 1997, p. 234). Moreover, Pompeius was allowed to raise money, troops and ships as he deemed fit.

The motion met with fierce and "almost universal" opposition in the senate (Seager, 2002, p. 44; Plutarch, 2009: 69). Republican Rome had developed a complex institutional structure of checks and balances in order to prevent the concentration of power in the hands of a single individual (Mommsen [1854] 1933). Senators feared that individuals might become too powerful to be con-

[31] Ormerod ([1924] 1997, p. 207) explains this negligence by the pirates' role in the international slave trade. De Souza's (1999) account seems to be more plausible, though: Within the highly competitive system of Roman politics, more prestige was to be gained from defeating "real" enemies, such as rivaling kings, than suppressing piracy. This changed only when pirates started to threaten vital supply lines.

trolled by their peers, if they were given extensive authority; only small-scale military campaigns were therefore accepted. But localized actions against piracy had proved ineffective in the past.

Due to immense pressure by the general public and Rome's business community, the law eventually passed. [32] As Cicero reports, popular confidence in Pompeius was so great that on the very day of his appointment the price of bread dropped (Seager, 2002, p. 45). Pompeius raised about 120,000 infantry, 4,000 cavalry, 6,000 talents of money, and 270 ships - "forces far in excess of anything that might be required" (ibid.). Pompeius divided the whole Mediterranean into 13 regions, assigning ships to each of them.

After swiftly restoring Rome's grain supply, he took his "sixty best ships" (Mommsen [1854] 1933, p. 121) and drove the pirates toward their home turf, the coast of Cilicia. The greek-roman historian Plutarch (2009, p. 70) tells us that he achieved this "in the space of forty days". He asserts that "the more elusive [pirates] were driven together towards Cilicia, like bees swarming to their hive" (as quoted by De Souza 1999, p. 168). Then Pompeius stopped to make the remaining pirates an offer: Should they surrender, he would not punish them, but instead help them settle in neighboring parts of Cilicia, where they would get the chance to pursue legal activities.[33] This approach turned out to be very successful: Only "[t]he most desperate ... placed their families and treasures in the castles of the Taurus [mountains] and prepared for a final resistance" (Ormerod, [1924] 1997, p. 240), but according to the literary sources, most gave up. Soon afterwards, the last pirate stronghold, Coracesium, fell (Seager, 2002, p. 47). All in all, Pompeius is reported to have finished his job within 3 months.[34]

[32] Loader (1940) gives a detailed account of the powers given to Pompeius. According to Mommsen ([1854] 1933, pp. 111-15) and Harris (2006), by setting a precedent, the lex Gabinia ultimately subverted the Republic, i.e. the very institution it was supposed to protect.

[33] Among other places, he settled them in the small coastal town of Soli (today's Mersin in Turkey), which was renamed Pompeiopolis.

[34] See also Mommsen ([1854] 1933, pp. 121-22). The scope of his achievements has recently been questioned by De Souza (1999) who points out that there still was a positive amount of piracy in the Eastern Mediterranean even after 67 BC. We should, however, avoid the Nirvana fallacy here: There is little doubt that Pompeius succeeded in significantly reducing the threat. Put differently, he managed to bring the extent of piracy closer to its "optimal" level.

As Kraska (2011, p. 14) reports, "[t]he Mediterranean Sea was cleared of pirates for the first time in history".

Most of the literature, following contemporary sources (particularly Cicero), attributes this astonishing success to Pompeius applying the Roman virtue of *clementia* (mercy). According to Ormerod ([1924] 1997), this not only "induced men whom he had spared to give information about the rest", but also reduced their "temptation to relapse into their old habits" and help them "obtain a fresh start in life" (ibid., pp. 239-41). As De Souza (1999, p. 171) rightly points out, to be effective, the strategy of sparing those who surrendered the (usual) capital punishment had to be made public from the start of Pompeius' campaign. By declaring his willingness to come to terms with the pirates without fighting, Pompeius could complete his mission in such a short time. This allowed him to engage in the fight against Mithridates VI, king of Pontus and Armenia Minor in northern Anatolia, one of Rome's most formidable enemies. That task promised even greater benefits in terms of prestige and political power (ibid.).[35]

4. Three lessons

The main thing to be learned from Pompeius' campaign is that incentives matter. As Plutarch puts it in his biographical sketch, Pompeius had taken into account that "man by nature is not a wild or unsocial creature, neither was he born so, but makes himself what he naturally is not by vicious habit; and that again, on the other side, he is civilized and grows gentle by a change of place, occupation, and manner of life, as beasts themselves that are wild by nature become tame and tractable by housing and gentler usage" (Plutarch 2009: 71). We argue that this lesson should be heeded, regarding its implications at both the level of the individual and the level of social entities that arise out of the interaction between individuals.

