

## RESEARCH NOTE

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# HOW DID MARITIME PIRACY AFFECT TRADE IN SOUTHEAST ASIA?

### Abstract

Over the past 30 years, Southeast Asia has experienced rapid growth in intra-regional economic activity, but despite the remarkable diminution in the frequency and intensity of military conflict and crises, it has not been free of interstate disputes, such as maritime disputes. However, the struggle against maritime crime activities such as maritime piracy is a priority for all countries of the region, as well as one of the unavoidable prerequisites for the achievement of the regional economic security. This research note focuses on the impact of maritime piracy on the Southeast Asian countries' trade. Bilateral trade flows among the Southeast Asian countries over the 1994 to 2013 period are used to estimate an augmented gravity model that includes various measures of maritime crime activities. The purpose is to find the evidence to indicate how maritime piracy has affected the volume of intra-regional trade.

### Keywords

Asia, Gravity Equation, International Relations, Security, Trade

## INTRODUCTION

Over the past 30 years, Southeast Asian countries have experienced rapid growth in intra-regional economic activity. Southeast Asia is one of the most strategically important areas for international trade: over half of the world's commercial shipping passes through the Straits of Malacca and Singapore, which provide the shortest sea route between the Indian Ocean and the Pacific Ocean. These are the most important shipping lines in the world, carrying approximately one-quarter of all traded goods. However, Southeast Asia is highly vulnerable to several threats that could undermine its security, especially in economic terms. The political instability in some countries and the conduct of criminal activities are the main threats. In particular, the weak control by some regional countries has allowed some individuals to engage in criminal activities, such as maritime piracy.

In this research note we estimate the impact of maritime piracy on the Southeast Asian countries' trade. Bilateral trade flows among the Southeast Asian countries in the years 1994 to 2013 are used to estimate an augmented gravity model that includes various measures of maritime crime activities. The purpose is to find evidence to indicate how maritime piracy has affected the volume of intra-regional trade. The research note is

structured as follows: the first section provides a brief background on maritime piracy and efforts to combat it; the second section focuses on the literature dealing with the consequences of maritime piracy on international trade; the third section presents the data used, and the fourth section outlines the model, empirical estimation and main results; the fifth section shows conclusions and ideas for further research.

Maritime piracy remains an issue in Southeast Asia. In the last 20 years, all the major regional powers have taken measures to ensure their rights on these waterways. These are vital for the economies of the Southeast Asian countries, and especially for the People's Republic of China. Its main shipping lines of import of energy supplies and raw materials are through the straits, from the Middle East and Africa. Consequently, the Chinese government aims to adopt a commercial and maritime strategy that will ensure better security to its shipping lines. In fact, these waterways have long been prone to maritime criminal activities such as piracy, especially when such ships are concentrated at the so-called "chokepoints."

Chokepoints are points of natural congestion along two wider and important navigable passages. They are naturally narrow channels of shipping, such as the Strait of Malacca, that have high traffic because of their strategic locations. Their geographical nature is conducive to maritime criminal activities, which consequently affect regional trade. Avoiding these maritime chokepoints would contribute to a significant loss in the nature of shipping operations. With the increase in sea-borne trade and shipbuilding tonnage worldwide, the amount of commercial traffic traversing the region's waterways has increased substantially, and it has resulted in the dramatic increase of maritime piracy in the region.

The Southeast Asian trade has historically suffered incidents of maritime piracy, which have fluctuated over the last 20 years but recently appear to be in another growth phase. Several initiatives have been carried out among the countries of the region to counter maritime criminal activities, especially through Article 43 ("Navigational and safety aids and other improvements and the prevention, reduction and control of pollution") of the United Nations Convention on the Law of the Sea, which states:

User States and States bordering a strait should by agreement cooperate:

- (a) in the establishment and maintenance in a strait of necessary navigational and safety aids or other improvements in aid of international navigation; and
- (b) for the prevention, reduction and control of pollution from ships.

The Malacca Strait Sea Patrols (MSSP) and the Regional Cooperation Agreement on Anti-Piracy (ReCAAP) are among the main regional cooperation initiatives, launched respectively in 2004 and 2006. In particular, the program ReCAAP has been established with the objective of increasing multilateral cooperation to combat the threat of maritime piracy and armed robberies through information sharing and cooperation agreements. Except for Malaysia and Indonesia, all the countries of the region have joined the program.

