MEASURING CHINESE AGGRESSION: MILITARY EXERCISES AS COST IMPOSITION ON ALIGNMENT WITH THE UNITED STATES

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Howard Wang, B.A.

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Howard Wang, B.A.

Thesis Advisor: John Hisnanick, Ph.D.

ABSTRACT

Although the sentiment that People's Republic of China (PRC) foreign policy has become increasingly aggressive in recent years, particularly upon the leadership of Chinese Communist Party (CCP) General Secretary Xi Jinping, current English-language empirical research into this aggression has largely measured PRC aggression through economic metrics, such as People's Liberation Army (PLA) spending rather than measuring aggressive PRC or PLA actions. This question is increasingly relevant given the current trajectory of U.S.-PRC competition and arguably confrontational policies, such as increasing PLA maritime military exercises or the American policies of Rebalancing to Asia and the Free and Open Indo Pacific Strategy implemented in the Barack Obama and Donald Trump administrations, respectively. To address this apparent gap, I attempt to examine the relationship between PRC aggression, as measured in PLA maritime military exercises, and American alignment with states neighboring the PRC, the increase of which has been the object of U.S. Asia-Pacific policy since 2012. I was unable to construct a model using publicly available data that drew meaningful results, however, and as such identified data limitations in the field which likely contribute to the literature gap.

To my family and friends for their unwavering
Support and my advisor John Hisnanick for
Never giving up on me.

With thanks,
Howard

Table of Contents

List of Figures

List of Tables

Introduction

Analysts largely agree that the People's Republic of China (PRC) has in recent years undertaken an aggressive foreign policy, particularly under the leadership of Chinese Communist Party (CCP) General Secretary Xi Jinping. This aggression is arguably most acute in PRC enforcement of its maritime claims in the East and South China Seas.[1]

The current literature on Chinese maritime aggression valuably explores the PRC's posture in terms of annual military spending and force structure deployed or in production; however, research on the operational dimension of PRC aggression is comparatively sparse.[2] There has been no systematic analysis of Chinese maritime aggression in the form of People's Liberation Army (PLA) activities in the Asia-Pacific. This thesis will serve as a framework for investigating PRC military aggression.

This thesis is a preliminary effort toward such a systematic analysis and examines the pattern of PLA military exercises in the Asia-Pacific as cost-imposition activities

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[1] See, for example, Angela Poh and Mingjiang Li, "A China in Transition: The Rhetoric and Substance of Chinese Foreign Policy under Xi Jinping," *Asian Security* 13:2, (May-August 2017), 84-97; Willy Lam, "Beijing's Aggressive New Foreign Policy and Implications for the South China Sea," *China Brief* 13: 13, June 21, 2013; Daniel Blumenthal, "Riding a tiger: China's resurging foreign policy aggression" *Foreign Policy,* April 15, 2011; John Coyne, Ashleigh Sharpe, and Diane Hodgson, "Mice that Roar: Patrol and coastal combatants in ASEAN" *Australian Strategic Policy Institute,* August 2018; Brendan Taylor, "China's Foreign Policy Aggressiveness" in *China Story Yearbook 2012: Red Rising, Red Eclipse* ed. Geremie R. Barme (Canberra: Australian Centre on China in the World, 2012) 2-26.

[2] See, for example, David Shambaugh, "U.S.-China Rivalry in Southeast Asia: Power Shift or Competitive Coexistence?" *International Security* 42:4 (Spring 2018), 85-127; Andrew S. Erickson, "China's Naval Modernization, Strategies, and Capabilities" in *International Order at Sea: How it is Challenged. How It is Maintained*, eds. Jo Inge Bekkevold and Geoffrey Till. (London: Palgrave MacMillan, 2016); Richard Q. Turcsányi, *Chinese Assertiveness in the South China Sea: Power Sources, Domestic Politics, and Reactive Foreign Policy* (Cham: Springer International Publishing AG, 2018)

targeting regional secondary states.[3] Cost-imposition activities are operations which exact costs on the behavior of other nations and are undertaken to coerce cessation or change in the targeted behavior. Cost imposition is a peacetime strategy and may impose economic, military, or political and diplomatic costs (Mahnken 2014). This framing implies a clarifying question on Chinese aggression: on what behaviors, and in which states, is the PRC imposing costs?

The PRC has from 2012 - 2018 imposed cost on increases in regional secondary states' alignment with the U.S. with increases in regional military exercises. This hypothesis has significant national security policy implications; if the hypothesis is found to be supported, this thesis contributes to a finding that the PRC is strategically discouraging alignment to the U.S. with coercive military pressure, and as such, secondary states which choose to increase alignment with the U.S. are exposed to a measurable risk. Chinese sabre rattling can then be identified as a specific response to American attempts to expand U.S. influence in the Asia-Pacific, including President Barack Obama's Rebalance to Asia and President Donald Trump's Free and Open Indo-Pacific (FOIP) Strategy.

This thesis will measure the relationship between *observable acts* of Chinese maritime aggression and alignment with the U.S.; this thesis analysis will examine the frequency

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[3] "Secondary states" here refers to the same term which Zachary Selden uses to describe states which are neither the hegemon nor the hegemon's primary competitor in a region, or "regional powers". Secondary states can insulate themselves from political pressure inflicted by regional powers through closer alignment with the U.S. and vice versa. Additionally, secondary states may have established economic ties with regional powers regardless of U.S. alignment. Also referred to as "second-tier states". See Zachary Selden, *Alignment, Alliance, and American Grand Strategy* (Ann Arbor: University of Michigan Press, 2016).

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of PRC unilateral military exercises in the South and East China Seas and its relationship with U.S. alignment with Japan, Vietnam, and the Philippines.

