Securing the Energy Supply: China's "Malacca Dilemma"

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Following Deng Xiaoping's 1978[1] reforms, China has experienced exponential industrialisation and transformation. In 2013, China overtook Japan to become the world's second largest economy[2] with growth of 7.7% for 2012-2013[3]. Primarily this has come from a huge expansion of the industrial and manufacturing sectors, bringing a myriad of benefits for the country. However challenges have also arisen, the most pressing being China's immense energy consumption. Although 69%[4] of China's energy consumption comes from coal, its oil requirements are substantial. Despite domestic crude production reaching 4.2mb/d in 2013, imports of 6.2mb/d[5] were required to meet demand. China is now the world's second largest consumer and importer of oil[6], with imports accounting for 54.8%[7] of China's oil requirements. In light of the shale boom in the U.S., China looks certain to become the world's largest importer of oil in the coming years.

This is in stark contrast to China's position as a net exporter in the 1970's[8]. For the Chinese, this new dependence on imports is a serious issue for their security of supply, an issue integral to Chinese national and economic security. Key to understanding this notion of perceived threat is the oft-quoted mantra of 'China as an island', discussed as a great geographical advantage protecting the core of Han China. But it also exhibits another characteristic associated with islands; it is reliant on sea routes for the majority of its energy. This is compounded by what the then-President Hu Jintao in 2003 called "The Malacca Dilemma". 80%[9] of China's oil imports have to pass through the strait en-route from the Middle East and Angola. Compounding the issue is the lack of a viable alternate sea route. The closest alternatives, the Straits of Lombok and Makassar, are five days slower[10] and are already heavily utilized by the Very Large Crude Carriers that cannot safely navigate the Malaccan route[11]. Thus, China is vulnerable to a wide range of potential natural and political interference due to it being highly dependent on a chokepoint that it does not directly neighbor.

RESEARCH QUESTION

China's efforts to deal with this geographic and geopolitical challenge will form the central tenant of this paper. The analysis will concern how successful these attempts have been, both in terms diversifying China's supply and increasing maritime security. The research question to be addressed is "Can China secure its supply to the extent necessary to mitigate the Malacca Dilemma?" This question has been posed due to the wide-ranging implications these strategies will have, not just on China's domestic politics, but on international affairs, energy markets and on wider geopolitical and regional security concerns.

This analysis requires two sub-questions. Regarding China's diversity of supply issue, the question "What alternatives is China pursuing and what will be the impact of these?" examines how China has sought to import oil and gas from non-oceanic routes. The impact of these measures pertains to the original question, relating back to whether they are effective enough to ease reliance on the Strait of Malacca. The final sub-question is "Can China's modernization of its naval forces be interpreted as a response to the Malacca Dilemma?" This looks at the problem from a more traditional understanding of security and defense, linking to Realist notions of state power, as well as the "String of Pearls"[12] theory. Both the sub-questions are required to fully answer the main research question. The

former shows how China will reduce its overall reliance on the Strait of Malacca, while the latter covers the steps taken to secure energy that cannot be imported through different routes.

METHODOLOGY

The methodology will be two-fold. First, the outlook for China's diversification strategy will be outlined. Sub-question one will largely be answered by comparing the possible volumes to be imported via new pipelines to the current volumes passing through the Strait of Malacca. Any disadvantages of these new supply routes will also be considered, thus determining the extent of China's vulnerability. Second, any remaining trans-Malaccan imports will be discussed in the context of the final sub-question. This will consider whether the geopolitical tensions created by Chinese naval operations in the area are offset by the benefits of greater presence around the Strait of Malacca. In tandem, these two evaluations will answer the main research question of whether the Malacca Dilemma can be mitigated.

Social Significance

The stability of oil prices until late 2014[13] serves as evidence of the importance of Chinese demand, with China's energy requirements greatly impacting the world oil price. Chinese growth was responsible for stabilizing oil prices between 2008 and 2014 in light of increased production in the U.S.

