Memo in a tweet:

The military balance in the Taiwan Strait is getting out of control! @U.S. Strategic Command should increase its aircraft carrier strike groups based in Japan!

To: Admiral Charles "Chas" A. Richard, Commander of U.S. Strategic Command

RE: U.S. Defense Commitment to Taiwan

Date: December 14, 2020

Abstract

This memo recommends the U.S. Strategic Command orders the Navy to deploy two aircraft carrier strike groups to its Seventh Fleet deployed in Yokosuka, Japan. The memo first discusses the sub-optimal levels of the U.S. defense commitment to Taiwan, outlines three policy alternatives to address this insufficiency, considers four criteria to evaluate these alternatives, weights the criteria, projects policy outcomes, then outlines the tradeoffs to make the final policy recommendation.

The Client

The mission of the U.S. Strategic Command (USSTRATCOM) is to deter strategic attack and employ forces to guarantee the security of the U.S. and its allies. The U.S. Strategic Command integrates and coordinates the necessary command and control capability to provide support with the most accurate and timely information for the President, the Secretary of Defense, other national leadership and combatant commanders.[i] In its latest annual report to Congress, *Military and Security Developments Involving the People's Republic of China 2020*, it re-emphasizes its focus in formulating an effective military deterrence against China's People's Liberation Army (PLA) in a Taiwan contingency.

Problem Statement: Given the current level of the U.S. defense commitment to Taiwan, the risk of Taiwan being invaded by the People's Republic of China (PRC) is too high

The U.S.'s prevailing Taiwan policy aims to maintain positive relations with the People's Republic of China (PRC), while objecting any unilateral changes to the status quo in the Taiwan

Strait, specifically PRC attempts to coerce or invade Taiwan.[ii] These goals justify U.S.'s continued defense commitment to Taiwan after it severed the diplomatic relationship with the island in 1979.

The U.S. defense commitment to Taiwan aims to complicate any PRC efforts to use force against Taiwan and foster greater confidence in self-defense on the part of Taiwan in its dealings with PRC,[iii] it centers on: (i) deploying an appropriate level of military forces in the area around Taiwan, and (ii) arms transfers through direct foreign military sales. In the past two decades, however, the steady, quantitative, and qualitative modernization efforts of the PLA have improved the PRC's ability to inflict a high cost on U.S. military forces that would come to Taiwan's aid in the event of a PRC invasion. The PLA's improvements in medium and short ballistic missile capabilities have significantly complicated the ability of the U.S. to defend Taiwan by making it difficult for the U.S. Navy and Air Force to operate in and around the Taiwan Strait.[iv] In the meantime, the frequency and quality of U.S. arms sales to Taiwan have decreased sharply. From 2002 to 2016, the Department of Defense notified Congress of 37 major arms sales to Taiwan, or fewer than 2.5 notifications per year, nearly half than the rate during 1990-2001.[v] Moreover, these arms deliveries to Taiwan do not appear to have provided the island with increased capabilities in missile defense, anti-invasion, counter-blockade, or air superiority, which are key to Taiwan's self-defense, than those it already possessed.[vi]

In sum, the current level of U.S. military capabilities in the area and arms deliveries to Taiwan is ill-suited to the recent military developments in the Taiwan Strait. It falls short to maintain a comparative advantage over the PLA and equip Taiwan with defensive advantages, increasing the likelihood of PRC military action against Taiwan in the near term.

Policy Alternatives to Reduce the Risk of Taiwan Being Invaded by the People's Republic of China (PRC)

Of the three policy alternatives to reduce the risk of Taiwan being invaded by PRC, one policy focuses on increasing U.S. military capability in the area (#1) and two focus on increasing Taiwan's capabilities in self-defense (#2 and #3).

Alternative #1: *Increase the number of carrier strike groups (CSGs) deployed in Japan from one to three*

This policy would increase the number of forward-deployed CSGs in U.S. Fleet Activities Yokosuka from one to three. The U.S. Strategic Command would make the recommendation to the President, who is Commander in Chief. With the President's approval, the U.S. Strategic Command would then command the Navy to deploy two extra CSGs to its Seventh Fleet based in Yokosuka, Japan.

Alternative #2: Transfer beyond-visual-range (BVR) missiles to Taiwan through direct foreign military sales

Under this policy, the U.S. Strategic Command would convince Taiwan's Ministry of National Defense (MND) to submit a formal letter of request of BVR missiles to the Department of Defense, Defense Security Cooperation Agency. The DoD Defense Security Cooperation Agency would then assess Taiwan's defense need and determine the type and quantity of BVR missiles to be sold. The Department of Defense, the Department of State, and the National Security Council would then notify Congress for approval or modification of the proposed arms sale. Contracts are then executed with defense suppliers, and orders are produced and delivered.[vii]

Alternative #3: *Deploy pilots in Taiwan to provide know-how to the training of Taiwan's pilots*

Under this Policy, the U.S. Strategic Command would coordinate with Taiwan's Ministry of National Defense to deploy U.S. pilots in Taiwan to assist in the training of the Republic of China Air Force (ROCAF) aircrew.

