SEARCHING FOR SANCTUARY:
Government Power and the Location of Maritime Piracy[1]

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Abstract

Recent systematic work on the incidence of maritime piracy shows the importance of various political, economic, and geographic correlates at the country level. Yet these correlates tell us little about the determinants of piracy location off states' coasts, despite the fact that piracy is well known to cluster locally. Conceptualizing pirates as strategic actors who consider the risk of detection and capture, this article argues that states' ability to project power over distance affects pirates' decisions on where to organize and operate. As state capacity increases, piracy will locate farther away from government power centers, whereas piracy can flourish closer to state capitals in weak states that struggle to extend control over space. Using geocoded data from the International Maritime Bureau for the 1996-2013 period, results show that increases in state capacity are associated with greater median capital-piracy distances. These findings are robust to several changes in model specification. Our results have important implications for the study of piracy and crime.

Keywords: Maritime piracy, geography, state capacity, transnational crime
Running head: Government Power and Piracy Location

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Introduction

The recent decline of piracy off the coast of Somalia obscures that other areas, especially the Gulf of Guinea and the Malacca Straits, have experienced increases in the number of attacks in 2012 and 2013.[2] Piracy endures because the conditions driving it have not been eliminated. Successful attacks against commercial vessels still produce lucrative rewards and the likelihood of capture remains low in most places. The average GDP per capita in piracy prone countries is less than a third as high as countries without piracy. Governments struggling with piracy are also significantly weaker, thus lacking the ability to enforce order over geographic space.[3]

Extant research convincingly demonstrates that state fragility and lack of economic opportunity increase piracy (Daxecker and Prins, 2013; Hastings 2009; Jablonski and Oliver 2013), yet has neglected how both of these explanations are impacted by a regime's loss of strength gradient (Boulding, 1962). The loss of strength gradient implies that governments, depending on their capacity, can only project coercive power so far. It also implies that pirates should recognize the geographic limits of government authority and position themselves away from areas controlled by government forces. Yet to this date, no research systematically examines the relationship between state weakness and the geographic location of pirate attacks. If pirates are rational, they should strategically locate themselves away from government power centers to avoid detection and reduce the risk of capture. Our argument draws on Ken Boulding's (1962) work on the loss of strength gradient, whereby the coercive power of government authority diminishes as geographic distance increases. Measuring the

[2] In 2011, the IBM reports that piracy off East Africa (mostly Somali) represented 37% of global pirate attacks. By 2013, Somalia piracy had fallen to about 4% of worldwide attacks. In contrast, piracy in the Gulf of Guinea represented less than 5% or worldwide attacks in 2011 but that number had increased to nearly 20% in 2013. Pirates off Indonesia represented less than 20% of the global attacks in 2011 but in 2013 were responsible for nearly 50% of the worldwide attacks.

[3] The average State Fragility score for countries without piracy is about 7.5. For countries that experience maritime piracy it is nearly 70% higher at 12.7. GDP per capita similarly varies. Per capita GDP of piracy prone countries is around $5,000. It is over three times higher in countries not suffering from piracy (see Prins, Daxecker and Sanford 2014).

median distance between capital cities (government strongholds) and piracy incidents, we find that increases in state strength are associated with greater capital-piracy distances. We conclude from our distance results that pirates strategically consider a regime's power projection ability when deciding where along a coast to organize and launch attacks against ships.

This research note makes an important contribution by providing the first systematic analysis of piracy location. Our findings also help corroborate findings in research on state capacity and the location of insurgency, which has similarly shown that insurgents locate away from government power (Buhaug 2010). As our results demonstrate, considerations of government power matter for the location of piracy, and these findings are likely relevant for understanding the location of other forms of illicit economic activity.

The Expected Utility of Maritime Piracy

Piracy is driven by rational calculations about the expected costs and benefits from attacks (Hansen 2009; Percy and Shortland 2013a). Potential pirates compare the reward from a successful attack to the income one can draw from work in the legal economy. The risk of capture and incarceration by government authorities also helps determine the expected utility for piracy. As gains from piracy increase compared to a daily wage, and the likelihood of arrest decreases as a result of government weakness, the pool of recruits should expand and the number of incidents increase. The evidence collected to date supports this logic. Piracy in the Greater Gulf of Aden increased as ransom rewards went higher. More generally, joblessness and low wages correlate with increasing numbers of pirate attacks (Frecon 2005; Jablonski and Oliver, 2013). Weak governments also associate with piracy as state officials either have too few resources to find and capture pirates or are complicit in the business of piracy (Daxecker and Prins 2013; Hastings, 2009; Murphy, 2009; Percy and Shortland 2013b). Most countries confronted with serious piracy have insufficient coast guard and/or

naval resources to devote to counter-piracy efforts. Even more importantly, ship captains, local government officials, and pirate leaders often appear to collaborate and share in the spoils of piracy. This is certainly true in the Gulf of Guinea, where coastlines are shorter than East Africa and Southeast Asia, but where vessels anchor for extended periods of time waiting for crude oil to be transported to the ship or refined fuel to be transported off the ship. These ships are easy targets for even moderately sophisticated pirate gangs that buy off government officials and easily evade the limited security presence in the area (Naftalin 2013).