[35] His campaign against Mithridates is even briefly mentioned, for illustrative purposes, by Smith (1976, pp. 98-99).

4.1. Lesson 1: Muster the political will to fight piracy

As Malmendier (2009) has shown, it is politics, not institutions, that ultimately matter for solving societal problems. This is almost self-evident: Without a sufficient degree of political motivation, there is no sense in giving advice on how to overcome piracy. In the case of the Romans, the dynamics of the political system generated this motivation by aligning, at least for the decisive period of time, political leaders' incentives with those of the populace. As De Souza (1999) explains, "there were ... political gains to be made by individuals from exploiting the problem of piracy" (p. 157). Valuable prestige and influence could be obtained by a victorious military leader (Schulz, 2000). After piracy had become a salient issue with the sacking of Ostia (see above), the potential political benefits from battling the pirates finally surpassed the expected costs of doing so, inducing immediate action.

In the case of today's piracy problem, things are more intricate. Almost all parties involved in the strategic interaction that gives rise to the issue - the pirates themselves, shipowners, private security firms, insurances, and even the navies - stand to gain from the game (through the chance of demonstrating their capabilities, say, or the chance of passing costs on to customers), at the expense of third parties, namely, consumers, taxpayers and, of course, the ordinary seamen (Shortland and Percy, 2010). Unless the incentives giving rise to this inefficient behavioral equilibrium are transformed to internalize externalities, there is little chance of solving the piracy problem.

4.2. Lesson 2: Separate the Wheat from the Chaff

In order to deal with the problem, it may be helpful to follow Pompeius in sorting pirates into various subsets with different reasons to engage in piracy, and to treat these subsets in different ways. According to Appian, a Roman historian, Pompeius distinguished "between pirates who were "wicked" and others who had been "driven to piracy by poverty" (as quoted by De Souza, 1999, 170). To differentiate between these subsets, using the language of game theory, Pompeius was able to establish a separating equilibrium, thereby identifying those "types"

of pirates that were truly motivated to continue their business. His offer to provide the pirates with alternative employment opportunities on land (mainly agriculture) served as a screening device: Those willing to give up (most of) their pirate activities revealed being of type "driven by poverty", while all others could safely be assumed to be of type "wicked", to use Appian's words.

To formalize these ideas, let us assume that to every pirate, Pompeius offers economic help of some quantity h in exchange for a certain reduction R of the pirate's engagement in piracy. When the pirate accepts the offer, a binding arrangement is made and both parties commit themselves to exchange h for R. Different pirates, however, differ in their appreciation of Pompeius' help. Those who are driven by poverty appreciate the help to a greater extent than those who are intrinsically wicked. Therefore, wicked pirates demand relatively more help to reduce a given amount of piracy compared to pirates driven by poverty. In order to avoid making too high offers that would bankrupt him, Pompeius screens pirates by inducing them to select different versions of (h, R)-bundles depending on their types. This situation thus mimics situations of monopolistic screening or second degree price discrimination as described in Maskin and Riley (1984) or Mussa and Rosen (1978) and therefore can be analyzed accordingly.

Suppose that the utility Pompeius can derive from an agreement with a pirate is given by $\Pi = R(h) - c(h)$, where $R(h)$ is the pirate's reduction of piracy when he obtains h (with $R(0) = 0$ and $R'(h) > 0$), and $c(h)$ depicts Pompeius' costs of the economic help (with $c(0) = 0, c'(h) > 0$). A pirate's utility derived from a (h, R)-bundle is $u(h, R, \theta) = \theta v(h) - R(h)$, where $v(0) = 0, v'(h) > 0$, and $v''(h) < 0$ for all h, and $\theta \in (\theta_w, \theta_p)$ depicts the degree to which the pirate appreciates economic help. Pirates driven by poverty appreciate help with θ_p and wicked pirates appreciate help with θ_w ($\theta_p > \theta_w$, and $\Delta\theta = \theta_p - \theta_w$). Individually, this appreciation is private information. Pompeius however is assumed to hold subjective beliefs about the distribution of wickedness, i.e. he assumes that $\theta = \theta_w$ with probability $\beta \in (0, 1)$ and $\theta = \theta_p$ with probability $(1 - \beta)$. We assume the pirate's outside utility to be fixed at $\bar{u} = 0$. That is, a pirate's decision whether to accept or reject Pompeius' offer does not influence the re-