Alternative #4: Maintain the business as usual

This policy would maintain the status quo. The U.S. Strategic Command would maintain its current level of military capabilities in the area and complete ongoing arms sales to Taiwan.

Criteria to Evaluate Policy Objectives

The policy alternatives should be evaluated based on these four criteria:

Political feasibility – Meet the target of all stakeholders support the policy:

Major stakeholders (U.S. and Taiwan governments) need to be convinced that these policy alternatives would address the problem. Note that since the U.S. military engagements with Taiwan are unofficial, we are declined to quantify the support of stakeholders. We instead assess this criterion based on the U.S. and Taiwan governments' views toward the cross-strait military dynamics.

Costs – Minimize the costs (in dollars) of deploying U.S. military forces in Japan and Taiwan:

The costs of deploying U.S. military forces in Japan and Taiwan are quantified as the annual fixed costs (in dollars) of operating aircraft carrier strike groups and running the Yokosuka Navy Base plus the variable costs (in dollars) per person per year of deploying military personnel in the Asia-Pacific region. (Note: the annual fixed costs (in dollars) of operating an aircraft carrier strike group is estimated by Lexington Institute's assessment of the logic of aircraft carrier strike groups, the costs of running the Yokosuka Navy Base and deploying military personnel in the Asia-Pacific region is estimated by Rand Corporation's research on the overseas basing of U.S. military forces.)

Efficiency - Minimize the number of U.S. fighter jets needed to deploy to defend Taiwan against the PLA's invasion

One criterion of effectiveness is achieving the most favorable outcome in defending against the PLA's invasion in a Taiwan contingency with the least U.S. military forces intervened. This criterion is quantified as the number of U.S. fighter jets needed to defend Taiwan against the PLA's invasion. (Note: this is estimated by Rand Corporation's simulation of a cross-strait military conflict.)

Efficacy - Maximize Taiwan's likelihood of defeating the PLA's invasion:

Another criterion of effectiveness is the extent to which increased levels of U.S. military capabilities in the area and/or Taiwan's self-defense capabilities increase the likelihood of defeating the PLA's invasion in a Taiwan contingency. This criterion is quantified as the percentage of cases in which the PLA's invasion can be defeated. (Note: this is estimated by Rand Corporation's simulation of a cross-strait military conflict.)

Weighted Criteria

Given the fact that the cross-strait military balance is shifting increasingly in favor of the PRC, we consider Taiwan's likelihood of defeating the PLA's invasion in a Taiwan contingency as the greatest concern, therefore, we weight "efficacy" as 50%. We estimate that U.S. public support toward the U.S. intervention in a Taiwan contingency would decrease sharply when there are high American casualties; posing a high political cost to the U.S. government, therefore we weight "efficiency" as 30%. We have seen concerns on Taiwan's declining defensive capabilities in the studies published by the Department of Defense and Taiwan's Ministry of Defense, and are aware that Congress in its National Defense Authorization Act for Fiscal Year 2020 states: "the Secretary of Defense should promote policies concerning the security of

Taiwan, including exchanges between general officers and the acquisition by Taiwan of appropriate defensive weapons"[viii], therefore we perceive "costs" and "political feasibility" as minimal concerns and weight them 10% each.

Projected Outcomes

Each policy alternative is ranked on a scale from one to ten, with ten assigned to the alternative with the most favorable outcomes in the criterion. In several cases, alternatives obtained similar outcomes within criteria and were therefore given with the same numerical value. This section will project the outcomes of each alternative by criteria.

Efficacy

Efficacy is the first of two criteria assessing the alternative's effectiveness, measured by the percentage of cases in which the PLA's invasion is defeated in a Taiwan contingency. "Increasing the number of CSGs" ranks highest within this criterion. Deploying three CSGs to the Seventh Fleet in Yokosuka, Japan, which would be the first to respond in a Taiwan conflict, would offer an effective warship-to-warship, aircraft-to-aircraft deterrence against the PLA's naval and air campaigns. With the intervention of these three CSGs, in 80% of the cases, the PLA's invasion would be defeated.[ix]

"Transfer BVR missiles" ranks second. This policy would offer meaningful technological advantages to Taiwan's Air Force, thus increasing its capabilities in a Taiwan contingency. With BVR capabilities, in 70% of the cases, Taiwan alone can defeat the PLA's invasion.[x]