Literature Review

Background

Analyst agreement on PRC aggression under Xi Jinping mirrors that of U.S. policymakers; former U.S. Secretary of Defense said in 2014 that China had become "significantly more aggressive" since 2013, citing increasingly aggressive maritime challenges to other claimants in territorial disputes within the South China Sea and East China Sea as well as the PRC's unilateral declaration of an Air Defense Identification Zone (ADIZ) to control airspace over the Senkaku/Diaoyu Islands (Miles 2014). This opinion has become widespread in policy analysis and opinion pieces, with leading analysts such as Willy Lam and Daniel Blumenthal publishing similar opinions in The Jamestown Foundation's *China Brief* and *Foreign Policy* magazine, respectively (Lam 2013 and Blumenthal 2011).

Simultaneously, the United States has increased its presence in the Asia-Pacific. President Barack Obama announced the Pivot/Rebalance to Asia, asserting that the U.S. is a Pacific power "inextricably linked with Asia's economic, security, and political order" (The White House, 2013). President Donald Trump's administration announced its approach to the Asia-Pacific region would be the FOIP Strategy; while the two policies have notable variance, they share several common elements, not least of which being an emphasis on increasing U.S. alignment with regional powers by demonstrating

a dedication to multilateralism and to reinforcing U.S. alliances and partnerships with regional states (Carter 2015, Mattis 2018). Chinese military strategists have long perceived U.S. activity in the Asia-Pacific as an effort toward militarily encircling China, and the Rebalance and FOIP have only exacerbated these fears; Chinese strategists have interpreted these policies as a challenge to China's rise, articulating the threat that "Western nations lead by the United States [are] carrying out strategic encirclement against our country" (Academy of Military Science 2013, Fravel in McReynolds 2017). The extent to which the Chinese threat perceptions regarding U.S. alignment with Asia-Pacific states is associated with any newfound Chinese aggression is a salient concept which meaningfully informs U.S.-Chinese relations and the relative costs of U.S. policy in Asia. This thesis will examine the context within which PRC aggression is expressed and perceived and propose regional alignment with the U.S. as a significant object of this aggression. Should my findings indicate a strong relationship between regional alignment to the U.S. and Chinese military aggression, U.S. policymakers will have a clearer foundation on which to consider likely Chinese cost imposition as retaliation to the continuation of U.S. Rebalance or FOIP policy.

Review of Literature on Alignment

Modern literature on interstate alignment in theory and as evidenced in the Asia-Pacific is thoroughly developed. Glenn Snyder comprehensively addressed the theoretical foundations in his *Alliance Politics* (1997), wherein he defines a "pattern of alignment" between states as "expectations of support" which "may be created by various behavioral means, such as joint military planning or diplomatic statements and agreements of various kinds, up to and including formal alliances." In the policymaking

context, such expectations are those held by statesmen "about whether they will be supported, opposed, or ignored by other states in future interactions" (Snyder 1997, 7 & 21).

In order to capture most cleanly the theoretical underpinnings of alliance and alignment theory, Snyder's work emphasizes these effects in multipolar international systems in the absence of any major powers; in doing so, *Alliance Politics* builds upon and reaffirms earlier Cold War-era research, notably George Liska's *Nations in Alliance* (1968), which assessed the incentives of alliance politics for weaker states in unipolar and bipolar systems, largely through the frame of great power competition. Liska argues:

> "The dynamics of alignment is most apparent when two major core-powers are surrounded by lesser allies. On the face of it, the core-powers have attracted the lesser countries into alliance; in fact, superior power does not attract. The weaker state naturally fears that its identity will be abridged by aligning with a more powerful one; and the strong state, too, will often shun association with the weak for fear of overextending its commitment and resources. Movement toward alignment sets in only when another state intervenes as a threat. The weaker state rallies then to one stronger power as a reaction against the threat from another strong power. The stronger state assumes the role of a protective ally, interested mainly in keeping the resources of the potential victim out of the adversary's control (Liska 1962, 13).

Zachary Selden (2016) extended Snyder's definition and Liska's model to account for the relatively recent development of U.S. hegemonic power in *Alignment, Alliance, and American Grand Strategy* and advances what he terms "alignment-based hegemony" (Selden 2016, 18). Using Liska's model of weaker state alignment by threat perception, Selden theorized first that "American hegemony is still generally preferable to the systems that could emerge if the United States no longer held a preponderant position," and second that "the demonstrated US willingness to defend its hegemonic position is critical to maintaining secondary states' alignment" (Selden 2016, 6). In Selden's first claim, there are three major states which could create a revisionist regional order in the absence of American power: the Russian Federation, the Federative Republic of Brazil, and the PRC. These states, in conjunction with the United States, become Liska's "core-powers" to which weaker states, which Selden terms "secondary states," will align with or against based on relative threat perceptions. With Selden's second claim, he argues secondary states will maintain American hegemony by "taking on certain costs that help to spread the burden of maintaining the American hegemonic system" because, for all the faults of U.S. foreign policy, the American hegemonic system is preferable to, in particular, a Russian or Chinese hegemonic system. Following this argument, such a taking-on of costs, particularly by secondary states that are not U.S. treaty allies which nonetheless extend U.S. military reach by contributing military facilities, financial support, and troops to U.S.-led operations, is a demonstration of U.S.-secondary state alignment (Selden 2016, 5-9).

