

## *Viewpoint*

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# Thunder in the Air: Taiwan and Theater Missile Defense

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Military and missile exercises by the People's Republic of China (PRC) in 1995-96, combined with its frequently threatening military tactics since then, have reinforced Taiwanese insecurity in the past five years. Owing to geographic proximity and the constant political tug-of-war over unification and separation between China and Taiwan, the Taiwan Strait is a flashpoint for potential military conflict. The mainland side of the strait is also a region with a high density of missile deployment. In this context, much recent debate about Taiwanese national security policy has centered on the possibility of Taiwan developing a theater missile defense (TMD) system. Indeed, the issue was an important agenda item for Chinese Vice-Premier Qian Qichen during his visit to Washington, DC, in March 2001.

China is reportedly concerned about Taiwan developing a TMD system, as such a capability could potentially embolden a Taiwanese drive for complete independence—a move that would challenge Beijing's territorial and national sovereignty. Moreover, because a Taiwanese missile defense system would be based largely, if not entirely, on U.S.-supplied technology and hardware, TMD would also inevitably lead to closer U.S.-Taiwan military relations,

potentially posing a roadblock to China's unification effort and even handicapping China's rise in world politics as a major power. Hence, Beijing has watched closely for any development of a Taiwanese TMD system.

On the other side of the Taiwan Strait, the TMD issue has stirred an intense debate in Taiwan and claimed a crucial spot unaffected even by the media frenzy in 2000 and 2001 concerning an arms procurement scandal that involved the death of a Taiwanese naval officer.<sup>2</sup> With its technical complexity, unproven reliability, colossal price tag, and significant domestic and international political implications, the TMD option poses a complex dilemma for Taiwan.

This viewpoint will center on several questions: Is TMD a wise option for Taiwan? What strategic and political gains could Taiwan expect from a U.S.-backed TMD? What would be the likely Chinese response to Taiwan developing TMD? What potential strategic ramifications could a Taiwanese TMD generate in Asia, particularly with regard to U.S.-China relations? In analyzing and attempting to answer these difficult questions, I argue that a U.S.-backed TMD is a poor choice for Taiwan. Alternative options to ensure Taiwanese security and to counter the

Chinese missile threat can be identified and should be sought.

This viewpoint will begin with a brief review of the Chinese missile threat to Taiwan. It then describes the basic elements of possible Taiwanese TMD systems and examines the reasons why TMD might be an attractive option for Taiwan. Next, it analyzes the arguments made by proponents and opponents of TMD in the debate currently taking place in Taiwan and reviews the strategic implications of a Taiwanese TMD system from several points of view: the cross-strait military balance; regional stability in Asia; and the triangular U.S.-Taiwan-China relationship. Finally, bringing together all the above considerations, this viewpoint reaches a pessimistic conclusion about the overall benefits for Taiwan of a U.S.-backed TMD system and suggests alternative measures to meet the PRC missile challenge.

### THE CHINESE MISSILE THREAT

Quantitative comparison of the PRC and Taiwan in terms of geographic size, population, economic potential, geography, and military forces quickly reveals Taiwan's inferiority on these traditional indices of national power.<sup>3</sup> An island only 0.375 percent the size of China, with 1.9 percent of the population of China, Taiwan is a virtual David facing Goliath. On the other hand, Taiwanese defenses against military threats from China are bolstered by a natural geographical barrier, the Taiwan Strait. The strait, approximately 100 miles wide, forces China to acquire sufficient maritime assets to transport troops if it plans to stage a successful amphibious invasion of Taiwan. The water barrier posed by the strait also compels China to provide adequate air cover for such an amphibious assault. Since Chinese air and naval capabilities are relatively poor, it remains unlikely that in the near future Chinese forces could cross the Strait without being detected and challenged by Taiwanese air and naval forces, at which point, Taiwanese leaders hope, engagement by the United States might help avert or defeat the invasion.

Qualitatively speaking, Taiwan presently maintains the upper hand in air superiority and naval forces. Compared to China, Taiwan has more advanced fighter jets and better trained pilots, better equipped surface ships acquired from the United States and France, and superior electronic warfare capabilities.<sup>4</sup> If there is any serious concern from the Taiwanese point of view, it is China's "pocket of excellence" in missile technology, the scale of its recent missile deployments, and Chinese nuclear capabilities.