In addition to the failure of regional cooperation in military terms for patrolling such a vast area, we highlight the difficulties of local governments to exercise effective internal security. These conditions have encouraged the increase of terrorist attacks, including in regional waters. In particular, this occurred mainly in the waters of the South China Sea, where some terrorist groups have carried out pirate activities to finance themselves and

gain visibility. However, notwithstanding a few episodes, it is not possible to state that terrorist groups really commit pirate activities.

Finally, it is difficult to distinguish between piracy, terrorism, and other acts of maritime depredation. According to the International Maritime Bureau (IMB), maritime piracy is

an act of boarding or attempting to board any ship with the apparent intent to commit theft or any other crime and with the apparent intent or capability to use force in furtherance of that act.

While the Council for Security Cooperation in the Asia Pacific (CSCAP) defines maritime terrorism as

the undertaking of terrorist acts and activities (1) within the maritime environment, (2) using or against vessels or fixed platforms at sea or in port, or against any one of their passengers or personnel, (3) against coastal facilities or settlements, including tourist resorts, port areas and port towns or cities.

#### LITERATURE REVIEW

Despite the risk arising from an increase in this phenomenon, to date, analyses in quantitative economics about the consequences of maritime piracy in this region are insufficient. From an economic point of view, maritime piracy affects international trade through an increased insecurity concerning the delivery of goods. Bensassi and Martínez-Zarzoso (2012) estimate the impact of piracy on maritime trade between Europe and Asia using data on incidents of maritime piracy between 1999 and 2008. They apply the gravity model, widely used to investigate the role played by specific policy or geographical variables in bilateral trade flows.

According to this model, exports from country  $i$  to country  $j$  are explained by their economic sizes, their populations, direct geographical distances, and a set of dummies incorporating some type of institutional characteristics common to specific flows. Economic size is measured as gross domestic product (GDP), and distance is typically measured as the distance between countries' capital cities. There are several empirical applications in the literature on international trade, which have contributed to the improvement of the performance of the gravity equation. In particular, the gravity equation has also been augmented with variables that could reduce trade. In this regard, Marcouiller (2000) and Anderson and Marcouiller (2002) have used the gravity model of trade to research empirically the extent to which insecurity deters trade. According to the analyses carried out by Anderson and Marcouiller (2005) and Blomberg, and Hess (2004), several types of violent acts have a significant negative impact on bilateral trade.

Martínez-Zarzoso and Bensassi (2013) test the effect of modern piracy on maritime trade cost proposing a simple model of transport cost determination and deriving a transport costs equation augmented with maritime piracy as an additional explanatory variable. Their results show a significant and positive impact of piracy on maritime transport cost; in addition, they show that localized conflicts could selectively harm some international trade routes.

Burlando, Cristea, and Lee (2014) lay out an empirical model of bilateral trade in which maritime piracy increases trade costs, and derive an augmented gravity equation

to estimate the effect of pirate activity on trade volumes. Using a global panel data set combining information on bilateral volumes of trade and on reported pirate attacks, they show that the threat of violence and, more generally, the possibility of disruptions in the transportation network has a negative effect on trade.

Generally, the negative impacts of maritime piracy disrupt the global economy. In fact, maritime piracy may have a significant impact on GDP of the trading countries through a drop in trade. Bendall (2010) has addressed the impact of piracy on the cost of maritime trade. Analysing the efforts of private and public sector initiatives, Kerr (2013) shows that maritime piracy imposes considerable costs on international commerce and taxpayers, thus inhibiting international trade.

Analysing the data between 2003 and 2008, Fu, Ng, and Lau (2010) have investigated the impacts of maritime piracy on global economic development. They attempt to explain the changes in economic losses experienced by the global shipping industry over time in terms of costs potentially produced by maritime piracy. Therefore, they use a simulation model to investigate how maritime piracy might affect losses through the increasing cost of insurance, and the potentially increasing costs associated with ships being forced to take (longer) alternate routes to avoid the risk of maritime piracy.

Given the issues at stake and the broad range of costs and trade-related implications of maritime piracy at both the regional and the global level, sustained long-term efforts to combat and repress maritime piracy clearly remain a matter of strategic importance. In this research note, we focus on the impact of maritime piracy on intra-regional trade. In doing so, we study the bilateral trade flows among the Southeast Asian countries, considering maritime piracy attacks as variables.

## DATA

The sample analysed here is made up of 10 countries of Southeast Asia; in particular, this research note registers the variations related to the annual foreign trade over the period between 1994 and 2013. Therefore, the database is composed by 200 statistics units.