Selden stands at the periphery of academic debate on U.S.-China relations and the regional alignment of secondary states. Although Selden's perspective on American versus Chinese hegemonic systems and the rules-based orders each would enforce in the Asia-Pacific is not unique, most academic literature describes secondary states as hedging rather than actively accepting costs to extend U.S. alignment-based hegemony. Øystein Tunsjø (2017) cogently defined hedging as "the development and implementation of government strategies aimed at reconciling conciliation and confrontation in order to remain reasonably well-positioned regardless of future developments" and asserted that "states hedge under conditions of high uncertainty" as he contends is now the case in the Asia-Pacific (Tunsjø 2017, 43-46). In the same volume as Tunsjø, Wang Dong (2017) elaborates on regional uncertainty which he and Tunsjø argue facilitates secondary state hedging by identifying the asymmetric core interests held by the U.S. and the PRC: where the PRC has expanded its economic influence by increasing its trade and investment activities in the region, the U.S. has endeavored to ensure its security interests by improving interstate cohesion within its hub-and-spoke regional alliance system. As such, Wang argues the asymmetric interests have given rise to a dual structure in East Asia consisting of an "Economic Asia" whereby secondary states are increasingly dependent on PRC leadership, investment, and markets, and a "Security Asia" whereby secondary states increasingly align, though do not necessarily ally, with the United States for security guarantees (Dong 2017, 100-103). Tunsjø and Wang in effect offer qualified support to Selden's argument of increased secondary state alignment with the U.S. predicated on Liska's

model of perceived threat between two core-powers but valuably complicate the analysis of hegemonic power with economic considerations.

The bifurcation of Economic Asia from Security Asia, however, implies a temporary stability in the hedging which David Shambaugh (2018) argues in his latest analysis does not exist; he contends "the overall strategic balance in the region remains in flux and contested" and that Southeast Asian states which pursued hedging have since 2016-2017 gravitated closer to Beijing in diplomatic, economic, and security dimensions (Shambaugh 2018). The economic and security ties cannot be so distinctly separated into two Asias, Shambaugh argues, because both are vital interests which mutually interact. "Economic Asia" under this argument reflects China's single-dimensional regional presence and lack of diplomatic influence rather than an enduring structural component of the Asia-Pacific. The PRC has been escalating its security-related activities and improving regional military-to-military ties, clearly staking a claim in Security Asia.

Review of Literature on Chinese Aggression

Because the Chinese aggression Gates described is a relatively new phenomenon and due to the PRC's limited government transparency, academic literature on Chinese aggression has been limited. Much of what has been published examines this distinctly militaristic aggression using economic metrics, in effect identifying PRC's apparently aggressive geopolitical positioning or factors affecting patterns of alignment such as aggressive rhetoric, rather than explicitly aggressive actions.

Amitai Etzioni (2016) attempts to provide a standard definition of "aggressive" behavior using international law and finds that PRC activities which are commonly described by analysts as "aggressive" do not meet his proposed definition; he proposes that rather than accusing the PRC of aggression for its "speeches by public officials, statements by generals, expansive sovereignty claims, military buildups, and forceful occupations of other states' territory," Chinese aggression should be assessed by "what China does" and not "by what [analysts] construe aggression to be" (Etzioni 2016).

The majority of the literature on Chinese military or paramilitary aggression is concerned not primarily with international law but with the expectations of behavior facilitated by public rhetoric, military buildup, and sovereignty claims. The Australian Centre on China and the World (2012) reported in their *China Story Yearbook 2012* that, in 2010-2011, PRC officials began responding to routine foreign policy events to which they were opposed, such as U.S. arms sales to Taiwan, with unusual force; in response to Obama Administration's decision to sell "a relatively inconsequential package" of arms to Taiwan, the PRC "suspended military exchanges with the US and threatened to impose sanctions against American companies involved in arms sales to Taiwan." In the same period, the PRC escalated its military involvement over territorial claims disputed with Japan and in the South China Sea; in the latter, PRC vessels "performed aggressive manoeuvers" against a U.S. surveillance ship in March 2009, and the People's Liberation Army (PLA) has since "conducted an increasing number and range of military exercises – both naval and air – there and added to its maritime patrols in the region,

something that has led to a rise in the number of clashes with Philippine and Vietnamese vessels" (Taylor 2012).

The Australian Strategic Policy Institute (2018) reported in August 2018 that this pattern of aggressive military behavior in the South China Sea not stopped even in the face of growing regional threat perceptions regarding maritime sovereignty; it reports most Southeast Asian states have emphasized developing their capability bases for near-shore maritime patrolling and response and to secure their access to and through their exclusive economic zones (EEZs), almost certainly in response to a perceived growing Chinese threat: "of the 45 major [South China Sea] incidents between 2010 and 2016, 71% have involved at least one China Coast Guard or Chinese maritime law enforcement vessel" (Coyne et. al 2018).

Acknowledging these same trends, Angela Poh and Mingjiang Li (2017) assess PRC foreign policy under Xi Jinping to be notably more aggressive than that of his predecessors but still in a transitory phase due to competing regional interests; they argue the PRC has immediate interests in territorial disputes in the East and South China Seas, but aggressive rhetoric and actions securing these interests "will severely undercut [China's] attempt to portray itself as a benign and responsible power and undermine its political ambition to overtake the US as the dominant leader in the Asia-Pacific region" (Poh and Li 2017). Because of these competing interests, Chinese aggression must be limited in scope and target specific policy goals in order to minimize

tradeoffs; PRC territorial claims, for example, are coupled with offers of joint development, and the PRC has so far avoided unilateral, destabilizing military action.

In the context of growing aggression in PRC foreign policy, much research investigated PLA military buildup, particularly in naval and aerial capabilities. Andrew Erickson (2016), arguably the leading American public access researcher on Chinese naval operations, described PLA Navy (PLAN) modernization as part a Chinese effort to transition from "being a great maritime country to being a maritime power" with "comprehensive strength in terms of the development, use, protection, management, and control of the seas" able to define and enforce "China's Ocean Basic Law," which would stipulate proper maritime behavior in the Asia-Pacific. Erickson finds that the PRC is developing a PLAN which "gives China unprecedented options for furthering Near Seas claims" and which "learns consistently from, and cooperates increasingly with, foreign navies in the Far Seas" (Erickson 2016, 80-81 & 87). As Erickson acknowledges, using only PRC official statements and assessing possible capabilities of the modernizing PLAN can offer only limited insight into the trajectory of future PRC actions in the Asia-Pacific. American policymakers can derive additional clarity by aligning statements and capability with current PLA action.