Chinese conventional forces have frequently been disparaged for outdated weapons and technological backwardness. While this view may be accurate in general, Chinese missile development has nonetheless been watched closely by Taiwan. Missiles present China with the capability to strike at Taiwan across the Taiwan Strait, using launch sites some distance from the coastal region, which could avoid preemptive surgical strikes by Taiwanese aircraft. Moreover, with Chinese missile deployments in the Taiwan theater thought to number several hundred, a massive launch of Chinese missiles would pose an extremely demanding, if not insurmountable, challenge for a future Taiwanese missile defense system, even assuming that all of the offensive missiles were conventionally armed.

China has developed an array of missiles of different ranges (see Table 1).<sup>5</sup> Not all of them are deployed against Taiwan, but the deployment of even a significant portion of China's shorter-range systems in this theater has been sufficient reason for Taiwan to take notice. Moreover, the acquisition of new weapons from abroad—such as Russian-built *Sovremenny*-class destroyers carrying SS-N-22 Sunburn ship-to-ship missiles (SSMs) and the Russian version of Airborne Warning and Control System (AWACS) aircraft—has boosted Chinese maritime mobility and over-the-horizon targeting capability.<sup>6</sup> Chinese development of cruise missiles and short-range missiles may be further enhanced by its efforts to employ a Global Positioning System (GPS) for improving their accuracy.<sup>7</sup> Increased accuracy would make these missile more effective for strikes against Taiwanese air bases and port facilities as part of the preparation for an invasion. In addition, China's reported acquisition of Russian Kh-31P anti-radar missiles and KS-172/ Air-to-Air Missiles (AAM)-L air-launched anti-AWACS missiles could undermine the defensive capabilities that Taiwan might gain from its early warning and tactical missile defense systems.<sup>8</sup> The Chinese launch of the unmanned Shen Zhou spacecraft in November 1999 and Shen Zhou II in January 2001, as well as other improvements in Chinese remote sensing systems, strengthen the guidance, navigation, and vehicle control components of the Chinese missile program to a level of sophistication causing serious concern for Taiwan.<sup>9</sup>

Even though Chinese M-class missiles—the primary systems likely to be targeted at Taiwan—might be offset somewhat by the limited missile interception capabilities of the Patriot Advanced Capability Level-2 (PAC-2) mis-

*Table 1. Selected Chinese and Taiwanese Land-based Theater Ballistic Missiles<sup>10</sup>*

Designation	Range Naut. Miles (km)	Comments
<b>China</b>		
Cruise missile		R&D since 1970s; reported to have 2,000 km range
Dong Feng (DF)-15 (M-9; CSS-6)	370+ (600)	short-range ballistic missile (SRBM), R&D (1984-); tested (1988); 300 m (CEP); deployed in Fujian and Jiangxi provinces; expected to incorporate satellite-assisted navigation system for accuracy; reported to have a separating warhead with own miniature propulsion system to allow changes to its terminal trajectory; warhead capable of nuclear or conventional payload; deployed on a mobile transporter-erector-launcher (TEL).
DF-11 (M-11; CSS-7)	180+ (300)	SRBM, R&D (1985-); solid propellant, road-mobile; Advantage over DF-15 is its larger payload capability; capable of covering Taiwan, if fired from launching sites in Fujian; expected to incorporate satellite-assisted navigation system for accuracy.
DF-21 (CCS-5)	1250 (2000)	land-based solid-fuel missile; R&D (1967-); tested (1985); deployed (1991); road mobile on a towed TEL; could potentially become China's "Pershing II," if modified radar-based system is incorporated to improve accuracy to 50m (CEP), an improvement from its current 700m (CEP) and will have accurate conventional strike capability.
SA-10B (Grumbel/S-300)	---	Russian made anti-tactical ballistic missile similar to Patriot PAC-2; a phased-array radar complex for early warning capability; maximum engagement range of about 90 km
<b>Taiwan</b>		
Xiong Feng	---	Xiong Feng-III, an anti-ship supersonic missile (IDF, AT-3A); Xiong Feng-IIE, claimed to be a cruise missile with a range of 200 km
Tian Gong (Sky Bow)	(100)	SAM; long-range and capable of multiple-target combat interdiction; deployed (1998); Tian Gong-I, a single-stage, solid propellant missile; Tian Gong-II, configured as a fixed, two-stage, single-rail or silo-launched system, with a range of 100 km down range and up to 30 km altitude; Tian Gong, reported as a medium-to-long range system based on earlier version of U.S. Patriot; can be converted into a SRBM with a range of 300 km (Tian Gong-III).