venues from engaging in piracy. Note that, since a rejection of the offer is likely to increase Pompeius' efforts to fight piracy, this assumption is a simplification.

First, to obtain a benchmark, consider the case where Pompeius is perfectly informed about each pirate's type. In this case, Pompeius can treat each type of pirate separately and offer a type-dependent arrangement (h_i, R_i) for each type i $(i = p, w)$. For a given type, Pompeius solves

$$\max_{h_u, R_i} R(h_i) - c(h_i) \qquad \text{subject to} \qquad \theta_i v(h_i) - R(h_i) \geq 0, \tag{1}$$

where the constraint is the participation constraint which ensures that all pirates accept the offer. Hence, for the moment we abstract from the possibility that not all types of pirates accept the offer. At the optimal solution this constraint must be binding: If it were not, Pompeius could raise his utility by demanding a greater reduction of piracy at a given level of help while the participating constraint would still be satisfied. Hence, the first-best solution to the problem $(\hat{h}_i, \hat{R}_i)$ is completely determined by $\theta_i v(\hat{h}_i) = \hat{R}_i$ and $\theta_i v'(\hat{h}_i) = c'(\hat{h}_i)$.

Now, suppose that Pompeius cannot observe the pirates' type so that the first-best solution is no longer feasible. This is the case because poor pirates would pretend to be wicked and choose the arrangement for the wicked pirates, thereby obtaining some positive surplus. Using the revelation principle, incentive compatibility constraints, and participation constraints (see Appendix), Pompeius' problem with imperfect information can be written as

$$\max_{h_w, h_p} \beta(\theta_w v(h_w) - c(h_w)) + (1 - \beta)(\theta_p v(h_p) - c(h_p) - \Delta\theta v(h_w)), \tag{2}$$

where the first term in brackets denotes the full surplus generated by the arrangement with the wicked pirates. The second term in brackets is the surplus generated by the arrangement with pirates driven by poverty minus their information rents $\Delta\theta v(h_w) = (\theta_p - \theta_w)v(h_w)$ that arise because they could mimic wicked pirates. The first-order conditions are

$$\theta_p v'(h_p^*) = c'(h_p^*) \tag{3}$$

and

$$\theta_w v'(h_w^*) = \frac{c'(h_w^*)}{1 - \frac{(1-\beta)}{\beta}\frac{\Delta\theta}{\theta_w}} > c'(h_w^*), \tag{4}$$

so that the optimal amount of help implies $h_p^* = \hat{h}_p > \hat{h}_w > h_w^*$. This second best outcome exhibits some classical properties. Pirates who are driven by poverty obtain an efficient allocation of help. However, as they have an information advantage and Pompeius does not want them to pretend to be wicked, pirates driven by poverty do not have to reduce their piracy activities as much as in the first best scenario. Thus, they get a positive surplus. Wicked pirates, to the contrary, obtain a subefficient allocation of help with zero surplus. Note that in the model, neither poor nor wicked pirates will completely forsake their pirate activities - a result driven by the concavity of the pirates' utility function $v(h_i)$, and consistent with reports that piracy continued, albeit at lower levels, to plague the Mediterranean after the campaign had ended (De Souza, 1999).

If $\beta\theta_w < (1-\beta)\Delta\theta$, then the RHS of equation (4) becomes negative and there is a corner solution with $h_p^* = \hat{h}_p$ and $h_w^* = 0$. In this case, the wicked pirates would get no offer from Pompeius. Hence, to get an offer, wicked pirates have to have a minimal degree of appreciation ($\theta_w \geq \beta\theta_p$), which is not too far away from the appreciation by poor pirates ($\Delta\theta \leq \beta\theta_p$), and the share of wicked pirates has to be sufficiently high ($\beta \geq \theta_w/\theta p$). If, for example, Pompeius assumes that the appreciation of his help by wicked pirates is close to zero ($\theta_w \approx 0$), he will go for the corner solution and make his offer only to the pirates of type p.