Conflict in the region remains a possibility as China projects "power further abroad in the name of protecting its economic interests."[14] Maritime border clashes with regional players such as The Philippines and Vietnam have the potential to cause havoc with global supply routes, as do terrorism and piracy. However the largest concern, as noted by Lanteigne (2008), is that China may become embroiled in a conflict with the U.S.[15] for control of the straits. The implications for global energy supply and state foreign policies are substantial, thus it is imperative that China's security concerns regarding the Strait of Malacca are fully understood and accounted for.

Scientific Significance

Much discussion has taken place on both China's energy imports and on China's geopolitical and military strategies. Authors Erickson and Collins[16] and Zhang[17] have examined the alternative sources of supply being pursued by China and discussed the feasibility of these options. Likewise, Chen[18], Lanteigne[19] and You[20] have discussed China's naval expansion, with Chen specifically looking at how China is seeking to "extricate itself from this strategic weakness"[21] (referring to the Malacca Dilemma). However, gaps exist in the research. The above authors are principally concerned with China's development of naval forces. While they acknowledge energy security as being one of several important motivators for naval development, none of the studies consider the possible impact of China's supply diversification strategy on its naval strategy. What is missing from the literature is an account of precisely how vulnerable China's energy security will continue to be, even after the proposed pipeline developments are accounted for. This paper links these two fields, showing that, while not the sole reason of increased naval power in the region, security of energy supply is an integral component of any analysis of China's naval modernization.

THEORETICAL FRAMEWORK

Historical Background

Despite centuries of existing as a "civilizational state"[22], repeated exploitation of China by colonial powers has acted to enforce the importance of independence and self-reliance. As recently as the 1950's, energy was shown to be a potential tool to be used against China when the U.S. instigated an export shutdown during the Korean War. Mao's push for energy independence in his first 'Five Year Plan' was a direct response to this.[23] China's rise to economic superpower status meant energy independence was no longer tenable. However, the importance of independence for the psyche of the ruling class remained. As Yergin (2012) notes, for the government of 1993, the new 'importer' label represented "a huge loss of face… it was very negatively received"[24].

Realism

China's motivations for increased energy security are best viewed through a realist paradigm. Classical Realism holds that it is the desire for power that drives the state, with this power being sought as the end rather than the means[25]. For classical realist scholars such as Hans Morgenthau, "when there is competition for scarce goods… a struggle for power will ensue."[26] Despite the abundance of oil and gas in the market, the geography of China and the lack of control of the surrounding area result in the possibility of Morgenthau's scarcity of goods becoming reality. Moreover, this scarcity refers not just to oil. The Malacca Dilemma is a spatial issue; it stems from a scarcity of space. That multiple parties have a vested interest in a finite resource (space) places this space at a premium and heightens interest in it.

Structural Realism allows for greater consideration of external factors. In contrast to Morgenthau's belief that power is an end in itself, for Waltz power is a means to achieve greater security.[27] In anarchy, power must be relative to one's competition. China's energy security concerns are also about its ability to compete in anarchy with established players. Securing supply is not just important in maintaining a robust economy; this economic robustness is the very basis of China's potential as a challenger to U.S. unipolarity. The ability to maintain economic power (by obtaining a sufficient, secure energy supply) is thus integral to strengthening China's military and industrial power in a future bi or multipolar world.

The contribution of energy to Chinese power is best shown by Ji You (2007). "The issue of oil is not one of market supply, but one of strategic competition."[28] Sea-lane imports are a geographic vulnerability due to blockade concerns. Imports are not as reliable as desired due to the situation in the Middle East[29]. Geopolitical instability from exporter countries is the challenge furthest from China's influence. Iran's threats to close the other major world chokepoint, the Strait of Hormuz, show that whatever its actions, China remains vulnerable to a Persian Gulf blockade. Thus it is even more critical for Chinese policy makers to secure as much influence as possible.

The String of Pearls

Geopolitical theory, such as Alfred Mahan's thoughts on the importance of sea power for national prosperity, act as a firm foundation from which to advance the discussion of China's maritime actions. For Mahan, a high value is placed on the sea for achieving economic dexterity, not just for military prowess. China's economic growth places it firmly at the center of the world economy. As Friedman said of Mahan, "any country dependent on the world economy must be able to secure access to the world"[30].