A country's geographic profile also conditions maritime piracy. Long coastlines and numerous inlets provide sanctuary for pirates and make policing difficult for government authorities. Models of piracy consistently show coastline length to be positively related to pirate attacks. But pirates are also strategic in their decision-making and take advantage of adjacent maritime boundaries that enable escape from pursuing naval or coastguard vessels. Sovereignty concerns and regional rivalry in both Southeast Asia and West Africa have prevented agreements that would allow effective cross-border policing. For example, while the Regional Cooperation Agreement to Combat Piracy and Armed Robbery against ships in Asia (ReCAAP) is credited with helping to reduce piracy in and around the Malacca Straits beginning in about 2006, Malaysia and Indonesia have not yet joined due to concerns over sovereignty. Sovereignty also forbids "hot pursuits" across borders, limiting the effectiveness of counterpiracy operations in the Straits (Frecon 2014). Similar concerns regarding sovereignty as well as territorial control inhibit counter-piracy efforts in the Gulf of Guinea and South China Sea. Pirates exploit the lack of coordination among governments to organize attacks, avoid detection, evade capture, and seek new recruits.

If state weakness and economic deprivation directly affect maritime piracy, both also interact with geographical conditions to influence the decision-making of pirates. The coastal

bases from which to launch attacks against ships are not randomly selected but quite deliberately reflect the two critical elements in a pirate's utility function: maximizing the prize and reducing the likelihood of capture. Pirates quite naturally position themselves where the opportunity to seize ships exists. But within this opportunity zone, the ability to acquire shelter from state authority should impact the location of pirate bases.

Similar expectations apply to rebel forces and terrorist cells. The ability of both insurgents and terrorists to organize, recruit, train, and carry out attacks against government forces and civilian targets is contingent on avoiding detection. Indeed, Crenshaw (1981) insists that a key source of terrorist violence remains a government's inability to prevent it. Takeyh and Gvosdev (2002) similarly conclude that state weakness facilitates the recruitment of new terrorist cadres.[4] While neither study notes the location of terrorist camps, insurgent forces have been found to strategically locate away from government power. Buhaug and Rød (2006), for example, find that separatist conflicts tend to occur in the peripheral regions of a country. Buhaug, Cederman, and Rød (2008) similarly observe that ethnic civil wars erupt far from capital cities (also see Rustad, Buhaug, Falch, and Gates 2011) and Cederman, Buhaug, Rød (2009) also find that the risk of civil war increases with the distance between capital and a politically excluded ethnic group. Arguably, the success of insurgent movements is dependent on rebels' ability to shelter themselves from government forces. Fearon and Laitin (2003, 80) note that nascent insurgencies survive because governments cannot "reach …into rural areas" and Gates (2002, 126) determines that "sanctuary implies a place to retreat away from government forces." Buhaug (2010) finds evidence of this search for sanctuary as conflict in more capable states is observed to occur in more physically distant regions of a country.

[4] Lai (2007) also notes that trans-national terrorist organizations tend to survive in weak states.

The same strategic reasoning used by rebel and terrorist leaders to locate away from government power should also apply to pirates. Certainly anecdotal evidence suggests this to be the case. Piracy in the Malacca Straits is facilitated by the presence of multiple maritime boundaries (Singapore, Malaysia, Indonesia, and Thailand) and numerous island chains, both of which enable pirates to escape law enforcement. Frecon's (2014) work on piracy in the Straits, for example, shows that pirates hide in remote areas separated by sea or long roads to pursue their illegal activities. Complex maritime boundaries and the extensive Niger Delta also present challenges to combatting piracy in the Gulf of Guinea. Not only does the Niger estuary provide numerous mangrove swamps and coastal barrier islands for taking cover, but pirates can also easily evade authorities by fleeing into the territorial waters of Benin, Cameroon, Equatorial Guinea, or Sao Tome and Principe.[5]

Extant research on maritime piracy has focused mainly on the determinants of piracy incidence and has not examined the location of piracy.[6] Scholars certainly incorporate geographical information in piracy models. Measures of coastline length, distance between capital cities and sea-lane chokepoints, as well as the number of deep water ports all clearly associate with pirate attacks (Daxecker and Prins 2013; Daxecker and Prins 2015; de Groot, Rablen, and Shortland 2011; Hastings, 2009;). Further, Daxecker and Prins (2014) integrate Boulding's loss of strength gradient into a model of piracy by interacting a measure of state weakness with distance between capital and coast. They find that the impact of government fragility on piracy incidents increases with distance. Weak and strong states have similar levels of piracy when capital-coast distances are short. But as distance increases, weak states experience considerably more pirate attacks in their territorial waters. Yet this evidence only indicates that weaker states have greater difficulty projecting power and therefore experience

[5] See Samuel Oyadongha. "Nigeria: Piracy Activities Heighten in Niger Delta. *Vanguard News*, 5 February 2014.

[6] Marchione and Johnson's (2013) work on the spatial clustering of piracy incidents is an important exception, but does not focus on how institutional or economic factors affect piracy location.

more pirate attacks. Where piracy is actually occurring, and to what extent state capacity affects the location of piracy, remains unclear.

Presumably, insurgents position themselves far away from government power centers and behind natural terrain barriers to avoid detection. The concealment afforded by both distance and difficult topography enables insurgents the time and space to organize, recruit, and strategize. Pirates also need sanctuary from the scrutiny of government authority. Bribing bureaucrats may be one method to elude exposure. But distance itself from government power centers provides a certain level of camouflage. Resource limitations naturally constrain the geographic allocation of state personnel. Weak states simply do not possess sufficient police, military, and intelligence forces to monitor extensive geographical areas. Consequently, pirate gangs can organize and operate in ungoverned spaces.