The selected countries are: Cambodia, Hong Kong, Indonesia, Macau, Malaysia, People's Republic of China, Philippines, Singapore, Thailand, and Vietnam. Note that Hong Kong and Macau are special administrative regions of People's Republic of China. Even if they maintain their own legal system, the public security force, monetary system, customs policy, and immigration policy, the State Council of China is responsible for military defense and foreign affairs.

Among the selected variables, we chose the membership to the Association of Southeast Asian Nations (ASEAN) because it is the main regional organization that aims to facilitate economic integration and to promote intergovernmental cooperation amongst its members. In addition to the economic issue, we chose this variable because of the efforts of ASEAN in the regional security.

Data on ASEAN membership, geographic boundaries, and spoken languages are compiled by the World Factbook: a reference resource produced by the Central Intelligence Agency that provides information on the history, people, government, economy, geography, communications, transportation, military, and transnational issues for over 250 world entities. The source of data on piracy incidents is the ICC International Maritime Bureau. It is a specialized division of the International Chamber of Commerce (ICC)

established in 1981 to act as a focal point in the fight against all types of maritime crime and malpractice. It maintains a round-the-clock watch on the global shipping lanes, reporting pirate attacks to local law enforcement and issuing warnings about maritime piracy hotspots to shipping. Finally, the economic data are compiled by the World Bank, which allows free and open access to data about development in countries around the globe.

Table 1 offers descriptive statistics of the variables considered to determine the influence of maritime piracy on Export.

METHODOLOGY

In this research note, we use a standard gravity model augmented by some political factors that are also deemed to influence the depth of trade. The model that we use in this research note is generally estimated in log-linear form, and is specified as follows:

$$\begin{aligned}
 Export_{ijt} = & \alpha_{ij} + \alpha_t + \beta_1 GDP_{it} + \beta_2 GDP_{jt} + \beta_3 Pop_{it} \\
 & + \beta_4 Pop_{jt} + \beta_5 Distance_{ij} + \beta_6 Piracy_{ijt} \\
 & + \psi_1 Contiguity_{ijt} + \psi_2 Language_{ijt} + \psi_3 ASEAN_{ijt} + u_{ijt}
 \end{aligned}$$

where

- $Export_{ijt}$  are the exports from country  $i$  (exporter) to country  $j$  (reporter) in period  $t$  in current USD thousands;
- $GDP_i/GDP_j$  indicates the GDP (at purchasing power parity) per capita of the exporter/importer;
- $Pop_i/Pop_j$  expresses exporter/importer populations;
- $Distance_{ij}$  is geographical distances between countries  $i$  and  $j$ ;
- $Piracy_{ijt}$  is the number of piracy incidents off the coasts of the two countries  $i$  and  $j$ ;
- $Contiguity_{ijt}$  is the common geographical boundary between countries  $i$  and  $j$ ;
- $Language_{ijt}$  is the common language between countries  $i$  and  $j$ ;
- $ASEAN_{ijt}$  is the common membership to the Association of Southeast Asian Nations (ASEAN) of the two countries  $i$  and  $j$ .

TABLE 1 Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Export	1,645	7278133	2.53e + 07	.508	3.84e + 08
Distance	1,800	2037.118	1087.229	60.77057	5220.879
Contiguity	1,800	.1777778	.3824318	0	1
Language	1,800	.2666667	.4423395	0	1
GDP <sub>i</sub>	1,800	19376.3	24287.12	761.3493	140644.4
GDP <sub>j</sub>	1,800	19376.3	24287.12	761.3493	140644.4
Pop <sub>i</sub>	1,800	1.79e + 08	3.75e + 08	391783	1.36e + 09
Pop <sub>j</sub>	1,800	1.79e + 08	3.75e + 08	391783	1.36e + 09
ASEAN <sub>i</sub>	1,800	.66	.4738404	0	1
ASEAN <sub>j</sub>	1,800	.66	.4738404	0	1
Piracy	1,800	24.45	35.45704	0	218

Note that  $Contiguity_{ijt}$ ,  $Language_{ijt}$ , and  $ASEAN_{ijt}$  are dummy variables and are generally used as proxies, which take the value of 1 when the countries have, respectively, a common geographical boundary, a common language, and a common membership to ASEAN.