sile defense system that Taiwan already fields, the Taiwanese people are not psychologically prepared for war. In addition, Taiwan's economy might not withstand the damage from a missile assault in which dozens of conventional warheads hit home. The damage to the Taiwanese economy would be mainly psychological, but still severe, and even if an invasion did not follow, such an attack could chill foreign and domestic investment in Taiwan. Chinese missile forces thus give Beijing potential political leverage in bargaining with Taiwan. Ongoing Chinese efforts to deploy additional missiles close to Taiwan, as at the M-11 missile base in Fujian, have alarmed Taiwanese security planners.<sup>11</sup> All these recent developments have increased tension and raised the chances of conflict across the Taiwan Strait. As it offers the possibility of countering the Chinese missile threat, proposals for a U.S.-led TMD system have generated quite a policy storm in Taiwan and East Asia.<sup>12</sup>

### TMD AS AN OPTION FOR TAIWAN

The emerging Taiwanese interest in TMD is partially motivated by the 1991 Gulf War when Israel and Saudi Arabia faced Saddam Hussein's Scud missile attacks. The Patriot air defense system, which then was designed more to shoot down aircraft than missiles, was deployed to defend against Iraqi Scuds. Although its technical effectiveness during the Gulf War has been a subject of debate, its political symbolism was propagated by live news coverage, and it offered Israel a justification to resist public pressure for retaliatory strikes against Iraq.<sup>13</sup> In so doing, the Patriot system helped maintain the cohesion of the U.S.-led coalition forces, which included a number of Arab states.<sup>14</sup>

Since then, the Patriot system, still under improvement, has gained a significant role in U.S. missile defense plans. The interceptor missiles form the first element of a multi-tiered missile defense system that the United States is developing to protect the U.S. homeland and U.S. allies against emerging missile threats.<sup>15</sup> Current U.S. plans call for the national missile shield to be able to intercept "handfuls" of enemy missiles, but theater missile defenses, which are expected to be less costly and less technologically complex, would be able to protect against considerably larger attacks of shorter-range missiles. Because a U.S. national missile defense system might threaten U.S.-Russian strategic stability, they have been the subject of considerable debate, while theater missile defenses have generally enjoyed wide support. In Taiwan, however, the debate over

the feasibility and need for TMD is in no way less contentious than the NMD debate in the United States.<sup>16</sup>

TMD systems are generally divided into two categories: the lower-tier and upper-tier systems, with an interception altitude of 40 kilometers (km) marking the threshold boundary between them.<sup>17</sup> A complete TMD system would combine both upper-tier and lower-tier elements. Lower-tier defense systems are designed for smaller defended area ("footprint") roughly within a radius of 50 to 60 km of where the interceptor missiles, such as the Patriot Advanced Capability Level-2 (PAC-2), and Patriot Advanced Capability Level-3 (PAC-3) are deployed. Another lower-tier option under development is the Navy Area Defense (NAD) system. Upper-tier defense systems, designed to cover larger defended areas, include the ship-based Navy Theater-Wide Defense (NTWD), land-based Theater High Altitude Area Defense (THAAD) systems, and other boost-phase intercepting systems like the airborne laser (ABL) systems.<sup>18</sup>

As an improved version of PAC-2, PAC-3 is equipped with a new extended-range interceptor technology (Erint) hit-to-kill interceptor designed to hit targets at around 30 km in altitude.<sup>19</sup> By contrast, an upper-tier system like THAAD is designed to intercept missile warheads at a range of 40-150 km, with a defended area of several hundred kilometers in diameter. The deployment of a system like THAAD requires modern phased-array X-band radar with a long-range detection capability of up to 500 km and the technological capability of distinctly separating decoys from actual warheads. This upper-tier system is still in the development and engineering phase, however.