If pirates, like rebels, consider a regime's loss of strength gradient, then the location of pirate operations should be a function of government capacity (Buhaug 2010). As state capacity increases, pirates will locate geographically farther away from a government's center of power in order to find adequate shelter from detection and incarceration by regime authorities.[7] Changes in state capacity and piracy location in Indonesia can illustrate this dynamic. From 1998 to 2012, Indonesia's percentile rank in government effectiveness increased from 29 to 44. In line with our expectation regarding the strategic calculations of pirates, these improvements in capacity coincided with a 100% increase in the median distance between Jakarta and the location of piracy from 513 kilometers in 1997 to 1058 kilometers in 2012. We therefore expect that variation in state weakness within and between states is associated with changes in piracy location. Compared to stronger states, weak states

[7] It is important to note that governments are also strategic actors who are selective in choosing areas for investment and the provision of public goods. While conceptualizing states as strategic actors is not inconsistent with our claim about the strategic selection of location by pirates, the under-provision of resources by the government could also lead to grievances against the state. Pirates may thus be motivated by grievances in addition to more opportunistic goals. While a more comprehensive assessment of this mechanism is beyond the scope of this article, it would seem likely that aggrieved individuals would primarily direct their discontent against that state rather than non-state targets.

will experience piracy closer to a country's power center, and improvements in state capacity are expected to increase the distance between government power centers and piracy. This discussion leads to the following hypothesis:

H_1: *The distance between pirate activity and a regime's power center will be greater for stronger states compared to weaker ones.*

Research Design

Data

We empirically examine our expectations with cross-national time-series data on the location of piracy from the International Maritime Bureau (IMB). As part of a larger project on maritime piracy that includes the creation of a comprehensive data set with all piracy incidents from the IMB and other reporting sources for the 1990-2014 period, we use the currently completed subset of incidents covering the years 1996-2013.[8] The coding procedure included standardizing information available for all incidents, pruning duplicates, and geocoding incidents where location information was missing.[9] In addition, pirate incidents were assigned to coastal states if they occurred within 12 nautical miles of maritime boundaries, or to the coastal country closest to the pirate incident for incidents outside of 12 nautical miles.[10] ArcGIS was used to assign incidents to individual countries. For the analyses in this article, incident-level data were aggregated into country-year data for all coastal states from 1996-2013. Our unit of analysis is therefore the country-year.

Dependent Variables

[8] A robustness check using an alternative data source is presented in model 5, table 1. Data for this model come from the Anti-Shipping Activity Messages (ASAM) data collected by the U.S. National Geospatial-Intelligence Agency. These data are similar to the incident-level information from IMB, but we have not yet had an opportunity to examine the ASAM data closely to check for duplicates, ensure precise geocoding information, or compare the ASAM incidents to IMB data.

[9] When GPS coordinates were missing, IMB lists the port location, the distance and direction from a point, the territorial waters, the body of water, or where along a route an incident occurred. We used ArcGIS to identify port and point coordinates. For territorial waters and bodies of water, we used centroid coordinates. For incidents en route between two points, we assigned coordinates for the halfway point. For all incidents, we note the location precision so users can drop incidents with less precise coding.

[10] For the 1996-2013 time period, over 90% of pirate incidents recorded by the IMB occur within the territorial waters (12 nm) and exclusive economic zones (200 nm) of states.

In line with hypothesis 1, our primary dependent variable measures the median distance (in kilometers) between coastal states' capital cities and the location of all piracy incidents attributed to these states for each year.[11] Quantum GIS was used to create this measure. Capital-piracy distances range empirically from 1.01 kilometers (Guinea-Bissau) to 12,682 kilometers (Russia), but we take the natural log because the data are right-skewed, which is problematic for the normality assumption in OLS regression.[12] However, since non-missing values of capital-piracy distance require the occurrence of at least one piracy incident per country-year, and the location of piracy is likely not independent of the initial onset of piracy, we specify a Heckman selection model that allows us to model the location and onset of piracy concurrently (Dubin and Rivers, 1989; Heckman, 1979). Since the incidence of piracy may be systematically related to its location, we estimate the probability that a coastal state will experience one or more piracy incidents in the selection equation, and the median distance between capital cities and piracy incidents in the outcome equation. [13] Therefore, in addition to estimating capital-piracy distances using OLS regression in the outcome equation, empirical models estimate the incidence of piracy as a second dependent variable in the selection equation. To measure the presence of piracy, we create a dummy variable that is

[11] A robustness test using mean distances is presented in model 7. Additionally, the main model in table 1 includes all incidents, including attacks that occur while vessels are steaming and those that occur while ships are stationary. However, since pirates cannot find permanent sanctuary at sea, we show a robustness test that includes only incidents that occur while vessels are berthed at port (model 3).

[12] In models not shown, we also specified models using unlogged median distance measures, which did not change our results.