The parameter estimates of the model are reported in Table 2, where Model 1.1 (with ordinary standard errors) and Model 1.2 (with robust standard errors) are contrasted. Even though Breusch-Pagan's test detects heteroscedasticity in Model 1.1 ( $\chi^2(1) = 331.27$ ,  $p < 0.001$ ), we show that the heteroscedasticity correction does not change standard errors a lot. Despite a relatively large number of regressors used in the model, there are not strong linear relationships between them as indicated by low values of the variance inflation factor (VIF). None of the VIFs exceed 2.4, whereas a typically used threshold value is 5.

All parameter estimates are statistically significant and have expected signs. The explanatory power of the model is very high: 71.3 percent of  $lnExport$  are explained using the regressors that enter Model 1. Every additional maritime piracy attack that

TABLE 2 Parameter estimates (Models 1.1 and 1.2)

	(1.1) lnExport	(1.2) lnExport
lnDistance	-1.112*** (0.0670)	-1.112*** (0.0609)
lnGDP <sub>i</sub>	1.754*** (0.0540)	1.754*** (0.0630)
lnGDP <sub>j</sub>	0.657*** (0.0449)	0.657*** (0.0484)
lnPop <sub>i</sub>	1.449*** (0.0288)	1.449*** (0.0326)
lnPop <sub>j</sub>	0.919*** (0.0274)	0.919*** (0.0272)
Piracy	-0.0109*** (0.00125)	-0.0109*** (0.00111)
ASEAN <sub>i</sub>	1.450*** (0.0986)	1.450*** (0.0951)
ASEAN <sub>j</sub>	0.659*** (0.0944)	0.659*** (0.0966)
Contiguity	0.345*** (0.119)	0.345*** (0.0823)
Language	1.958*** (0.118)	1.958*** (0.127)
_cons	-43.29*** (1.162)	-43.29*** (1.181)
N	1645	1645
R <sup>2</sup>	0.713	0.713
adj. R <sup>2</sup>	0.711	0.711
AIC	6335.9	6335.9
BIC	6395.4	6395.4

Standard errors in parentheses

\*p < 0.1, \*\*p < 0.05, \*\*\*p < 0.01

TABLE 3 Variance inflation factor

Variable	VIF	1/VIF
$\ln \text{Pop}_i$	2.36	0.423991
$\ln \text{GDP}_i$	2.30	0.434185
$\ln \text{Pop}_j$	1.98	0.505652
$\ln \text{GDP}_j$	1.88	0.533012
Language	1.72	0.581204
$\ln \text{Distance}$	1.58	0.634493
$\text{ASEAN}_i$	1.28	0.783292
Contiguity	1.25	0.797679
Piracy	1.21	0.823768
$\text{ASEAN}_j$	1.19	0.843456
Mean VIF	1.67	

happens either of the two partnering countries leads to a 1 percent decrease in export volume. In addition, it is worth mentioning that variables describing exporter  $i$  have a stronger impact on its export volume than the corresponding characteristics of the importer  $j$ . For example, a 1 percent increase of GDP of the country  $i$  leads to a 1.754 percent increase in Export from country  $i$  to country  $j$ ; while the same percentage increase of GDP of the country  $j$  leads to only a 0.657 percent increase in Export from country  $i$  to country  $j$ .

In order to figure out which country's Export is most influenced by pirates, we conduct analysis by exporter, controlling the importer's characteristics and the distance between the two countries. The impact of the number of maritime piracy attacks is the highest on Macau's Export (more than 3 percent decrease of Export due to each additional attack). The weakest effect is on Indonesia's trade (the effect is negligible and the  $p$ -value  $> 0.1$ ).

In addition, we find specific pairs of countries that are impacted by maritime piracy the most by running regressions of  $\ln \text{Export}$  on Piracy for each pair of countries. In Table 5, we report the effects on all pairs that are significant at 1 percent level ( $p$ -value  $< 0.01$ ). The highest size of the effect (beta coefficient) is observed for export from Hong Kong to Cambodia ( $\text{Exp}(-0.195) = 0.82$ , i.e. each maritime piracy attack is associated with a 18 percent decrease in Export). Maritime piracy has a similar strong effect on Export from Cambodia to PR China as well ( $\text{Exp}(-0.184) = 0.83$ , i.e. each maritime piracy attack is associated with a 17 percent decrease in Export). Another adversely affected trade route is from Philippines to Macau ( $\text{Exp}(-0.189) = 0.83$ , i.e. each piracy attack is associated with a 17 percent decrease in Export).

## CONCLUSIONS

According to security experts, the main threat to regional security in Southeast Asia would be the nexus between maritime piracy and terrorism. Indeed, recently, pirate activity in the high sea has gradually been used as the tool for terrorist groups. Such attacks would halt international commerce and lead to the economic losses. Indeed, the shipping industry could exert additional pressure on regional governments given that ships and crew are at greater risk, driving up the cost of insurance premiums.