Conceptual Framework and Hypothesis

Current academic literature on Chinese aggression, particularly in the East and South China Seas, covers the context within which Chinese foreign policy sits and thoroughly addresses PRC potential and military buildup yet does not attempt to draw clear

associations between PRC foreign policy actions and the goals for which they may be employed. By researching the relationship between increased Chinese military aggression in the Asia-Pacific by way of military training exercises and the effects of the U.S. Rebalance to Asia and the FOIP strategy by way of changing alignment between the U.S. and regional actors, this thesis will attempt to address several questions which persist in the reviewed literature:

1. In what way is the PRC participating in Security Asia? What are some of the means by which the PRC is conducting its engagement, and is the trajectory increasing or decreasing in competition with the United States?

    a. If the PRC is increasing its participation in Security Asia and increasing its competition with the United States, what particular aspects of alignment (e.g., military bases, joint military exercises, joint military operations, arms sales) are the most likely to invite competitive PRC reaction?

2. Do PLA maritime activities such as military exercises in or near contested waters align with the literature's assessments of PRC limited objectives based on official statements and the capabilities to which the PLAN are modernizing?

3. What has been the overall effect of the U.S. Rebalance to Asia, and what is the likely effect of the Free and Open Indo-Pacific strategy for U.S.-China relations and the regional order?

Though this thesis will limit its scope to assessing PLA military exercises, this scope does not claim to be comprehensive over all PRC aggressive activities or policy expressions in response to growing U.S. security influence in the Asia-Pacific. If the

thesis finds that the increased aggression is associated with increased U.S. influence by alignment in the region, it will be a promising foundation for additional research into the possibility of U.S. coercive diplomacy whereby both Chinese aggression and U.S. military alignment in the Asia-Pacific can be modulated relative to one another. If the thesis is unable to find such an association, further research may demonstrate that the causes of PRC aggression are domestic, and U.S. policy should not attempt to affect PLA behavior. I hypothesize for this model that the U.S. policies are successful in increasing U.S. alignment with secondary states and that this success is related to a decrease in the frequency of PLA maritime exercises.

Data and Methods

The data used in this thesis come from five sources and broadly fall into two categories: 1) patterns of PRC military activity and 2) national alignment with the United States. The first category includes data from the PRC Maritime Safety Administration (MSA), which publicly issues warnings of planned PRC military exercises in Chinese claimed territorial waters. For this thesis, I identified maritime military exercises (identified in MSA warnings as one of a handful of phrases such as *jūnshì xùnliàn* 军事训练, *jūnshì rènwù* 军事任务, and *shídàn shèjí* 实弹射击) and noted if they were designated as within the Yellow Sea and Bohai Sea, East China Sea, South China Sea, or the Taiwan Strait. The PRC MSA reports sailing warnings as early as February 2007, though military exercises do not become regularly reported until approximately 2012.

13

The second category (#2. National alignment with the United States) encompasses variables from a variety of sources which indicate interstate alignment. While there is no consensus within literature on interstate alignment on how alignment should be measured, this thesis uses as a baseline Selden's (2016) proposed model, which uses joint military exercises and basing of U.S. forces as the pertinent variables. In addition to Selden's variables, this thesis includes as a new alignment-measuring variable a state's arms procurements.

This thesis sources data for joint military exercises and basing of U.S. Forces to the International Institute for Strategic Study's (IISS) annual publication *The Military Balance*, a detailed assessment of the military capabilities and defense economics of 171 countries. The publication includes country-specific entries including military forces, personnel data, military equipment on hand, and such details as the existence and size of U.S. troops deployed to a country as well as its participation in multilateral military exercises, whether or not they are led by the United States.

Arms procurements from the U.S. are sourced to the Stockholm International Peace Research Institute (SIPRI) Arms Transfers Database, which includes data on all conventional weapons transfers from 1950 until the last full calendar year. The SIPRI Arms Transfers Database produces an account of Trade Registers detailing deals between specific arms suppliers and recipients over a specific time period; the deals can be a physical transfer of military equipment or a transfer of technology or provision of a license permitting assembly or production. Each deal is coded with particular details

14

including the number of items ordered, the designation and description of each weapon or item, the year the order was placed, the year the order was delivered, the number of weapons or items delivered, and any additional information known about the deal.The SIPRI Arms Transfers Database aggregates this information across publicly available news sources, most commonly depending on commercial periodicals specializing in military issues. Sources which are not published and available to the general public are not used.

For the purposes of this thesis, I will be using these data sources to determine U.S. alignment to three states in the Asia-Pacific: Japan, Vietnam, and the Philippines. To narrow the scope of this thesis' analysis to PRC actions in the context of U.S. policies, particularly the Obama Administration's Pivot to Asia and the Trump Administration's Free and Open Indo Pacific, all data analyzed will be in the 2012-2018 time frame.

The model this thesis employs measures as a dependent variable the number of PRC military exercises reported by the PRC MSA in the South China Sea and East China Sea between 2012-2018 against the variables measuring alignment with the United States and with U.S.-allied states for the cases of Japan, Vietnam and the Philippines; East China Sea exercises will be pertinent to Japan, while South China Sea exercises will be most pertinent to Vietnam and the Philippines. While the U.S. and Philippines are allied in a mutual defense treaty, the U.S. has no such agreement with Vietnam. Any identified relationships between PRC military exercises and Filipino or Vietnamese

alignment with the United States or its allies would likely best be interpreted as the PRC

response to entities joining or otherwise reinforcing U.S. influence in a Security Asia.