[13] The Heckman model requires specification of the exclusion restriction for identification purposes. The exclusion restriction requires the inclusion of one or more covariates that influence the incidence of piracy in the selection equation, but do not independently affect the location of piracy in the outcome equation (Woolridge 2010). Finding such an instrument in the selection stage is difficult since most correlates of piracy incidence can quite plausibly be linked to piracy location. Still, we think that measures of population size and peace years could be such covariates. Population size is an indicator of the labor force that can be recruited by pirate leaders and evidence links larger populations to more pirate attacks (Daxecker and Prins 2013; Hastings 2009; Jablonski and Oliver 2013). Past experience with piracy has also been shown to affect the future incidence of piracy (Daxecker and Prins 2013). Importantly, we do not expect population size and peace years to impact the distance between a country's capital city and the location of pirate incidents. While population size could indirectly affect distance because more populous countries tend to be larger (and thus have greater distances on average), our models already control for country size by including land area in the selection and outcome equation. For peace years, we cannot think of plausible links with piracy location. To confirm that possible violations of the exclusion restriction in the Heckman model do not influence our results, model 9 in table 1 presents results using the less restrictive two-part model (2PM) proposed by Vance and Ritter (2014).

coded 1 if a coastal state experienced one or more piracy incident in a given year, 0 otherwise. Consequently, piracy distance is measured only for country-years with at least one piracy incident. For country-years without piracy, our distance measure is censored.

Independent Variables

Piracy Location: Our key independent variable in the outcome equation of the Heckman model is a measure of state capacity. Recall that our primary hypothesis expects that piracy in weak states occurs more geographically proximate to power centers than piracy in more capable states. We measure state capacity with data on the effectiveness of governments from the World Bank Governance Indicators (World Bank Group 2012).[14] Government effectiveness measures "perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies" (Kaufmann, Kray, and Mastruzzi 2009, 6). Countries are scored in percentile rank terms, which range from 0 to 100, with higher values corresponding to better outcomes. We divide government effectiveness by 10 when including it in our empirical models to make the range of this variable more comparable to other indicators.

We include four control variables that likely influence the location of piracy: country size (CIA Factbook), GDP per capita (World Bank), coastline length (CIA Factbook), and a dummy variable for Somalia. First, the size of a country clearly influences how physically distant piracy incidents from a capital can be, which is why we include the log of square kilometers for each country in the outcome equation. Second, our theoretical discussion mentions how decisions to engage in piracy are a function of economic opportunity and the

[14] In a robustness test in model 6, we use an alternative indicator measuring state fragility from the Center for Systemic Peace scoring countries on the effectiveness and legitimacy of economic, political, social, and security conditions. Results support our main expectation. Considering additional operationalizations (Hendrix 2010), robustness tests not included found very similar results for other measures of state capacity, including the World Bank's rule of law, the International Country Risk Guide's measure of political stability, the Political Constraints Index independent judiciary measure, and the military personnel variable from the Correlates of War data set.

risk of capture, and others have suggested that GDP per capita captures both economic strength and the ability to project power (Buhaug 2010, 118). Third, longer coastlines provide the space for pirates to act and offer sanctuary away from government forces. We take the natural log of each country's coastline length in kilometers to create this measure. Finally, the period under analysis includes the height of Somali piracy (2005-2012), yet Somalia is arguably an outlier in terms of the extent and geographical scope of piracy. We therefore include a dummy variable to control for Somalia in all models.[15]

Piracy Incidence: Drawing on other systematic research on the determinants of piracy, we include seven variables in the selection equation of the Heckman model. All five of the variables in the outcome equation (government effectiveness, GDP per capita, land area, coastline length, and the Somalia dummy) are likely to affect piracy occurrence and therefore are included in the selection equation (Daxecker and Prins 2013; Daxecker and Prins 2014). In addition to these measures, research has shown that population size affects the incidence of piracy (Daxecker and Prins 2013; Hastings 2009; Jablonski and Oliver 2013). We measure (log) population size with data from the World Bank. To account for temporal dependence, we include a control counting the number of years since the last piracy incident and three cubic splines (Beck, Katz, and Tucker 1998). Cubic splines are not reported to conserve space.

All independent variables except for the peace years measure are lagged by one year to reduce concerns over reverse causality. Descriptive statistics can be found in table A1 in the appendix.

Results

TABLE 1 ABOUT HERE

[15] We discuss a model without the Somalia dummy below.

Table 1 presents results examining our expectation of the effect of state capacity on capital-piracy distance. The first model presents a simple OLS regression of capital-piracy distance without considering that the location of piracy might be endogenous to the determinants of piracy onset. The coefficient for government effectiveness is positive and significant, and a one-unit change in government effectiveness (which ranges from 0 to 10) results in a 0.084 increase in log kilometer distance. While we have considerable theoretical reason to expect piracy onset and location to be interdependent processes, we present the simple OLS regression to address concerns over the instability of estimates in the Heckman model documented in the literature.

Model 2 considers incidence of piracy and its location as interdependent processes by specifying a Heckman selection model (Wooldridge 2010). As seen in the outcome equation of model 1, the coefficient for government effectiveness is positive and significant, and a one unit change in government effectiveness (which ranges from 0 to 10) results in a 0.10 increase in log kilometer distance. Figure 1 more helpfully illustrates the effect of government effectiveness on distance by varying effectiveness across its entire range. Varied from the minimum to the maximum, (log) average distance increases from 4.5 to 5.5, which corresponds to an increase from 90 kilometers to nearly 250 kilometers between capitals and piracy incidents. Findings in model 1 thus provide support for our claim on how state capacity influences the location of piracy, showing that piracy in weak states occurs closer to power centers. The significant rho parameter also supports modeling onset and location as endogenous processes.