Analogously, offering young male Somalis[36] alternative economic opportunities may serve the same screening function - besides increasing opportunity costs of pirate activities in order to redirect local entrepreneurial talent into legitimate ventures. Options to do so include supporting Somalia's agriculture by facilitating international trade and giving Somali farmers access to the markets of developed countries, and providing help for establishing a formal coast guard

[36] The active pirates are between 15 and 30 years old, almost exclusively male, and mostly uneducated and from rural backgrounds. See `www.publications.parliament.uk/pa/cm201012/cmselect/cmfaff/1318/131805.htm`.

to protect Somalia's rich fish stock from both overexploitation and the illegal dumping of hazardous waste.[37] Another option would be to establish "charter cities" - as recently proposed by Paul Romer (Mallaby, 2010) - in the country.

4.3. Lesson 3: Fight the Chaff by using existing institutional resources

Finally, there is the practical issue of how to implement these measures. While Pompeius was able to directly intervene in the pirates' home region, there is a near-consensus that this is not an option in modern Somalia: The UN-led attempts to do so between 1993 and 1995 have revealed the prohibitive costs of doing so. On the other hand, building centralized institutions by supporting the "Transitional Federal Government" in Mogadishu seems to be futile as well, as the TFG has proved not only corrupt and ineffective, but also unable to extend its control beyond parts of the capital itself.

The only option left is to accept the reality on the ground and to "work with" the institutional resources at hand: In fact (and as expected by economic theory), Somalia is a case of spontaneously ordered anarchy, rather than "chaos". As explained above, there are several protective agencies that more or less effectively maintain (informal) law and order in the country. So far, the lack of an appropriate framework for structuring interaction and competition between them induces inefficient behavior. For instance, there is still the possibility of a symbiotic relationship between these agencies and the pirates: The agencies may provide order - necessary for the pirates' business to flourish - in return for the pirates' money and investments. From the viewpoint of the international community, this is a vicious circle that ought to be broken.

A possible way to achieve this is the following: The international community sets up a meta-institutional framework for organizing a system competition between all protective agencies that respect some fundamental preconditions (such

[37] Cf. the related proposal by Matt Arons: "[I]f U.S. forces and others already in the region begin to protect fisheries, they will deprive pirates of their stated motivation to attack, thus exposing those who continue to board ships as nothing more than common criminals", see `http://afpprinceton.com/2010/02/stopping-somali-piracy-addressing-the-hidden-environmental-causes/`.

as refraining from acting violently against each other and from supporting islamist extremists, say). Given the conditions of "market entry", new agencies can join at any time. Those who are most successful in (i) enforcing the preconditions - e.g. by suppressing islamist movements -, and in (ii) fighting piracy over a pre-specified time period are rewarded by gaining better access to international markets or by getting support for establishing their own coast guard.

Would Somali proto-governments be willing to accept these conditions and fight piracy? There is some evidence to that effect. When the "Islamic Courts Union" - arguably not exclusively composed of extremists - briefly took control of large parts of southern Somalia in 2006, piracy there abated significantly.[38] Authorities in Somaliland and Puntland are reportedly engaged in counter-piracy measures, although their means to do so are severely limited.[39]

Admittedly, this is not a *direct* lesson from Pompeius, as he was not faced with the problem of mustering the institutional resources necessary to fight piracy. It is, however, an indirect lesson in that it is based on applying the same behavioral logic that motivated his campaign strategy. Economic theory predicts that self-interested (not necessarily perfectly rational) individuals will have incentives to respond to the dismantling of the state by following rules, self-organize, and engage in behavior that leads to the emergence of adaptive social order, rather than genuine "chaos".

Apparently, the international community is at long last willing to heed this advice, at least partially. There are plans to redirect support from the TFG to regional bodies and to help create a "federal" system by empowering tribal federations that are supposed to cooperate in a (yet to be founded) constituent federal assembly (The Economist, 2012a). After years of unsuccessfully focusing on the "central" government, this finally looks like a promising approach.