"Deploying pilots to Taiwan" ranks third. This policy would increase the training standard and quality of the Taiwanese pilots. Given the fact that Taiwan's pilots already enjoy a higher training standard (150-180 hours per year) than do PLA pilots (as little as 80 hours in the

air each year), with an increased level of training, in 55% of the cases, Taiwan alone can defeat the PLA's invasion.[xi]

"Business as usual" ranks lowest because it does not improve the U.S. military capabilities nor Taiwan's self-defense capabilities. Under this scenario, in 30% of cases, the PLA's invasion would be defeated.[xii]

Efficiency

Efficiency is the second criterion of assessing an alternative's effectiveness, measured by the number of U.S. fighter jets needed to defend Taiwan against the PLA's invasion in a Taiwan contingency.

"Increase the number of CSGs" ranks highest within this criterion. This policy would suppress PLA's air operations by reducing the number of the PLA air-to-air sorties[xiii] to 150, therefore requiring only 24 U.S. fighter jets.[xiv]

"Transfer BVR missiles" ranks second. This policy would somehow deter the PLA's air operations by reducing the number of the PLA air-to-air sorties to 200, and therefore requiring 40 U.S. fighter jets.[xv]

"Deploy pilots in Taiwan" ranks third. This policy would increase the combat capabilities of Taiwan's Air Force through higher level of training, and therefore reduces the number of the PLA air-to-air sorties to 600. Under this scenario, 40 U.S. fighter jets would be needed.[xvi]

"Business as usual" ranks lowest because it does not improve the U.S. military capabilities in the area nor Taiwan's self-defense capabilities and would face 1400 PLA air-to-air sorties during a Taiwan contingency. Under this scenario, 98 U.S. fighter jets would be needed.[xvii]

Political Feasibility

As noted, given the fact that the U.S. military engagements with Taiwan are unofficial, we are declined to quantify this criterion. We estimate the outcomes based on the views of the U.S and Taiwan governments toward the cross-strait military balance.

Based on our estimations, "deploying pilots in Taiwan", "increase the number of CSGs" and "Transfer BVR missiles" all rank highest within this criterion. With the consensus of promoting U.S.-Taiwan defense and security cooperation within the U.S. government, and Taiwan's concerns on the growing military strength of the PRC in its 2019 National Defense report,[xviii] we project that the U.S. and Taiwan governments are very likely to support these alternatives.

"Business as usual" ranks lowest, meaning that the U.S. and Taiwan governments would less likely agree to maintain the current level of the U.S. defense commitment to Taiwan.

Costs

To measure the costs of deploying U.S. military forces in Japan and Taiwan, we calculate the fixed costs (in dollars) of operating aircraft carrier strike groups and running the Yokosuka Navy Base plus the variable cost (in dollars) per person per year of deploying military personnel in the Asia-Pacific region.

"Transfer BVR missiles" and "Business as usual" equally rank highest within this criterion. These alternatives would cost approximately $200 million per year running the Yokosuka Navy Base[xix], and approximately $2.7 billion per year operating one aircraft carrier strike group.[xx]

"Deploying pilots in Taiwan" ranks second. This alternative would cost approximately $4,0000 per person per year deploying pilots in Taiwan.[xxi] It would also cost approximately $200

million per year running the Yokosuka Navy Base[xxii], and approximately $2.7 billion per year operating one aircraft carrier strike group.[xxiii]

"Increase the number of CSGs" ranks lowest. This alternative would cost approximately $8.1 billion per year operating three aircraft carrier strike groups[xxiv], and $200 million per year running the Yokosuka Navy Base.[xxv]

Tradeoffs

1. Two alternatives rank highest: "transfer BVR missiles" (6.62) and "increase the number of CSGs" (6.95).
2. These two alternatives offer a relatively balanced strength, however, "transfer BVR missiles" ranks slightly lower in the most important criterion.
3. The alternative: "Deploy pilots in Taiwan" is weaker in general, presenting no relative strength.
4. All of the alternatives clearly outperform the "Business as usual", which is terrible in all criteria except cost.