FIGURE 1 ABOUT HERE

Results for control variables in the outcome equation confirm expectations based on previous research. The coefficient for Somalia is positive and significant and indicates that average capital-piracy distances increase by 1.5 log kilometers for Somalia, which is equivalent to a

one standard deviation increase of distance.[16] We also see that both land area and coastline length increase capital to piracy distances. Finally, we do not find much evidence that wealth in the form of GDP per capita influences distance to piracy (although it has a significant effect on piracy incidence). We present a visualization of the effect of significant variables in the outcome equation for models 1-6 in Figure 2. The coefficient for Somalia is not shown in the figure.

FIGURE 2 ABOUT HERE

With regard to the selection equation, variables mainly have the expected effect on the probability of piracy. The dummy for Somalia and the coefficient for coastline length are both positive and significant (always for Somalia and in two of the models for coastline length), whereas higher GDP and longer time periods without piracy reduce the probability of experiencing piracy. Notably, state capacity does not significantly affect piracy incidence once its effect on piracy location is modeled as part of an interdependent process. With regard to the exclusion restriction, we include population size and peace years in the selection equation but omit it from the outcome equation. Both measures clearly affect piracy incidence, but it is less obvious how they would affect capital-pirate distances. However, because an effect on incidence alone is difficult to establish conclusively, we present a two-stage estimation approach with less onerous identification requirements in model 9.

We proceed to examine whether results in models 1 and 2 hold up to a number of changes in model specification. One concern with connecting state capacity on land to piracy location is that (at least some) piracy occurs at sea, and we cannot be sure that incidents at sea can be attributed to proximate areas on land since they could theoretically be carried out by

[16] The surge of piracy in the Greater Gulf of Aden, which began in 2008, eventually stretched far out into the Indian Ocean by 2011 (all the way to the Maldives in fact). Such distances are unusual and were largely confined to the Somali case during this brief period of extraordinary activity.

pirates originating from other states.[17] Because most piracy at sea occurs in territorial waters, we consider this quite unlikely. Yet to ensure that this possibility is not influencing our results, we take advantage of the fact that approximately 47% of piracy incidents happen at anchor or berthed, which most likely have been committed by individuals in those areas. We recalculate our distance measures to include only distances between capitals and piracy incidents in ports and at anchorages. The coefficient for government effectiveness remains positive and significant in model 3.

In model 4, we assess whether the inclusion of inland capitals unduly influences our results. States with inland capitals will per definition have longer capital-piracy distances, and these distances are less likely to be influenced by variation in state capacity.[18] To account for this possibility, we include a dummy variable coded 1 for states with capitals on coastlines (0 otherwise) and interact it with government effectiveness. The coefficient for the interaction in model 4 thus represents the effect of state capacity on piracy location only for states with coastal capitals. The coefficient remains positive and significant, and similar in strength as in the first two models, thus showing that our results are not simply a function of the coastal or inland location of capitals.

The fifth model uses piracy data from the Anti-Shipping Messages (ASAM) data to assess whether the use of IMB piracy affects our results.[19] While we have not examined the ASAM data for duplicates, missing location information, or incidents that may not be considered piracy using the IMB definition, we nevertheless examine whether our results hold using an alternative data source. We use the procedure outlined earlier to create the distance measure and dummy variable indicating the presence of piracy. Results in model 5

[17] We think that this concern is less warranted for an analysis at a relatively aggregate level, since we are examining the relationship between capacity and location only at the level of the state.
[18] The positioning of capitals inland, however, could well be a result of lower state capacity, but is not something we can examine here.
[19] Data are collected by the U.S. National Geospatial Intelligence Agency and available at http://msi.nga.mil/NGAPortal/MSI.portal?_nfpb=true&_pageLabel=msi_portal_page_65.

show that government effectiveness is positively related to pirate distance and weakly significant (90% confidence with a one-tailed test). If we restrict the sample to the last ten years (2003-2013), which is when data records on pirate attacks and their locations became much accurate, government effectiveness is statistically significant at 95% confidence levels.

In model 6, we replace our measure of state capacity with an alternative measure from the Center for Systemic Peace. State fragility ranges from 0 to 25, with larger values indicating more fragility. The coefficient for fragility is negative and significant, showing that more fragile states have shorter average capital-piracy distances. In model 7, we recalculate capital-piracy distances using averages instead of medians. Results for mean distances are very similar to our other models. In model 8, we exclude the dummy variable for Somalia to be sure that treating Somalia as a special case does not influence our findings. Although the result is weaker, we again find a positive and nearly significant coefficient for the government effectiveness variable (significant using a one-tailed test with 90% confidence). However, Somalia is an unusual case since attacks occurred at extreme distances (some were closer to India than Africa). In fact, median distance increases by over 200 kilometers when incidents by Somali pirates are included. If we use a capital-port incidents measure for distance and exclude the Somalia dummy, the government effectiveness variable is positive and significant at the 95% confidence level (two-tailed test).

The final model in table 1 (model 9) uses a two-part model (2PM) that helps account for censoring but does not require specifying the exclusion restriction necessary with the Heckman estimator (Vance and Ritter 2014). In this model, we estimate piracy incidence with a standard probit model and capital-piracy distances with OLS in separate equations. Stored estimates from the probit equation are then regressed on stored OLS estimates using seemingly unrelated estimation. This method incorporates correlated cross-equation error terms into the estimation and thus provides an alternative method for addressing sample

selection bias. Results using the 2PM method are substantially similar to our Heckman and OLS results. In model 9, the coefficient for government effectiveness in the outcome equation is again significant and positive, and results for other variables are highly similar to those in our earlier models.