Against this background, the Malacca Dilemma can be firmly placed in the contemporary "String of Pearls" theory. Referring to the chain of islands and ports subject to heavy Chinese influence, the theory contends that China is seeking to project its power from the "First Island Chain"[31] across the Indian Ocean to the Persian Gulf[32]. The Strait of Malacca is an intrinsic part of this. The sea-lanes closely follow the String of Pearls, showing the high value that China places on protecting its oceanic interests[33].

The String of Pearls theory is pertinent to three aspects of this paper. First, it shows the dual effectiveness of developing pipelines beginning at the Indian Ocean, as these ports constitute 'pearls' in addition to their potential pipelines. Second, the theory is fundamental when analysing China's naval build-up across the region. Control across the region from the Persian Gulf to Chinese waters is essential to securing energy supply, as well as contributing to China's wider economic and military interests. Lastly, according to Holmes and Yoshihara, this strategy represents an embodiment of "raw geopolitics"[34]. India is viewed as possible future energy and economic competition for China. The String of Pearls aims to strengthen China's position at the long-term expense of India, both in terms of having the ability to securely transport oil from the Middle East and acting to contain a rival power[35]. Parts of all three of these aspects are embodied in the Malacca Dilemma, especially as the inability of China to control the Strait not only affects its security of supply, but also acts to weaken the entire chain of 'pearls'. While energy security is a key aspect of the String of Pearls strategy and its accompanying naval power, this represents only one of numerous benefits for China of implementing such a strategy. As mentioned in the introduction, China's economy is the driving force behind its rise to prominence. Energy helps to fuel China's position as "the workshop of the world"[36], but

increased naval power also strengthens China's position as an exporter of goods. This does not diminish the importance of the Malacca Dilemma. Exports bound for Europe, Africa and the Middle East are still impacted by the chokepoint. However, in relation to the second sub-question, it must be noted that energy security is not the sole calculation in the String of Pearls strategy. Nor is securing the Strait of Malacca the only benefit for China of greater military dexterity. A modernized navy and increased presence in the Pacific and South China Sea seeks to counter what Barack Obama termed in 2012 "The American Pivot to Asia." Even without the added pressure of the Malacca Dilemma, China still has an urgent interest in pursuing greater naval abilities in the region.

Political self-interest is also apparent in China's energy policy. International politics aside, China draws a substantial amount of domestic legitimation from its economic resources[37]. Historically, issues of legitimacy are an area where China has been shown to be deeply uneasy, even paranoid. Providing healthy economic prospects is a crucial part of minimizing mass protests and demands for greater democracy. Without the energy to fuel the economy, the government's legitimacy is called into doubt.

In short, the Malacca Dilemma shows the limitations for China's reliance on oceanic imports alone. The above discussion has detailed three important aspects of the problem. First, the historical motivations for China's desire for energy security have been established. Second, the potential consequences and worst-case scenarios should China fail to obtain further security of supply have been explored. Finally, it has shown how China's actions are consistent with a defensive-realist paradigm, and how these actions fit into China's wider strategy in the Indian Ocean. How this broad theoretical background is applied to the focused situation of the Malacca Dilemma will now be explored in the analysis.

ANALYSIS

The Strait of Malacca is second only to the Strait of Hormuz in terms of strategic chokepoints. Crude volumes crossing the strait have increased to 15.2 mb/d[38]. Of this, 6.2mb/d of crude is destined for China. Fig 3 shows the sources of oil stem predominantly from the Middle East and Africa, constituting 77%[39] of imports. As fore-mentioned in the theoretical framework, the fact that this large volume is sourced from a geopolitically unstable region heightens the importance for China to have a satisfactory import policy.

China is seeking to reduce its over-reliance on the Strait of Malacca through two main strategies- pursuing alternative supply routes and increasing domestic production and storage. These will now be examined. The only alternatives discussed are those that circumvent the Strait of Malacca. As such, increased imports from Africa and Latin America will not be included.