Both NAD and NTWD systems rely on Aegis cruisers and destroyers with vertical launch systems. Different types of Standard missiles can be deployed to meet various needs. The effectiveness of Aegis cruisers in defense and coverage of defended areas is subject to incoming missile speed, ship location, and the support of detection and sensor equipment.<sup>20</sup> At present, the PAC-3 lower-tier system is much better developed than other systems like NTWD or THAAD, which are not projected to be ready for deployment until 2007 or 2008. Therefore, debates and discussion in Taiwan usually center more on the necessity of lower-tier TMD and less on the upper-tier systems.

Historically less advanced in missile research and development (R&D) than China, Taiwan has in recent years opted to invest tremendously in missile development. China's successful satellite launches in the 1970s prompted

Taiwan's Chungshan Institute of Science and Technology to follow suit by embarking on the Qingfeng Jihua (Green Peak) program for short-range missiles, completed in 1980. That same year, the Chungshan Institute acquired a highly sophisticated computer system for missile guidance research.<sup>21</sup> This early success paved the way for the Tianma Jihua (Sky Horse) project, which aimed at the R&D of medium-range missiles and satellites. Under U.S. pressure, the Tianma project was aborted in 1982, and its research staff was dispersed to aircraft design and short-range missile R&D.<sup>22</sup> This major setback, however, did not deter Taiwan from continuing research on several short-range missiles; some of these indigenous missiles were tested and deployed in the wake of the Tianma project (see Table 1). These include the Gongfeng 6A Rocket, Xiong-feng-II Surface-to-Air Missiles (SAM), Tianjian AAMs, and Tiangong SAMs. Facing Chinese missiles positioned nearby, Taiwan has also engaged R&D directed toward developing its own anti-missile system based on Anti-Tactical Ballistic Missiles (ATBM).<sup>23</sup>

Because of China's comparative advantage in missile systems and R&D, Taiwan as a latecomer would have difficulty closing the gap. Historically, empirical data tend to support the hypothesis that war is more likely when offense has (or is believed to have) the advantage.<sup>24</sup> Chinese missile superiority over Taiwan could, arguably, be viewed as giving China a perceived offensive advantage over Taiwan. A quick way to reverse this disadvantageous position vis-à-vis China would be to acquire a missile defense system from abroad. A U.S. TMD system, if available, could be an attractive option for Taiwan in light of its potential positive impact on regional stability and the cross-Strait military balance.

Its supporters in Taiwan see the deployment of TMD as one way to ensure stability by maintaining a balance between offense and defense and thus deterring China from trying to exploit its missile capabilities. The psychological boost TMD could give Taiwan also appeals to policy planners, who view it as an instrument to neutralize the only credible threat that Beijing is currently capable of wielding to intimidate Taiwan. Other military and political options to counter Chinese missile capabilities are less attractive, owing to the various difficulties and uncertainties in implementation. For example, a conventional military offensive to eliminate missile sites in China would face the logistical challenge of crossing the Taiwan Strait. The stalemate between Taiwan and China with regard to the "one China" policy has decreased the possibility that

talks could lead China to restrict its missile deployments opposite Taiwan.

Media analysis, electoral politics, and a group of deeply committed TMD advocates initiated the TMD debate in Taiwan. The 1995-96 missile crises also catalyzed the debate. In an attempt to intimidate voters in Taiwan's 1996 presidential election, for example, China launched four unarmed missiles near Taiwan shortly before the vote.<sup>25</sup> Taiwanese analysts also perceived Chinese expansion of missile bases in Fujian and Jiangxi provinces, directly across the Taiwan Strait, as another attempt at missile intimidation prior to the 2000 presidential election.

### THE TMD DEBATE IN TAIWAN

The debate in Taiwan over TMD has included analyses of economic factors, technological factors, military factors, and domestic political factors. In considering each of these categories, the following questions arise:

- Is TMD financially feasible and bearable for Taiwan?
- Is TMD technologically feasible to achieve what it proposes to accomplish?
- Is TMD militarily effective enough to increase Taiwanese security in the face of Chinese missile capabilities?
- How do different political parties in Taiwan view TMD? After all, TMD can only be realized if a "winning coalition" among these parties is formed to push the TMD political agenda through the budgetary process. Also, what is the possible impact of interservice rivalry regarding TMD? Is there a consensus on TMD among different military services?