Empirical Model

PRC Exercises = B_0 + B_1Joint Military Exercises + B_2Deployments + B_3USArmsTransfer

+ e

Table 1: Description of Variables

Dependent/Independent Variables	Hypothesized Outcome
Military Exercises -- Instance of a PRC military exercise in the South China Sea as reported in the Maritime Safety Administration	N/A
Joint Military Exercises -- Number of military exercises in which a state participated jointly with an United States ally	Positive
Deployments -- Number of U.S. servicemen deployed to a state	Negative
USArmsTransfer -- Number of items transferred from the United States to a state	Positive

Empirical Results

In order to test the hypothesis that increased American alignment with states

neighboring the PRC is associated with a reduction in Chinese military aggression, I

attempted to measure for the impact of U.S. alignment with Japan, the Philippines, and

16

Vietnam on PRC military exercises using data collected from IISS, SIPRI, and the PRC MSA. This effort involves using the number of Chinese military exercises as an indicator for Chinese aggression and regressing it on indicators of alignment including the number of a state's joint military exercises with the U.S., the number of American servicemen deployed to a state, and the value of arms a state procures from the U.S. between 2012 and 2018 and can be reflected in the following model:

$$PRC\_Exercise = B_0 + B_1 JointMilEx + B_2 USDeploy + B_3 USArmsSales + B_4 PRC\_GDP + B_5 Japan\_ID + B_6 Phil\_ID + e$$

Univariate Results

The following variables include data from 2012 through 2018. In the cases of ArmsSales and PRC_GDP, data for calendar year 2018 is not yet available. As such, the 2018 values for both variables are estimates. Estimated value of 2018 arms sales to Japan, the Philippines, and Vietnam are the mean of these sales between 2015 through 2017. The PRC's estimated 2018 GDP was provided on TradingEconomics.com.

Table 2: Descriptive Statistics

Variable Name	Variable Description	Descriptive Statistics
PRC_exercise	Number of military exercises the PRC conducts each year in the South China Sea and the East China Sea	Mean: 18.19 Mean Std. Error: 2.02 Median: 16 Min: 6 Max: 35
JointMilEx	Number of military exercises a state (Japan, Philippines, Vietnam) conducted jointly with the United States in a year	Mean: 3.81 Mean Std. Error: 0.68 Median: 3 Min: 0 Max: 13
USDeploy	Number of U.S. servicemen deployed within a state's (Japan, Philippines, Vietnam) boarders per year	Mean: 14,132.38 Mean Std. Error: 4,580.83 Median: 180 Min: 0 Max: 53,900
ArmsSales	Dollar value in millions of arms the U.S. sold to a state (Japan, Philippines, Vietnam) each year	Mean: 124.32 Mean Std. Error: 33.49 Median: 50.3 Min: 0 Max: 479
PRC_GDP	The PRC's gross domestic product each year	Mean: 10,906.21 Mean Std. Error: 321.93 Median: 11,064.67 Min: 8,560.55 Max: 13,200
Japan_ID	Dummy variable indicating Japan	Observations: 21 Std. Dev.: 0.48
Phil_ID	Dummy variable indicating the Philippines	Observations: 21 Std. Dev.: 0.48
Viet_ID	Dummy variable indicating Vietnam	Observations: 21 Std. Dev.: 0.48

The dataset demonstrated increasing resources in the Asia-Pacific, with PRC GDP

increasing year over year and U.S. increasing its servicemen deployed to Japan by

18

nearly one-third from 2012-2018. Similarly, the overall number of military exercises and the cumulative duration of these exercises increased from 2012 to 2018. However, the data appeared to indicate corresponding spikes and lulls in Chinese aggression and U.S. regional alignment. In particular, Chinese military exercises diminished significantly between 2013 and 2016, only exceeding 2012 levels in 2018. This dip in aggressive activity is closely mirrored in Chinese military exercises in the South China Sea.

Similarly, the U.S. significantly increased its joint military activity with Japan in 2013. However, U.S. joint military activity in the Asia-Pacific has steadily diminished since and reached a low point in 2017. The remarkable similarities between the frequency of Chinese military exercises in the South China Sea and joint military exercises between the U.S. and Japan may indicate corresponding, competitive escalations and de-escalations of tensions between the two.

The data indicates that concrete acts of PRC aggression is a relatively new phenomenon that has been steadily increasing from a temporary low between 2014-2016 and is only now returning to 2012 heights. Moreover, this recent resurgence of PRC aggression was not matched by net increases in U.S. alignment after 2016. While indicators of PRC aggression and U.S. alignment appeared to spike in 2012 through 2013 and mutually decline through 2016, recent PRC aggression has gone unmatched. Any relationships between Chinese aggression and U.S. alignment within the region remains to be seen.
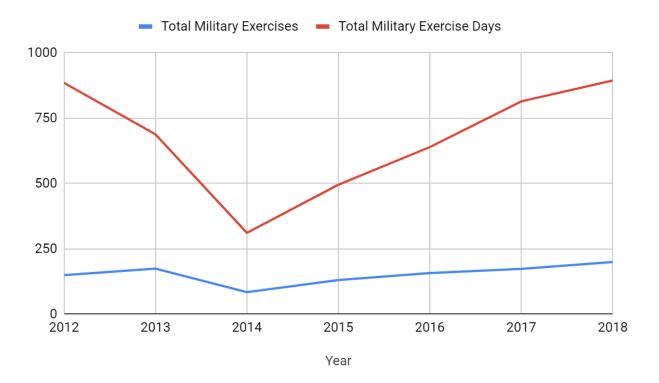
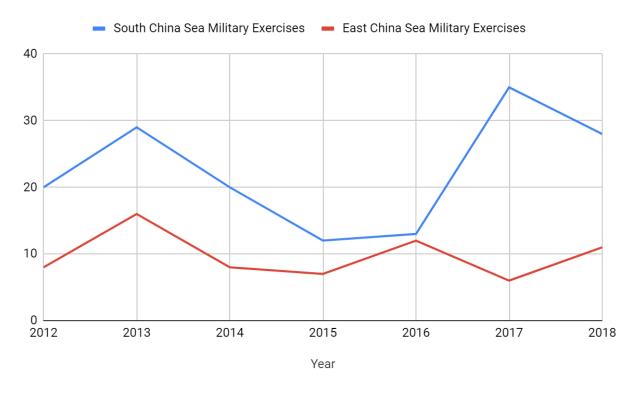Figure 1: Chinese Military Exercise Frequency, 2012-2018