Alternative Supply Sources: Land Imports

Kazakhstan-China Pipeline

As its geographical neighbors, and being rich in resources, Russia and Central Asia are advantageous partners for China. The Kazakhstan-China oil pipeline from the Caspian region to Xinjiang was first activated in 2006. This section was responsible for supplying 240,000[40] barrels per day (b/d). In light of China's increased energy requirements, this was expanded and now delivers 400,000 b/d. This comparatively small figure is due to Kazakhstan's preexisting arrangement to deliver oil to the European market. In addition, there is some reluctance in the region about aiding a potential new hegemonic power[41].

ESPO Pipeline and Pacific Ocean Imports

In recent years, an import/export relationship has proven to be in the interest of both Russia and China. The development of Russia's East Siberian field and the accompanying East Siberian-Pacific Ocean (ESPO) pipeline have greatly increased the opportunities for China to import. The pipeline supplies 300,000[42] b/d with potential to expand to 600,000[43] b/d. Rosneft provides a 'top-up' to the Kazakh pipeline, adding 140,000[44] b/d to the total volume. Fig 4 shows current and future pipelines in the region. Together with the existing Kazakh pipeline and

forecasted future capacity, 1.1 mb/d have been sourced via these countries. However, of far greater impact to the Malacca Dilemma is the volume that could potentially come from the ESPO in the future. Expanded capacity is forecasted to deliver 1.6[45] mb/d to Russia's far-East ports for shipping by 2018. Here, China has the opportunity to dramatically offset its trans-Malacca import volume.

Myanmar-Yunnan Pipeline

The most attractive land option was signed in 2009[46] and is expected to begin operations in 2015. The Myanmar-Yunnan pipeline will bring 420,000[47] b/d from the Bay of Bengal to Kunming. An added bonus of this project is the inclusion of an accompanying gas pipeline, bringing further benefits for China as it seeks to improve its position on the energy efficiency ladder. The costs of the project are considered reasonable at $2billion[48], with the bonus of the Chinese end of the pipeline being close enough to industrial centers to minimize internal redistribution. As Myanmar itself has minimal domestic oil production, and much of the oil will be of Middle Eastern origin, the establishment of this route can be seen as a direct response to the Malacca Dilemma[49]. An added benefit is bringing Myanmar into China's sphere of influence under the previously discussed "String of Pearls"[50] strategy, at the expense of India[51].

Gwadar-Xinjiang Pipeline

A further, although slightly less viable land option is Gwadar, Pakistan. A proposed pipeline would bring Middle-Eastern oil directly to Xinjiang[52] from the newly constructed Gwadar port on the Arabian Sea. A favorable political relationship between the two countries has already led to Chinese investment in the port of $198m[53], with the planned pipeline having a capacity of 200,000[54] b/d. While the pipeline would present a sizeable engineering challenge based on the terrain, the political willpower exists for such a project to be undertaken. As with the Myanmar option and the "String of Pearls", strategic benefits abound for both parties[55]. The benefits of this option are the potential integration with an Iran-China pipeline in the (distant) future and the short distance from Gwadar to the Chinese border[56]. As with the Myanmar option, the lack of domestic production in Pakistan signals this to be a clear attempt to retain energy security in the face of a Strait of Malacca shutdown. However, two major drawbacks are apparent. First, the pipeline would have to overcome considerable mountainous terrain. Second, Xinjiang is far from China's industrial zones. Considerable costs of up to $10[57] per barrel could be added by following such a route. Currently, the combined financial strain of these two factors makes the completion of this option unlikely. However, if China finds itself involved in a confrontation then that calculation could shift. The proximity of Gwadar to both the Middle East and Xinjiang mean it retains enough geopolitical value to remain an option.