While all these aspects can be listed separately for analytical purposes, they are inevitably intertwined together in Taiwanese policymaking and debate.

#### Economic feasibility

In budgetary estimates, the cost of Taiwan's participation in a TMD system was projected to be \$9.4 billion in 1999 (\$300 billion Taiwanese dollars).<sup>26</sup> (All currency figures below presented in U.S. dollars) This is far below the U.S. projection of the ultimate cost of NMD, figured at around \$60 billion or more, depending on how aggressively the U.S. pursues various possible technologies.<sup>27</sup> With the proposed U.S. NMD defending 3.6 million square miles, while a Taiwanese TMD would have coverage of 22.3 thousand square miles, the cost per square mile ratio

between the United States and Taiwan is approximately 1 to 50. Thus, the cost of protecting Taiwan, per square mile, is radically more expensive. The ratio may not be an accurate indicator due to the “fuzzy” nature of budgetary projections for military weapon systems.<sup>28</sup> However, if weapon production costs in the past may serve as a guide, one would expect this ratio to remain asymmetric, even if overall costs for the U.S. and Taiwanese systems should increase. In short, construction of a Taiwanese TMD would be extremely costly.

While the United States, for example, would be able to upgrade its ballistic missile early warning radar systems and satellite system already in place, Taiwan might have to begin from scratch in many respects—from mainframe computer construction to the installation of peripheral equipment and support. If a Taiwanese TMD project is launched, reliance on the United States for missile technology and end products would inevitably deepen, and the probability of later terminating such a project would decrease. For Taiwan, there are thus legitimate concerns about the high cost of full implementation of TMD. Even without an upper-tier component to the system, TMD is a financial drain on Taiwan’s already strained military budget. The cost for 200 PAC-3 missiles and associated systems is estimated to be as high as \$1.4 billion, at the unit cost of \$7 million per missile.<sup>29</sup> If the United States approves their purchase at some point in the future, four Aegis destroyers for Taiwan’s navy-based TMD (i.e., NAD or NTWD) would cost around \$6.5 billion.<sup>30</sup> For purposes of comparison, Taiwan’s regular defense budget for July 1, 1999, to Dec. 31, 2000, amounted to \$12.6 billion, and 50 percent of it is typically reserved for personnel expenses.<sup>31</sup> The 2001 budget was set at \$8.3 billion.<sup>32</sup> These budgetary figures should also be weighed in light of the fact that Taiwan’s governmental budgetary deficit in 2000 reached \$15.96 billion.<sup>33</sup> In approximate terms, \$6.5 billion expended on Aegis systems over eight years would amount to \$800 million/year, a 12.5 percent annual increase in the overall military budget and a 25 percent increase in the non-personnel military budget.

Consequently, an enhanced emphasis on TMD could squeeze out sufficient funding for other equally important weapon systems in the Taiwanese defense budget, such as the upkeep of the second-generation tactical aircraft (IDFs, F-16s, and Mirages) and R&D for third generation fighter planes. For example, annual costs for the maintenance of F-16s and Mirages were projected to be \$2 billion in 1999.<sup>34</sup> When one begins to add up these

numbers, it is clear that TMD would severely burden Taiwan’s military budget.

### Technological feasibility

Of course, systems essential for survival and national security cannot be evaluated solely in monetary terms. If, technologically speaking, TMD is capable of offering a high success rate in interception, it might be well worth the economic burden. The problem, however, is that the performance of the Patriot system in the Gulf War was exaggerated by the “CNN effect.” A U.S. General Accounting Office (GAO) review later revealed that Patriots hit only 9 percent of the 45 Scuds engaged.<sup>35</sup> In 1997, the United States acknowledged that Patriots are only intended and able to intercept missiles nearing the end of their flight. Therefore, the U.S. Department of Defense spent considerable resources developing the Airborne Laser (ABL) program to destroy missiles in the boost phase. Subject to missile type, the window of opportunity for an ABL system can range from 30 to 140 seconds, from the point at which the target missile has cleared the cloud tops until its booster burns out.<sup>36</sup>