TABLE 4 Analysis by exporter

	Cambodia lnExport	Hong Kong lnExport	Indonesia lnExport	Macau lnExport	Malaysia lnExport	PR China lnExport	Philippines lnExport	Singapore lnExport	Thailand lnExport	Vietnam lnExport
lnDistance	-1.862*** (0.524)	-0.00228 (0.0826)	-2.433*** (0.206)	-0.953*** (0.161)	-1.479*** (0.129)	-1.005*** (0.259)	-1.798*** (0.606)	-1.211*** (0.0805)	-3.083*** (0.242)	0.231 (0.388)
lnGDP <sub>j</sub>	1.889*** (0.374)	1.144*** (0.0657)	1.012*** (0.0493)	1.090*** (0.174)	1.363*** (0.0614)	1.637*** (0.0765)	2.046*** (0.130)	0.992*** (0.0791)	1.800*** (0.102)	0.695*** (0.156)
lnPop <sub>j</sub>	1.250*** (0.241)	0.818*** (0.0503)	1.231*** (0.0467)	0.865*** (0.153)	1.246*** (0.0509)	1.113*** (0.0760)	1.402*** (0.108)	1.037*** (0.0510)	1.501*** (0.0712)	0.859*** (0.115)
Piracy	-0.0235*** (0.00445)	-0.0193*** (0.00164)	-0.00257 (0.00179)	-0.0343*** (0.00531)	-0.0130*** (0.00209)	-0.0134*** (0.00260)	-0.0179*** (0.00252)	-0.00787*** (0.00155)	-0.00918*** (0.00179)	-0.0233*** (0.00303)
ASEAN <sub>j</sub>	0.180 (0.763)	-1.090*** (0.187)	-0.266* (0.148)	-0.886 (0.544)	0.115 (0.170)	-0.649** (0.264)	1.955*** (0.270)	-0.00979 (0.179)	0.589*** (0.213)	1.782*** (0.327)
_cons	-16.41* (8.443)	-8.583*** (1.080)	2.699** (1.360)	-8.523** (3.588)	-8.502*** (1.087)	-9.622*** (2.750)	-17.58*** (2.666)	-2.689** (1.157)	-5.527*** (1.155)	-10.36*** (2.643)
<i>N</i>	122	180	177	171	180	180	162	171	180	122
<i>R</i> <sup>2</sup>	0.323	0.872	0.825	0.667	0.788	0.750	0.787	0.743	0.749	0.623
adj. <i>R</i> <sup>2</sup>	0.294	0.868	0.819	0.657	0.782	0.743	0.780	0.735	0.742	0.607
<i>AIC</i>	557.9	329.6	478.1	631.5	557.6	486.4	518.3	527.7	543.3	407.4
<i>BIC</i>	574.7	348.8	497.1	650.3	576.8	505.5	536.8	546.5	562.4	424.2

Standard errors in parentheses

\**p* < 0.1, \*\**p* < 0.05, \*\*\**p* < 0.01



TABLE 5 Analysis on pairs of countries

Group (Reporter–Partner)	Model	Coefficients*			t	Sig.
		Unstandardized		Standardized		
		Coefficients		Coefficients		
B	Std. Error	Beta				
Hong Kong–Cambodia	1 (Constant)	12.895	.183		70.644	.000
	Piracy	–.195	.042	–.740	–4.673	.000
Hong Kong–Thailand	1 (Constant)	15.095	.126		119.982	.000
	Piracy	–.046	.015	–.597	–3.157	.005
PR China–Cambodia	1 (Constant)	13.522	.309		43.742	.000
	Piracy	–.184	.049	–.662	–3.751	.001
PR China–Singapore	1 (Constant)	16.789	.246		68.194	.000
	Piracy	–.130	.041	–.602	–3.196	.005
PR China–Thailand	1 (Constant)	16.347	.271		60.283	.000
	Piracy	–.118	.026	–.726	–4.474	.000
Philippines–Cambodia	1 (Constant)	9.492	.219		43.297	.000
	Piracy	–.123	.026	–.767	–4.776	.000
Philippines–Hong Kong	1 (Constant)	15.501	.143		108.724	.000
	Piracy	–.088	.015	–.817	–5.667	.000
Philippines–Macau	1 (Constant)	9.772	.366		26.723	.000
	Piracy	–.189	.045	–.726	–4.227	.001
Philippines–PR China	1 (Constant)	16.072	.338		47.513	.000
	Piracy	–.169	.031	–.805	–5.423	.000
Philippines–Thailand	1 (Constant)	14.330	.113		126.346	.000
	Piracy	–.027	.008	–.621	–3.170	.006
Singapore–PR China	1 (Constant)	16.855	.259		64.971	.000
	Piracy	–.146	.043	–.627	–3.413	.003
Singapore–Philippines	1 (Constant)	15.783	.172		91.856	.000
	Piracy	–.079	.020	–.686	–4.001	.001
Thailand–Cambodia	1 (Constant)	14.093	.222		63.545	.000
	Piracy	–.115	.036	–.606	–3.233	.005
Thailand–PR China	1 (Constant)	16.464	.248		66.359	.000
	Piracy	–.115	.024	–.749	–4.798	.000
Thailand–Philippines	1 (Constant)	15.168	.269		56.430	.000
	Piracy	–.079	.020	–.682	–3.951	.001
Vietnam–Thailand	1 (Constant)	15.171	.499		30.411	.000
	Piracy	–.137	.043	–.678	–3.197	.008