Conclusion

With the dramatic decline of Somali piracy in 2013, some have been quick to declare victory over modern-day pirates.[20] It is certainly true that piracy in the Greater Gulf of Aden has decreased substantially. In 2011, the IMB listed 160 incidents off Somalia, which was a slight increase from the 139 in 2010. But with only 7 confirmed attacks (and all unsuccessful) in 2013, the flotilla of naval vessels in the area and improved onboard security measures, such as the placement of private security guards on commercial ships, appears to have made it more difficult to seize ships (reducing the reward) and increased the risk of capture. Conditions in Somalia have also improved somewhat due to domestic improvements as well as international support for both capacity building measures and the rule of law.[21] But it may be too soon to announce an end to this maritime threat. Indeed, piracy has increased in the Gulf of Guinea by over 200% from 2011 to 2013 (Bridger 2013; Naftalin 2013). In the waters off Indonesia, the number of incidents has surged from 15 in 2009 to 106 in 2013. Pirate attacks are on the rise even off Somalia's coast. There have been at least 13 incidents so far in 2014 (up through October). Piracy and pirates have not yet disappeared.

The political, economic, and geographic correlates of piracy established in recent systematic work explain why it endures at the country level, but these studies tell us little about the determinants of piracy location off state coasts. However, a better understanding of

[20] See, for example, stories in USA Today (December 20, 2012) and the Southern Times of Africa (December 20, 2013).

[21] The Contact Group off the Coast of Somalia and the UNODC have focused on law enforcement, the creation of a dedicated pirate court in the Seychelles and prisons in Somalia, and the disruption of financial flows from piracy. These efforts have apparently met with some success as Somalia's fragility score has decreased from 24 in 2011 to 20 in 2013.

piracy location is important since we know that piracy is not uniformly distributed across states' coastlines and their territorial waters. Drawing on Boulding's (1962) seminal work on the loss of strength gradient, and Buhaug's (2010) application to civil war, our article shows that piracy follows a strategic logic in which the government's ability to project force influences piracy location. Since state power in weak states declines more rapidly as distance from power centers increases, piracy in those countries occurs closer to capitals than in more capable states. Estimating a selection process in which several determinants of piracy incidence also affect its location, our empirical findings show that median (and mean) capital-piracy distances are shorter in less capable states. This result holds across a number of sensitivity tests, including alternative measures of state capacity and piracy, different types of piracy, a restriction to coastal capital-piracy distances, and the use of different estimation methods.

To conclude, an important reason why pirates in moderately capable states like Indonesia locate themselves in remote areas cut off by sea or long roads is that the risk of detection and capture decreases with physical distance. More generally, our article establishes that because weak states pose less of a threat to pirates, piracy occurs closer to capital cities. In addition to providing insight on piracy, our findings have implications for the location of other forms of organized crime such as drug or gang violence that should be examined in future research.

Table 1: Determinants of Capital-Piracy Distance, 1996-2013

	(1) OLS w/o selection	(2) Selection Model	(3) Port Incidents	(4) Coastal Capitals	(5) ASAM Piracy	(6) Fragility	(7) Mean Distance	(8) w/o Somalia Dummy	(9) 2 PM Model
Outcome (piracy location)									
Government Effectiveness$_{t-1}$	0.084*	0.101**	0.126**	-0.023	0.051		0.115**	0.050	0.084**
	(0.036)	(0.039)	(0.042)	(0.028)	(0.039)		(0.037)	(0.037)	(0.035)
State fragility$_{t-1}$						-0.068**			
						(0.022)			
Somalia	1.376**	1.447**	1.529*	2.300**	0.994**	1.642**	1.407**		1.376**
	(0.173)	(0.190)	(0.642)	(0.236)	(0.201)	(0.223)	(0.168)		(0.173)
Land area	0.535**	0.608**	0.682**	0.466**	0.488**	0.656**	0.564**	0.612**	0.535**
	(0.052)	(0.059)	(0.067)	(0.054)	(0.046)	(0.058)	(0.055)	(0.061)	(0.053)
GDP per capita$_{t-1}$	0.083	0.072	0.236**	-0.037	0.029	-0.045	0.081	0.057	0.083
	(0.060)	(0.075)	(0.095)	(0.062)	(0.061)	(0.088)	(0.070)	(0.075)	(0.059)
Coastline Length	0.216**	0.145*	-0.017	0.218**	0.226**	0.149*	0.175**	0.198**	0.216**
	(0.062)	(0.066)	(0.074)	(0.060)	(0.054)	(0.065)	(0.059)	(0.065)	(0.061)
Coastal Capital				-2.164**					
				(0.234)					
Effectiveness$_{t-1}$* Capital				0.200**					
				(0.048)					
Constant	-0.462	-0.369	-0.787	1.935**	0.302	1.356	-0.252	-0.460	-0.463
	(0.494)	(0.523)	(0.587)	(0.467)	(0.469)	(0.903)	(0.492)	(0.523)	(0.492)
Selection (piracy yes/no)									
Government Effectiveness $_{t-1}$		-0.017	-0.016	-0.014	-0.017		-0.020	-0.024	-0.016
		(0.027)	(0.026)	(0.026)	(0.022)		(0.027)	(0.026)	(0.025)
State Fragility $_{t-1}$						0.016			
						(0.012)			
Somalia		5.088**	0.154	4.924**	4.880**	4.666**	5.143**		
		(0.159)	(0.371)	(0.140)	(0.115)	(0.050)	(0.207)		
Land Area		-0.035	-0.059	-0.028	-0.023	-0.052	-0.042	-0.025	0.002
		(0.042)	(0.043)	(0.041)	(0.034)	(0.041)	(0.041)	(0.042)	(0.036)