Figure 2: Chinese Military Exercise Frequency in the South China Sea and East China Sea, 2012-2018
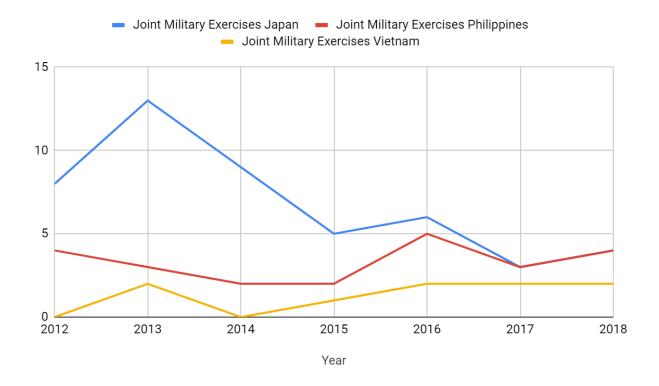
20

Figure 3: U.S. Joint Military Exercises with Japan, Vietnam, and the Philippines, 2012-2018

Correlations between the PRC aggression variable and the U.S. alignment variables are as expected for this hypothesis. Although PRC aggression has overall increased over time and has grown alongside the PRC's GDP, it is negatively correlated with indicators of U.S. alignment, such as joint military exercises and deployed forces. Notably, this bears out as a negative correlation between PRC aggression and Japan, where the U.S. has deployed the most servicemen and with whom the U.S. has conducted the most joint military exercises, while the Philippines and Vietnam, which has relatively less alignment with the U.S., are correlated with higher PRC aggression.

21

Table 3: Correlation Table

	prc_ex~e	year	jointm~x	usdeploy	armssa~s	prc_gdp	japan_id
prc_exercise	1.0000						
year	0.1345	1.0000					
jointmilex	−0.3585	−0.1874	1.0000				
usdeploy	−0.6611	0.0422	0.6478	1.0000			
armssales	−0.6355	0.2021	0.5544	0.9280	1.0000		
prc_gdp	0.1522	0.9867	−0.1913	0.0611	0.1959	1.0000	
japan_id	−0.6640	0.0000	0.7068	0.9705	0.9404	0.0000	1.0000
phil_id	0.3320	0.0000	−0.1215	−0.4827	−0.4019	0.0000	−0.5000
viet_id	0.3320	0.0000	−0.5853	−0.4878	−0.5384	0.0000	−0.5000

Multivariate Modeling Results

I ultimately employed four models in my multivariate analysis. The initial model's output demonstrated classic indicators of multicollinearity including a high F-statistic and a relatively high r-squared value with no coefficients with statistical significance. As such, subsequent models attempt to tease out correlated variables which may control for collinearity. The fourth model employs lagged variables for U.S. alignment but is ultimately unsuccessful in controlling for collinearity. To circumvent the possibility model outputs may include negative constants, implying that the People's Liberation Army (PLA) might conduct negative military exercises in a year when controlling for a my selected variables, all of my regressions in models two through four suppress the constant.

Model One

Table 4: Model One Regression Results

Source	SS	df	MS		Number of obs	=	21
					F(6, 14)	=	2.53
Model	890.662399	6	148.443733		Prob > F	=	0.0713
Residual	820.575696	14	58.6125497		R-squared	=	0.5205
					Adj R-squared	=	0.3150
Total	1711.2381	20	85.5619048		Root MSE	=	7.6559

prc_exercise	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
jointmilex	.8637195	1.077601	0.80	0.436	-1.447504	3.174944
usdeploy	-.0001422	.0003569	-0.40	0.696	-.0009075	.0006232
armssales	-.0106872	.0506815	-0.21	0.836	-.1193883	.0980139
prc_gdp	.0016457	.0014776	1.11	0.284	-.0015234	.0048148
japan_id	-8.172586	26.57554	-0.31	0.763	-65.17145	48.82628
phil_id	-1.397608	5.210517	-0.27	0.792	-12.57305	9.777839
_cons	3.479712	15.99075	0.22	0.831	-30.81703	37.77646

The initial model found coefficients which were neither statistically significant nor entirely as predicted. Although coefficients for usdeploy and armssales were negative, suggesting increases in U.S. serviceman deployments to regional states is associated with decreases in Chinese aggression, jointmilex has a positive coefficient of notable magnitude. Using this model, we might estimate that each additional military exercise that Japan, Vietnam, or the Philippines joins with the U.S. is associated with an additional 0.86 Chinese military exercises. This result runs contrary to the hypothesized effect of U.S. alignment on Chinese aggression as well as the correlation between prc_exercise and jointmilex shown in the correlation table above.

Model Two

Table 5: Model Two Regression Results

```
   Source |       SS          df        MS         Number of obs  =        20
----------+----------------------------------     F(3, 17)       =     24.06
    Model | 6957.18736         3    2319.06245     Prob > F       =    0.0000
 Residual | 1638.81264        17    96.4007437     R-squared      =    0.8094
----------+----------------------------------     Adj R-squared  =    0.7757
    Total |      8596         20         429.8     Root MSE       =    9.8184

-----------------------------------------------------------------------------
prc_exercise |     Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+---------------------------------------------------------------
    japan_id |  2.487154   4.240926     0.59   0.565    -6.460417    11.43473
     phil_id |  6.612054   4.719671     1.40   0.179    -3.345582    16.56969
      lagex1 |  .7908259    .145806     5.42   0.000     .4832021     1.09845
-----------------------------------------------------------------------------
```

I employed a second model to test whether Chinese aggression is most driven by persistence, that is the notion that a strong predictor of the number of Chinese military exercises this year is the number of Chinese military exercises last year. I created a variable lagging prc_exercise by one year on which to regress my dependent variable, also controlling for variation between my selected countries using dummy variables. The second model suggests that persistence is a significant predictor; not only was the lagged variable statistically significant at a 99% confidence level, the r-squared value indicates eighty percent of the variation in the model is explained by my included variables.