Correlation Alternative Matrix

	50%	30%	10%	10%	
	Maximize Taiwan's likelihood of defeating the PLA's invasion	**Minimize the number of U.S. fighter jets needed to deploy to defend Taiwan against the PLA's invasion**	**Minimize the cost (in dollars) of deploying U.S. military forces in Japan and Taiwan**	**Meet Target of all stakeholders support the policy**	
Deploy pilots in Taiwan	**5.5** The PLA's invasion would be defeated in 55% of the cases	**2** 72 fighter jets needed	**4** $4,0000 per pilots deployed in Taiwan, $200 million per year running the Yokosuka Navy Base, $2.7 billion operating one CSG	**9** The U.S. and Taiwan governments are very likely to support the policy	**4.65**
Transfer BVR missiles	**7** The PLA's invasion would be defeated in 70% of the cases	**5.4** 40 fighter jets needed	**6** $200 million running the Yokosuka Navy Base, $2.7 billion operating one CSG	**9** The U.S. and Taiwan governments are very likely to support the policy	**6.62**
Increase the number of CSGs	**8** The PLA's invasion would be defeated in 80% of the cases	**6** 24 fighter jets needed	**2.5** $200 million running the Yokosuka Navy Base, $8.1 billion operating three CSGs	**9** The U.S. and Taiwan governments are very likely to support the policy	**6.95**
Business as usual	**3** The PLA's invasion would be defeated in 30% of the cases	**1** 98 fighter jets needed	**6** $200 million running the Yokosuka Navy Base, $2.7 billion operating one CSG	**2** The U.S. and Taiwan governments are less likely to support the policy	**2.6**

Recommended Alternative

Based on the defined criteria and projected outcomes, the U.S. Strategic Command should command the Navy to deploy two extra aircraft carrier strike groups to its Seventh Fleet deployed in Yokosuka, Japan. A U.S. intervention consisting of three aircraft carrier strike groups would decisively alter the outcome of a Taiwan contingency. Moreover, by offering a cutting-edge combat advantage over the PLA's Air Force and Navy, this policy would reduce the deployment of extra U.S. military forces and thus reduces American casualty. Furthermore, this policy is in line with Congressional objective toward the U.S. defense commitment to Taiwan.

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[iii] Gomez, Eric. A Costly Commitment: Options for the Future of the U.S.-Taiwan Defense Relationship. Cato Institute, 2016. Accessed December 14, 2020. http://www.jstor.org/stable/resrep04900, 3.
[iv] Kan, Shirley A. Taiwan: Major U.S. Arms Sales Since 1990, report, June 13, 2014; Washington D.C.,50.
[v] "Threading the Needle: Proposals for U.S. and Chinese Actions on Arms Sales to Taiwan: EastWest Institute." Threading the Needle: Proposals for U.S. and Chinese Actions on Arms Sales to Taiwan | EastWest Institute, September 10, 2013. https://www.eastwest.ngo/idea/threading-needle-proposals-us-and-chinese-actions-arms-sales-taiwan.
[vi] Gomez, Eric. A Costly Commitment, 4.
[vii] Ibid, 5.
[viii] "H.R.2500 - 116th Congress (2019-2020): National Defense Authorization Act for Fiscal Year 2020." Congress.gov, August 11, 2020. https://www.congress.gov/bill/116th-congress/house-bill/2500.
[ix] Shlapak, David A., David T. Orletsky, and Barry Wilson, Dire Strait?: Military Aspects of the China-Taiwan Confrontation and Options for U.S. Policy. Santa Monica, CA: RAND Corporation, 2000, 84.
[x] Salapak, et al, *Dire Strait*, 89.
[xi] Ibid, 45.
[xii] Ibid, 80.
[xiii] A sortie is a deployment or dispatch of one military unit, be it an aircraft, ship, or troops, from a strongpoint.
[xiv] Ibid, 90.
[xv] Ibid, 91.
[xvi] Ibid, 92.
[xvii] Ibid, 93.
[xviii] Agency, Central News. "Taiwan Defense Report Details Coastal Strategy to Repel Chinese Forces." Taiwan News. Taiwan News, September 11, 2019. https://www.taiwannews.com.tw/en/news/3774369.
[xix] Lostumbo, Michael J., Michael J. McNerney, Eric Peltz, Derek Eaton, David R. Frelinger, Victoria A. Greenfield, John Halliday, Patrick Mills, Bruce R. Nardulli, Stacie L. Pettyjohn, Jerry M. Sollinger, and Stephen M. Worman, Overseas Basing of U.S. Military Forces: An Assessment of Relative Costs and Strategic Benefits. Santa Monica, CA: RAND Corporation, 2013, 40.
[xx] Loren B. Thompson, Ph.D. "In Brief: The Logic of Aircraft Carrier Strike Groups." Lexington Institute, October 28, 2019. https://www.lexingtoninstitute.org/in-brief-the-logic-of-aircraft-carrier-strike-groups, 3.
[xxi] Loren B, et al. *In brief*, 9.
[xxii] Lostumbo, *Overseas Basing of U.S. Military Forces*, 40.
[xxiii] Loren B. et al, *In Brief*, 8.

[xxiv] Lostumbo, 40.
[xxv] Loren B. et al, *In Brief*, 9.