		(0.047)	(0.049)	(0.045)	(0.040)	(0.043)	(0.046)	(0.045)	(0.040)
Coastline Length		0.047	0.031	0.046	0.082**	0.067*	0.045	0.059+	0.025
		(0.035)	(0.033)	(0.035)	(0.029)	(0.035)	(0.035)	(0.035)	(0.034)
Peace Years		-0.764**	-0.482**	-0.768**	-0.568**	-0.793**	-0.761**	-0.782**	-0.751**
		(0.065)	(0.052)	(0.065)	(0.055)	(0.065)	(0.065)	(0.065)	(0.060)
Constant		-1.686*	-2.463**	-1.538*	-0.571	-2.217**	-1.835**	-1.480*	-1.012+
		(0.703)	(0.715)	(0.677)	(0.613)	(0.791)	(0.685)	(0.686)	(0.604)
Rho		-0.228+	-0.347*	-0.206+	0.072	-0.212+	-0.326**	-0.211	
		(0.119)	(0.141)	(0.101)	(0.106)	(0.116)	(0.114)	(0.129)	
R-squared	0.37								
Z									0.767**
									(0.070)
N (select)		1,361	1,470	1,361	1,286	1,441	1,361	1,361	
N (outcome)		527	458	527	635	556	527	527	
N (total)	621	1,888	1,928	1,888	1,921	1,997	1,888	1,888	1,928

Robust standard errors in parentheses. Cubic splines not reported.

** p<0.01, * p<0.05, + p<0.1 (two-tailed tests)

Figure 1: Marginal Effect of Government Effectiveness on Capital-Piracy Distance, Model 2