Although the intercept success rate for PAC-2 (called Modified Air Defense System (MADS) in Taiwan) against Scud missiles is still far less impressive than one would desire, a GAO report issued in 2000 indicated that the improved PAC-3 missiles successfully intercepted “three of four test targets,” though additional tests would be required to assess the system’s suitability and effectiveness.<sup>37</sup> Clearly, the PAC-2 systems that Taiwan already possesses are clearly not sufficient to counter Chinese missile capabilities, and an effective Taiwanese lower-tier system would need the improved PAC-3, which is on the verge of being fielded by the U.S. military. As of October 2001, the PAC-3 had entered operational testing, and the U.S. Ballistic Missile Defense Organization (BMDO) reported that it has had an “unprecedented level of hit-to-kill success in developmental testing, with 11 out of 12 successful flights in the last three years, including eight out of nine successful intercepts,” suggesting that it is a significant improvement over the PAC-2.<sup>38</sup> However, that improvement comes at a cost. In the United States, the estimated cost for the PAC-3 program increased from \$3.9 billion in 1994 to \$6.9 billion as of March 2000 (a 77 percent increase).<sup>39</sup> In July 2001, some members of the U.S. House Armed Services Committee expressed concern over the cost of PAC-3, while in October 2001, the same panel added \$100 million to the FY2002 budget for

the PAC-3 program to speed up procurement.<sup>40</sup> These funding increases suggest that there are further technical—and therefore financial—challenges facing the PAC-3 missile program, which would form a crucial element of any proposed TMD for Taiwan. Ultimately, the technological feasibility of a Taiwanese TMD system, even a lower-tier system, is questionable. It is reasonable to expect that no missile defense system can comfortably boast a success rate of 100%.<sup>41</sup> As a result, it is safe to expect that some of China's M-9s and M-11s would be able to penetrate any Taiwanese missile shield.<sup>42</sup> If these missiles, presumably armed with conventional warheads, scored numerous hits on a crowded, compact area such as Taiwan, the resulting damage could prove politically and economically unacceptable. So the question remains: could a lower-tier system in Taiwan avoid being overwhelmed by a large barrage of short-range offensive missiles?

Even if one assumes that a lower-tier system could successfully intercept short-range Chinese missiles, Taiwan would still face the threat of attack by longer-range missiles, that is, an attack by medium-range Chinese missiles launched from the interior of China.<sup>43</sup> The Chinese DF-21 missile, for example, can be armed with a conventional warhead, and China could potentially target these missiles against Taiwan as a means of circumventing a lower-tier Taiwanese missile defense system.<sup>44</sup> If Taiwan felt it necessary to possess the capability to intercept longer-range missiles, then an upper-tier system would be necessary. Leaving aside the question of whether or not an upper-tier missile defense system is technologically sound for deployment, is Taiwan willing to purchase such a costly system at the expense of other equally important defense projects that address competing threats from China such as cruise missiles, information warfare, and conventional forces? If the level of military engagement with China escalates beyond missile attacks, would Taiwan be well prepared for those non-missile challenges if it concentrates its resources on missile defenses?

### **Military Effectiveness**

This question leads us to consider the potential effects of TMD on Taiwan's overall military posture. Weapon systems not related to missile defense would surely be squeezed out or downsized, particularly if the declining trend of Taiwan's defense budget, witnessed throughout the 1990s, continues.<sup>45</sup> The Chinese missile threat is certainly more imminent than many other threats to Taiwan, but it is nevertheless not the only one. The development

of a missile defense system would not counter all military threats Taiwan faces.

A discussion of military effectiveness cannot avoid addressing the inevitability of heavy Taiwanese reliance on the United States in TMD construction. Technological dependence implies difficult budget planning, as the price of TMD system components and equipment would likely be inflexible, due to the lack of competition from other suppliers. Typically, Taiwan is unable to bargain for market-compatible prices. Owing to the U.S. origin of most likely TMD equipment, management, operation, and system integration personnel will require long-term training by their U.S. counterparts in order to be capable of fully utilizing the system. In addition to primary TMD system hardware, Taiwan would also probably become dependent on U.S. satellite-based early warning data in the region for detection and tracking of Chinese missile launches. This total reliance on the United States could potentially handicap Taiwan's intelligence collection and delay crucial command and control decisions.