Kur Channel and the Pan-Malaysian Pipeline

A canal through the Kur Channel of southern Thailand would be the most direct way to avoid the Strait of Malacca and would be able to cover 90%[58] of current shipments. In a perfect scenario, China would be able to establish something akin to the U.S. Panama Canal Zone, in which it retained control over the area in exchange for constructing the canal. The problem is, this perfect scenario does not exist. Thailand is not as economically and politically weak as Panama was in the late 19th century and would not agree to such terms, although they have agreed to the principle of a canal in general. A canal that is vulnerable to foreign intervention would leave China in much the same situation, geopolitically, as it finds itself in at present. Additionally, the cost of $25billion[59], coupled with an absence of financial partners, means the project is essentially nonviable. The second option, an 800,000[60] b/d pipeline across Malaysia, is more promising. The costs entailed with setting up refineries at each end result in a high cost of $14.5billion[61], however multinational financial support lessens the burden of this. The logistics of such a project are a negative, as all shipments would have to be unloaded and reloaded at each end. While it would go some way to alleviating the risk posed by piracy and shipwrecks in the Strait of Malacca, it would do little to ease China's fears of a state-to-state confrontation affecting its energy supply. Not only would it represent a chokepoint in itself, it would be subject to the influence of all the countries financially backing it, diminishing China's ability to act unilaterally.

Alternative Supply Sources: Domestic Production

Domestically produced oil comes with the high degree of security sought by China, but Chinese domestic production is unable to match consumption. In 2013, crude production totaled 4.2mb/d[62], with the majority coming from mature fields with limited potential for higher production. China is pursuing more upstream development to compensate for the future decline of these fields, most notably in Xinjiang and the South China Sea.

In a best-case scenario, current production levels of conventional oil will be maintained[63]. Measures to moderate consumption, such as auto industry regulation and environmental tax breaks could also lessen the burden on imports. While these measures would have an impact, they are subject to economic prioritization and as such may not be viable in the long term[64]. Domestically, the most direct attempt to mitigate the Malacca Dilemma is the development of increased storage facilities to compensate for any short-term interference. At present, China has the capacity to store 160 million barrels, with plans to increase this to 500 million barrels[65] by 2020. The EIA estimates that commercial reserves add a further 250-400[66] million barrels. This storage will prove useful in fulfilling domestic requirements in the event of temporary blockage to the strait, but is unlikely to be sufficient in the case of a prolonged shutdown. It is important to note that this does not account for the future development of tight oil, which will doubtless have an impact on later domestic production.

The sum of the alternatives total 4.12mb/d. Compared with China's current imports of 6.2mb/d, a daily shortfall of 34% is present. However, that is based on the maximum capacities of the discussed pipelines and best-case scenarios. As many of the proposed developments contain significant financial and logistical challenges, it is extremely unlikely that all the possible volumes will be achieved. Only a fraction of the potential 4.12mb/d will realistically be available for utilization. Answering the first research sub-question, the alternatives China is pursuing are not sufficient to meet its needs. While they will have an impact on providing a degree of supply security, this is nowhere near the level required to compensate for the volumes currently shipping through the Strait of Malacca. Thus, to increase its security of supply, other means must be adopted.

Securing The Remaining Trans-Malaccan Imports: Increased Naval Power

The U.S. has the most extensive naval force in the world, with the capability to severely interrupt the sea-lanes in an act of "energy encirclement."[67] As it has been shown, China will continue to be reliant on oil via the Strait of Malacca. Its concerns are heightened by the lack of feasible multilateral safeguards, such as joint ASEAN security operations, being an option in the region due to existing power politics[68]. It must thus reverse its "shortcomings in naval power projection capabilities"[69] to diminish the consequences of the Malacca Dilemma.

The strategy for a "blue water navy"[70], launched in 1987, was originally a response to Taiwanese alignment with the U.S. However it is apparent that the continued development of the People's Liberation Army Navy (PLAN) is of great benefit for the protection of sea-lanes. The delicate nature of the geopolitical situation in the region limits the extent to which the PLAN can be modernized. Any rapid expansion of naval capabilities would trigger countermeasures by other regional players, an undesirable outcome for all concerned. Hence, China's modernization of its fleet has been slow and steady, with an onus on cooperation rather than confrontation. As You (2007) writes, China is "seeking power not for domination but for enhancing security, best achievable through cooperation."[71] The lack of development of aircraft carriers shows this to be an accurate statement; such a move could be interpreted as an excessive show of force[72]. The clear negative of this strategy is the time it will take to become a serious naval force, but this is preferable to a "regional arms race"[73]. However, the buildup of PLAN forces shows that China does not consider cooperation a serious *long-term* strategy, but a necessary *short-term* appeasement. The development of a 093 class nuclear submarine force shows this. It can be done rapidly without triggering geopolitical anxiety in the manner a full fleet would, and secures sea-lanes by providing a forward presence[74].