24

Model Three

Table 6: Model Three Regression Results

Source	SS	df	MS			
Model	7477.14552	4	1869.28638			
Residual	1118.85448	16	69.9284051			
Total	8596	20	429.8			

				Number of obs	=	20
				F(4, 16)	=	26.73
				Prob > F	=	0.0000
				R-squared	=	0.8698
				Adj R-squared	=	0.8373
				Root MSE	=	8.3623

prc_exercise	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
japan_id	-8.081558	5.297978	-1.53	0.147	-19.31277	3.149654
phil_id	1.497267	4.435842	0.34	0.740	-7.906298	10.90083
lagex1	.2159456	.2446797	0.88	0.391	-.3027522	.7346435
laggdp1	.0015232	.0005586	2.73	0.015	.000339	.0027074

The third model tested the findings of the second model by additionally controlling for Chinese economic performance. To capture the possible relationship between the prior year's economic growth and current frequency of Chinese military exercises, I created a variable lagging prc_gdp by one year and added it to my model. Controlling for lagged GDP largely erased the possible effect of the prior year's military exercises; in the updated model, the lagged aggression variable no longer has a statistically significant coefficient, while the lagged GDP variable is significant at the 95% confidence level. Using this model, prior year Chinese economic growth appears to be an overwhelmingly powerful predictor of current year military aggression, and a trillion USD increase in Chinese GDP in the preceding year is correlated with an increase of one and one-half military exercises in the current year.

Model Four

Table 7: Model Four Regression Results

Source	SS	df	MS			
				Number of obs	=	20
				F(6, 14)	=	16.60
Model	7536.52812	6	1256.08802	Prob > F	=	0.0000
Residual	1059.47188	14	75.6765626	R-squared	=	0.8767
				Adj R-squared	=	0.8239
Total	8596	20	429.8	Root MSE	=	8.6992

prc_exercise	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
japan_id	-8.665783	11.27038	-0.77	0.455	-32.83835	15.50678
phil_id	.9336293	5.293287	0.18	0.863	-10.41934	12.2866
laggdp1	.0019051	.0003592	5.30	0.000	.0011347	.0026755
lagjointmilex1	.6965171	1.081108	0.64	0.530	-1.622228	3.015262
lagusdeploy1	-.0000624	.0002827	-0.22	0.828	-.0006689	.000544
lagarmssales1	-.0126298	.0415198	-0.30	0.765	-.1016809	.0764214

Finding statistical significance in a handful of lagged variables in Model Two and Model Three, I explored the possibility that prior year events are more predictive of current year Chinese aggression than current year events are. As such, I lagged the U.S. alignment variables regarding joint military exercises, servicemen deployed, and value of arms procured from the United States. Even when controlling for indicators of U.S. alignment, the only statistically significant variable remains the lagged Chinese GDP, which is significant at a 99% confidence level. Lagging the variables of U.S. alignment did not change the directions of their coefficients and produced only marginally reduced coefficient magnitudes. In this final model, each additional joint military exercise that the United States holds with Japan, Vietnam, or the Philippines is associated with approximately 0.7 additional Chinese military exercises. While the coefficient magnitude

was not as great as the corresponding value in Model One, this is contrary to both my

initial hypothesis and anticipated sign from the correlation table.

Table 8: Summary of Models One Through Four

	(1) prc_exercise	(2) prc_exercise	(3) prc_exercise	(4) prc_exercise
jointmilex	0.864 (0.80)			
usdeploy	-0.000142 (-0.40)			
armssales	-0.0107 (-0.21)			
prc_gdp	0.00165 (1.11)			
japan_id	-8.173 (-0.31)	2.487 (0.59)	-8.082 (-1.53)	-8.666 (-0.77)
phil_id	-1.398 (-0.27)	6.612 (1.40)	1.497 (0.34)	0.934 (0.18)
lagex1		0.791*** (5.42)	0.216 (0.88)	
laggdp1			0.00152* (2.73)	0.00191*** (5.30)
lagjointmi~1				0.697 (0.64)
lagusdeploy1				-0.0000624 (-0.22)
lagarmssal~1				-0.0126 (-0.30)
_cons	3.480 (0.22)			
N	21	20	20	20

t statistics in parentheses
* $p<0.05$, ** $p<0.01$, *** $p<0.001$

There are several possible reasons none of my key independent variables had statistically significant coefficients. Notably, my data is aggregated by year from 2012-2018 and as such is very limited as a sample size; identifying, gathering, and regressing variables reflecting unaggregated raw data may improve the power of these models. Additionally, the continued statistical significance of lagged Chinese GDP across models and lack of statistical significance across U.S. alignment variables suggests a significant collinearity between the alignment variables which is not equally applicable to Chinese GDP. As such, the latter was the most significant variable in explaining my outcome.

Discussion

This thesis begins with a review of the current landscape of English-language literature on Chinese military aggression and identifies that current literature examines at length economic indicators, such as GDP or military spending, which position the PRC to be more aggressive but generally does not systematically examine observable acts of Chinese maritime military aggression. In attempting to measure for this aggression and assess any relationship it may have with U.S. alignment with secondary states in the Asia-Pacific, this thesis also employs empirical models which experience data and predictive limitations which likely explain why such a gap in the literature exists. The models results this thesis found exhibited significant multicollinearity and likely found statistical significance in the GDP variable due to its not being collinear with the alignment variables; the model was as such entirely unsuccessful in identifying, with a

29

high degree of confidence, any relationships between the variables for PRC aggression and the variables for U.S. alignment.