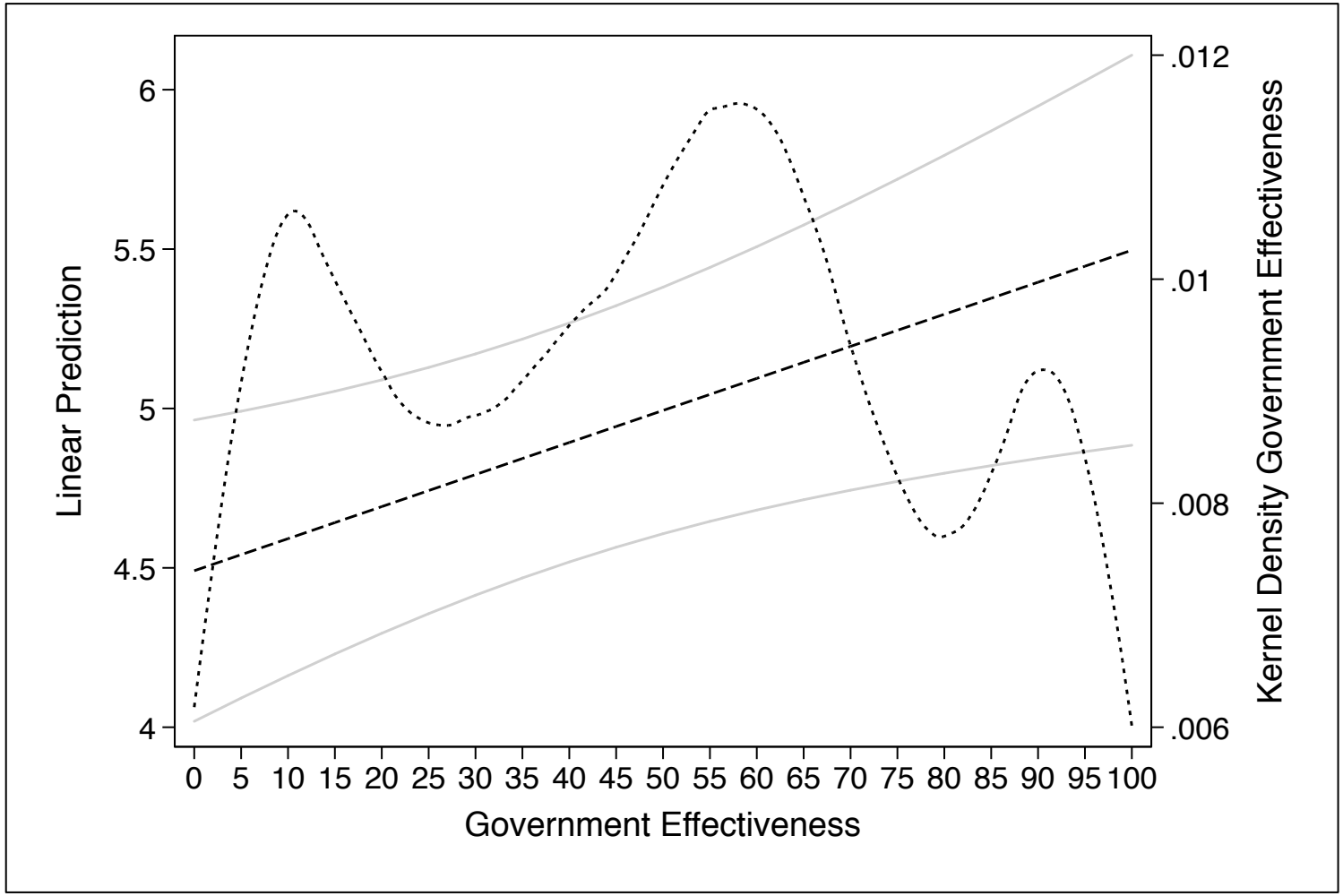
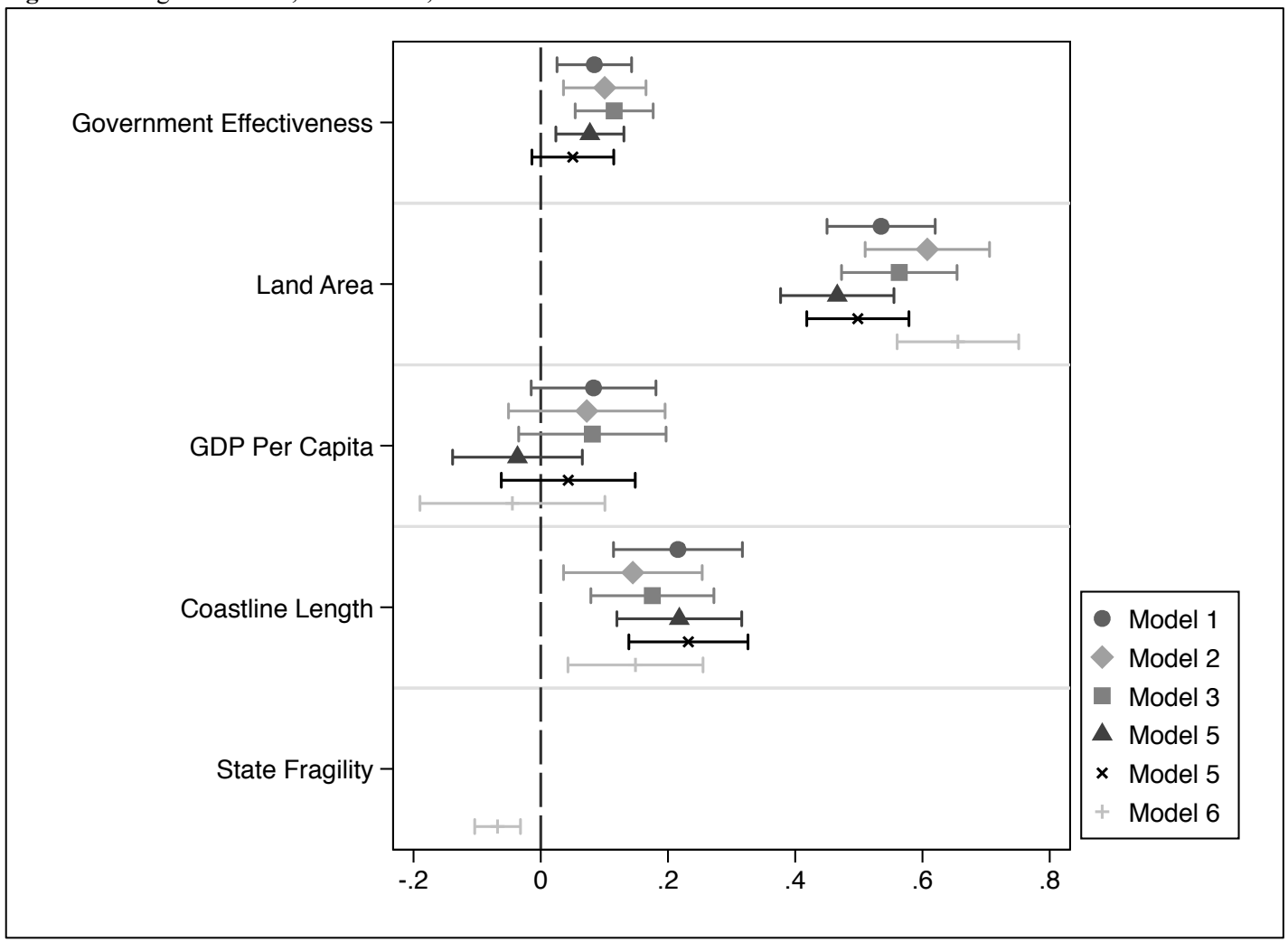


Figure 2: Marginal Effects, Models 1-6, Median Distances



Note: Government effectiveness divided by 10, ranges from 1-10. Marginal effect for Somalia dummy not presented.

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Table A1: Descriptive Statistics

	Mean/Median	Standard Deviation	Minimum	Maximum
Capital-Piracy Distance, logged	5.465/5.341	1.844	0.010	9.448
Government Effectiveness	5.050	2.913	0	10
Somalia	0	-	0	1
Land Area, logged	5.284	1.914	0.525	9.701
GDP per capita, logged	8.169	1.582	4.633	11.124
Population, logged	16.253	1.656	12.903	21.024
Coastline, logged	7.188	1.690	2.996	12.216
Peace Years	5.001	5.234	0	18
Observations	1,905			