These actions are also consistent with the aforementioned String of Pearls strategy, protecting the western approaches to the Strait of Malacca to secure its energy supplies. That the established 'pearls' closely follow the sea-lanes requiring naval protection is not coincidence. The establishment of ports at Gwadar and Myanmar enable PLAN forces to deploy further away from home and operate closer to the Strait of Hormuz, which also has the potential to greatly affect Chinese energy security. Whether or not the pipelines are developed, a heavy Chinese presence enhances China's security of supply. By establishing an Indian Ocean presence, China is using its budding

navy to recreate in the Strait of Malacca the same "energy encirclement"[75] that it fears being a victim of in the Pacific. Rather than seeking to control just the Strait of Malacca, by spreading influence across the Indian Ocean the risks contained within the Malacca Dilemma can be preemptively addressed. In light of these events, to the second sub-question the answer is a definitive yes. The modernization of the PLAN, along with forward presence submarine capabilities, is indicative of China seeking to secure the routes of supply. This process serves jointly for its energy security, for ensuring its continued economic success, and to balance rival powers in the region. As one of the sources of insecurity is the Malacca Dilemma, the modernization of China's forces can be said to be partly a response to it. Protecting the remaining necessary sea-lane imports helps to relieve energy insecurity, but the act of modernizing the navy increases the risk of military escalation in the area, arguably one of the scenarios China is most keen to avoid.

Answering the primary research question, China *can* mitigate itself from the Malacca Dilemma in terms of security of supply. An improved naval force will be able to protect Chinese interests in the region. What it cannot do is neutralize the concerns of a confrontation. One of the core geopolitical fears stemming from the Malacca Dilemma is a shutdown of the strait following a confrontation with a rival power. The modernization of the PLAN, while increasing China's ability to prevent or deal with a blockade, arguably makes the chances of such a confrontation occurring greater. Thus it can be said that China can effectively address the problem of security of supply, but not the root cause of wider insecurity.

CONCLUSION

This analysis has shown that despite the numerous alternatives pursued by China, land options will be unable to provide similar levels of oil to those current arriving via the Strait of Malacca. Even if all possible projects are developed and operate at full capacity, a 2mb/d shortfall remains, and likely substantially more. If China continues to grow at projected levels, the gap between production and consumption will widen. While the alternatives pursued will have an impact on diversifying (and thus increasing the security of) China's energy supply, they alone are insufficient to meet its needs. Imports will still arrive via the Strait of Malacca. The security of these imports has been made one of the cornerstones of China's naval strategy, and as such the navy has been modernized and expanded. The measures taken will, overall, partially mitigate the Malacca Dilemma. One way for China to further mitigate itself from the dilemma would be to develop its production of unconventional tight oil. Further research into this avenue could explore whether China has the capacity to become energy self-sufficient again. If such an analysis shows that this is indeed possible, it would dramatically aid China's goal of increased energy security. While not lessening the importance of the sea-lanes for China's wider economic and geopolitical strategies, it may act to weaken energy security as being one of China's key concerns. As such, more research into the feasibility of pursuing shale oil and gas is recommended.

Currently, the risk for China going forward is that although an increased military presence may secure sea-lanes from terrorism and piracy, it heightens the risk of geopolitical confrontation in the area, the very type of confrontation China is eager to avoid. The lack of viable alternatives (apart from shale) means that a strategy of cooperation over the Strait of Malacca may be the best short-term course of action, especially as China's primary concern in the Malacca Dilemma is avoiding a shutdown or blockade of the strait. A balance must be struck between the necessity of protecting the sea-lanes and accounting for regional concerns about increased Chinese militarization. To ensure its continued economic success, China must carefully tread the line between these two fields.

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