That this model has no significant results does not indicate, however, that there are no findings. Alignment between states is an amorphous concept which can be difficult to measure; that the alignment variables of joint military exercises, arms sales, and troops stationed within a secondary state's borders were collinear is a good suggestion that the alignment metrics are reasonably predictive of one another and to some extent measure the same underlying phenomenon. The alignment variables this thesis includes likely accurately constitute part of a suite of variables which collectively measure the underlying concept of interstate alignment. This being the case, these variables may feasibly be included in future research to form a composite variable measuring alignment; having a single alignment variable will likely be useful both in widening a study's analytical aperture to control for variables omitted from this thesis' model and in constructing a parsimonious empirical model. This thesis excludes select alignment variables, such as joint conflict years between two states and the existence of a treaty alliance between two states, which should be included in such a composite variable.

Though none are statistically significant, the alignment variables' coefficient directions also indicate modeling issues. In particular, the positive direction for U.S. joint military exercises with Japan, the Philippines, and Vietnam indicating these exercises are associated with more Chinese military exercises is contrary both to hypothetical expectations and to the results of the correlation table. These results imply notable

30

omitted variable bias, and the few variables included in this thesis' model leave significant room for such; in order to derive results robust against uncertainty, future models might control for additional economic indicators, military spending, current consequences of shared historical events, and exogenous events within the relevant time period such as global energy or financial shocks, natural disasters, domestic pressures, political shifts, and diplomatic engagement. Among these, factors which occur before the pertinent time period such as shared histories may be captured in a model which includes entity fixed effects. While quantifiable metrics for most of such proposed variables may not exist or be widely accessible, particularly for the time period examined in this thesis, they are all likely endogenous to Chinese military aggression, and a robust model will likely need to accurately incorporate each.

Conclusion

The model I use in this thesis produced results plagued by multicollinearity, which drains my analytical statistical power. No coefficients were statistically significant, and it is unclear if any of the coefficient signs are not switched as a result of the collinearity. Because the collinearity affected all of the alignment variables, which were key to the analysis, my model did not produce any output from which meaningful analysis can be derived.

Works Cited

Amitai Etzioni, "How Aggressive is China?" *The Korean Journal of International Studies* Vol. 14 No. 2 (2016), 291-307

Andrew S. Erickson, "China's Naval Modernization, Strategies, and Capabilities" in *International Order at Sea: How it is Challenged. How It is Maintained*, eds. Jo Inge Bekkevold and Geoffrey Till. (London: Palgrave MacMillan, 2016)

Angela Poh and Mingjiang Li, "China in Transition" The Rhetoric and Substance of Chinese Foreign Policy under Xi Jinping" *Asian Security* Vol. 13 No. 2 (2017), 84-97

Ashton Carter, "Remarks on the Next Phase of the U.S. Rebalance to the Asia-Pacific" (McCain Institute, Arizona State University, Tempe, AZ, April 6, 2015.)

Brendan Taylor, "China's Foreign Policy Aggressiveness" in *China Story Yearbook 2012: Red Rising, Red Eclipse* ed. Geremie R. Barme (Canberra: Australian Centre on China in the World, 2012) 2-26

Daniel Blumenthal, "Riding a tiger: China's resurging foreign policy aggression" *Foreign Policy,* April 15, 2011

David Shambaugh, "U.S.-China Rivalry in Southeast Asia" *International Security* Vol. 42. No. 4 (2018), 85-127

Glenn Snyder, *Alliance Politics,* (Ithaca: Cornell University Press, 1997)

George Liska, *Nations in Alliance: The Limits of Interdependence*, (Baltimore: The Johns Hopkins Press, 1962)

James Mattis, "Remarks by Secretary Mattis at Plenary Session of the 2018 Shangri-La Dialogue" (International Institute for Strategic Studies, Singapore, June 2, 2018.)

John Coyne, Ashleigh Sharpe, and Diane Hodgson, "Mice that Roar: Patrol and coastal combatants in ASEAN" *Australian Strategic Policy Institute,* August 2018

Kathleen Miles, "Robert Gates: China, Russia Are Becoming Aggressive As They Perceive U.S. Pulling Back" *Huffington Post* May 21, 2014

Military Strategy Research Department, PLA Academy of Military Science, *The Science of Military Strategy* ; [战略学], 3rd ed., (Beijing: Military Science Press, 2013) [军事科学出版社].

Øystein Tunsjø, "U.S.-China Relations: From Unipolar Hedging toward Bipolar Balancing" in eds., Robert S. Ross and Øystein Tunsjø, *Strategic Adjustment and the Rise of China: Power and Politics in East Asia* (Ithaca: Cornell University Press, 2017)

"Fact Sheet: The Fiscal Year 2014 Federal Budget and the Asia-Pacific" *The White House* April 12, 2013. Accessed October 18, 2018.

Taylor M. Fravel, "China's Changing Approach to Military Strategy: The Science of Military Strategy from 2001 and 2013" in *China's Evolving Military Strategy*, ed. Joe McReynolds. (Washington, D.C.: The Jamestown Foundation, 2017).

Thomas G. Mahnken, "Cost-Imposing Strategies: A Primer," *Center for a New American Security*, November 2014

Wang Dong, "Two Asias? China's Rise, Dual Structure, and the Alliance System in East Asia" in eds., Robert S. Ross and Øystein Tunsjø, *Strategic Adjustment and the Rise of China: Power and Politics in East Asia* (Ithaca: Cornell University Press, 2017)

Willy Lam, "Beijing's Aggressive New Foreign Policy and Implications for the South China Sea," *China Brief* 13: 13, June 21, 2013

Zachary Selden, *Alignment, Alliance, and American Grand Strategy*, (Ann Arbor: University of Michigan Press, 2016)