Differences in national security concerns and military culture can easily lead to divergent interpretations of intelligence data and its level of urgency. A crisis could build up over time or erupt in minutes, and the United States might not share Taiwan's sense of urgency. It is possible to envision scenarios in which the United States might even deliberately withhold information in order to forestall what it viewed as an unnecessary escalation or a hasty, unwarranted reaction from Taiwan, such as a preemptive attack on Chinese missile sites. The fact that the United States decided to sell Taiwan AARAAM mid-range air-to-air missiles under the condition that they be stored on U.S. territory is evidence of U.S. caution in supporting Taiwan. Delivery of these missiles to Taiwan will only be made within forty-eight hours once a potential military conflict across the Strait is affirmatively acknowledged.<sup>46</sup> This condition may help calm tension in the region, but it also suggests that Taiwanese TMD advocates should lower their expectations regarding the effectiveness of TMD as a political tool to forge an informal defensive missile alliance with the United States to counter China's threat. The military effectiveness of TMD in overall Taiwanese security policy is therefore questionable.

### **Domestic politics**

Any decision military policy planners adopt will have to be endorsed by Taiwan's political leaders, and the proposed budget will have to be accepted by the Taiwanese

legislature. In this arena, the TMD debate intersects with Taiwanese party politics. Chinese fears that Taiwanese advocates of TMD are not driven by security concerns but also motivated by a desire to bolster a future Taiwanese bid for independence, are supported by former Taiwanese President Lee Teng-hui's skillful political maneuvering. His agenda for Taiwanese independence as well as that of the currently ruling Democratic Progressive Party (DPP), which has been stated explicitly, give China reason to perceive TMD as a means of achieving this goal. Nevertheless, a narrow focus on Lee Teng-hui and the DPP obscures the intensity of the TMD debate between Taiwanese political parties and overlooks the broader political dynamics of arms procurement in Taiwan.

The DPP, the primary opposition party prior to the 2000 presidential election and the current ruling party, has traditionally focused on social and political issues. Since the military has been historically dominated and socialized/indoctrinated by the Nationalist Kuomintang (KMT) Party, the DPP has fewer military connections and less informal access to the military sphere than either the KMT or the other opposition party today, the New Party. The DPP has failed to garner many military votes in the past, and the lack of a military constituency means that military issues have typically been relegated to the backburner in party policy deliberation. Military subjects seldom claim a top priority for the DPP in campaigning, except when the issue fits into the DPP political agenda for a new, independent Taiwan. In contrast, pledges to achieve social justice and the redistribution of social wealth, like welfare benefits to senior citizens, environmental protection, and anti-corruption, have usually been the most salient elements in the campaign platform of the DPP.

Showing voters that it stands strong on defense against Chinese missile threat is potentially a key instrument for the DPP in gaining military votes and consolidating electoral power. TMD has received general support from the DPP, which views the system as a good opportunity to develop defense links with Japan and the United States, two states that signed an agreement in 1999 to conduct joint research on a missile defense system for Northeast Asia.<sup>47</sup> Fully acknowledging the high cost of TMD, the DPP believes that it is nonetheless worth the price. The formation of a missile coalition among the United States, Japan, and Taiwan would reinforce the DPP vision of Taiwanese independence at a maximum and maintain the status quo of separation from China at a minimum. As a

result, the DPP position is, generally speaking, almost indistinguishable from that of the KMT with regard to the political implications and strategic utility of TMD.

Like the DPP, the KMT, led by Lee Teng-hui prior to the 2000 election, generally supports TMD for Taiwanese defense and emphasizes its potential role in the strategic consolidation of U.S.-Taiwanese relations. Yet within the KMT there is a small group of dissenters. Its reservations rest on the huge cost of TMD, which would likely squeeze social welfare and civilian infrastructure in the budgeting process. On the one hand, TMD is a selling point to assuage voters' concerns about the Chinese missile threat. However, if TMD development and construction were to inhibit the expansion of other budgetary items like social welfare and civilian infrastructure—which it would likely do—voters might punish the KMT and other parties that supported such a program in the next election. Electoral opponents could campaign for increases in social welfare to gain votes. Therefore, the KMT must walk a tightrope to achieve the necessary balancing act between security and social welfare within Taiwan. One potential solution would be to downsize the military more broadly. The savings from the reduction of personnel expenses might cover the TMD price tag, but downsizing too rapidly again risks offering adversaries a chance for domestic political gain.