[38] http://securitydebrief.com/2012/03/29/as-somali-piracy-grows-bolder-nato-stays-the-course/.
[39] See www.marinecorpstimes.com/news/2011/04/ap-piracy-somaliland-coast-guard-040411/.

5. Concluding Remarks

There is near-universal agreement that attempts to solve the problem of Somali piracy should focus on its causes, not its symptoms, and that these causes are to be found on land. On the other hand, most observers concur in the futility of trying to build up Somalia's central government from scratch, as any foreign-led intervention would risk the "Nirvana fallacy" (Coyne 2006) and likely be prohibitively costly. As we have argued in this paper, such an approach is fortunately not necessary: In line with the rational choice logic suggested by Pompeius' counter-piracy campaign in 67 BC, efforts to combat piracy could rely on the cooperation, induced by appropriate incentives, of the existing proto-states that, for the foreseeable future, provide informal law and order in Somalia. Pompeius' most important lesson, though, is to use screening devices to isolate the truly "wicked" among the pirates, in order to bring the problem down to manageable proportions.

6. Appendix

Assuming that Pompeius cannot observe the pirate's type, to obtain a second-best solution, he can create (h, R)-bundles that solve

$$\max_{h,R} \beta(R(h_w) - c(h_w)) + (1-\beta)(R(h_p) - c(h_p)), \tag{5}$$

subject to

$$\theta_i v(h_i) - R(h_i) \geq \theta_i v(h) - R(h) \qquad \text{for all } h \text{ and } i = L, H, \tag{6}$$

and

$$\theta_i v(h_i) - R(h_i) \geq 0 \text{ for } i = L, H. \tag{7}$$

Equations (6) make sure that each type selects the arrangement that is designed for him, and equations (7) depict the participation constraints that guarantee that each pirate is willing to participate in the arrangement. To solve this problem, Pompeius can apply the revelation principle and choose optimal direct revelation arrangements ($(h_w, R(h_w))$ for type w and $(h_p, R(h_p))$ for type p). Then, defining $R_i := R(h_i)$ for $i = L, H$, the above problem can be rewritten as

$$\max_{(h_w,R_w)(h_p,R_p)} \beta(R_w - c(h_w)) + (1-\beta)(R_p - c(h_p)) \tag{8}$$

subject to

$$\theta_p v(h_p) - R_p \geq \theta_p v(h_w) - R_w \tag{9}$$

$$\theta_w v(h_w) - R_w \geq \theta_w v(h_p) - R_p \tag{10}$$

$$\theta_p v(h_p) - R_p \geq 0 \tag{11}$$

$$\theta_w v(h_w) - R_w \geq 0. \tag{12}$$

Note that equation (12) must be binding at the optimal solution, because otherwise Pompeius could demand a small $\epsilon > 0$ more R_w and R_p without violating any constraint but raising his utility. Therefore, $R_w = \theta_w v(h_w)$. Also equation (9) must be binding at the optimal solution, because otherwise Pompeius could raise R_p by a small $\epsilon > 0$ without violating any constraint but raising

his utility. Hence, $R_p = \theta_p v(h_p) - (\theta_p v(h_w) - R_w) = \theta_p v(h_p) - \Delta\theta v(h_w)$, where $\Delta\theta v(h_w)$ depicts the information rent of the pirates with the higher appreciation of legal working opportunities. Given that equation (12) and equation (9) are binding, equation (11) is automatically satisfied so that we can ignore it. Moreover, given that equation (9) is binding, equation (10) can be written as $\theta_w(v(h_w) - v(h_p)) \geq R_w - R_p = \theta_p(v(h_w) - v(h_p))$, which holds if and only if $h_p \geq h_w$. Accordingly, we can replace equation (10) by $h_p \geq h_w$. Pompeius relaxes his problem by deleting this incentive constraint, solves the relaxed problem, and checks whether the deleted constraint is satisfied. Using $R_w = \theta_w v(h_w)$ and $R_p = \theta_p v(h_p) - \Delta\theta v(h_w)$, Pompeius can solve his problem without any constraint:

$$\max_{h_w, h_p} \beta(\theta_w v(h_w) - c(h_w)) + (1-\beta)(\theta_p v(h_p) - c(h_p) - \Delta\theta v(h_w)). \tag{13}$$

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