\* Dependent Variable: lnExport

In order to estimate the impact of maritime piracy on countries' trade in Southeast Asia, we used data on piracy attacks over the period between 1994 and 2013 and employed measures necessary to conduct empirical research based on the gravity model of trade. The results of the empirical analysis show that every additional maritime piracy attack that happens at the expenses of either of the two trade partnering countries involved leads to a 1 percent decrease in export volume. In addition, we stress that variables describing exporter  $i$  have a stronger impact on its export volume than the corresponding characteristics of the importer  $j$ .

In order to figure out which country's export is influenced the most by maritime piracy, we conducted the analysis by exporter, controlling for the importer's characteristics and

the distance between the two countries. We show that the impact of the number of maritime piracy attacks is the highest on Macau's export (more than 3 percent decrease of export due to each additional attack), while the weakest effect is on Indonesia's trade. Then, we ran regressions of export on maritime piracy attacks for each pair of countries, and we proved the trade partnering pair most affected by the phenomenon: in particular, the most impactful effects are observed for exports from Hong Kong (PR China) to Cambodia, where each maritime piracy attack is associated with an 18 percent decrease in export. Maritime piracy has a similar effect on exports from Cambodia to PR China and from Philippines to Macau (PR China).

Recently, the number of maritime piracy attacks on oil tankers in the Strait of Malacca is increasing, and this could pose a serious threat to the economic security of the region. Hijacking oil tankers in order to transfer and sell their cargo is the most lucrative business model used by pirates in the region. Such incidents often occur in international waters and are purportedly linked to transnational organized crime. Southeast Asian countries have not yet established a composite special task force—or group from the Navy, Maritime Police, Air Force, and other maritime enforcement agencies—to create a regular maritime presence in locations of concern. In the meantime, however, countries have increased their defense expenditure and started to modernize their military capabilities, particularly in the air and naval domains. According to the statistics of the Stockholm International Peace Research Institute (SIPRI), Southeast Asia has seen a robust growth in military expenditure over the period between 2010 and 2013. There have been net increases for all countries of the region driven by a multitude of strategic rationales and domestic factors. In particular, maritime disputes between China and its neighbors have increased tensions and affected countries' modernization programs.

These tensions have not strengthened maritime surveillance capabilities in the region. In fact, Southeast Asian countries have not shown any serious willingness to collaborate in creating a more effective and sustainable force to patrol regional waters. They should show a willingness to share intelligence and hold law-enforcement exercises. So far, the regional cooperation to counter maritime attacks adopted has been insufficient. This is due especially to unresolved conflicts between international and domestic laws concerning any coastal state's obligation and jurisdiction to combat pirates. Consequently, these conditions have encouraged the increase of maritime attacks in Southeast Asia, and have also limited the success of international cooperation on combating maritime attacks in the region, where the related rates of economic growth have been among the highest in the world in the past 20 years.

The increasing development of maritime trade in Southeast Asia requires a stable maritime security. Achieving maritime security cooperation in this region requires that the relevant countries work hard to reach consensus, build up mutual confidence, and eliminate the concern that maritime cooperation will affect the claim of sovereign right. In addition, they should adopt effective measures to promote economic and social development, with the aim of eliminating threats to maritime security, such as maritime piracy. This solution would have the advantage of creating an area of strong stability in a strategic region for international trade.

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