It is not a surprise to see a united front between the DPP and the KMT on missile defense issues. Both parties believe that the United States is a key player in securing Taiwanese defense against China. While they have varied on numerous political issues since the inception of the DPP in 1986, a careful comparative examination of DPP and KMT policies regarding China and the international status of Taiwan reveal that they converged during the years when Lee Teng-hui led the KMT (1988-2000).<sup>48</sup> During this period, Lee skillfully advocated the "Taiwan first" principle, a subtle and less aggressive way of echoing the DPP drive for unequivocal independence. Both parties have come to support Taiwan's "pragmatic diplomacy" to expand its international role.

The changing of the guard following Taiwan's 2000 presidential election did not move either party away from its public conviction of the necessity of TMD. During the 2000 election, in fact, presidential candidates Chen Shui-bian of the DPP and Lien Chan of the KMT both proposed a shift from a purely defensive to a more offensive military stance. Their suggestions included the development and deployment of medium and long-range missiles,



an indication that both parties considered offensive means to deter China as important as systems of a purely defensive nature.<sup>49</sup> This more active and offense-oriented approach did not, however, lessen support for TMD.

Unlike the DPP and the KMT, the opposition New Party is highly critical of TMD. New Party criticisms cite questions about the technological effectiveness of missile defense, since there is no defensive shield currently available that can intercept all incoming missiles. New Party critics argue that more than 20 percent of Chinese missiles in a massive assault would still, in the best of circumstances, theoretically penetrate Taiwanese defenses. Even if missile defense technology is fully developed, they point out, a full-scale deployment is unlikely to be completed before 2008 for the Army and 2010 for the Navy. Thus, these critics argue, these systems will arrive too late to address the immediate task of offsetting China's missile advantage.

Moreover, the flight time for Chinese missiles from launch sites to Taiwan is roughly two to three minutes. Because Taiwan does not have space-based reconnaissance satellites and extensive early warning systems, its command and control systems would have difficulty quickly determining the size and origin of the attack and ordering an immediate response. The response time would likely take more than a few minutes, and the effectiveness of the TMD system, New Party critics contend, would be compromised.<sup>50</sup> The other two main parties do not share the pessimistic New Party view of the utility of TMD, but it nevertheless remains an important factor in the domestic political scene.

In contrast to the New Party, James Soong, who established the People First Party (PFP) in the wake of the 2000 election, was initially skeptical of the utility of TMD but later came on board as a supporter. At first, Soong expressed concern with the cost of TMD and worried that it could cause a deterioration in cross-strait relations. Seeing that public opinion polls on the TMD issue showed most voters thought otherwise, Soong modified his position to include the TMD option in his defense agenda. Even so, he continued to warn of the danger of overconfidence and the inherent risks in the development of a Taiwanese TMD.<sup>51</sup>

Currently, Soong and the PFP are allied with a small group of legislators from the KMT who are concerned about the utility and feasibility of TMD.<sup>52</sup> Although the strength of the PFP cannot challenge either the DPP or the KMT in the legislature, its future position as a critical

minority may become crucial if the DPP and KMT diverge from their common policy grounds. By the time this article is published, the results of the December 2001 legislative elections will likely have started a new party realignment process. Both TMD supporters and opponents are expected to regroup following any newly established fault lines.

In addition to the dynamics among the various political parties within Taiwan, the TMD debate is also mirrored in the long-standing inter-service rivalry between the branches of Taiwan's military forces. Traditional favoritism toward the army in military budgeting and personnel promotion gradually developed some cracks in the 1970s, when Taiwan began to relinquish the idea of recovering mainland China and instead focused on its naval and air defense capabilities. Although there has been a concerted effort to develop anti-air strike, anti-sea lifting, and anti-landing capabilities—and despite the guideline that there should be a balanced buildup among the services—most new weapons systems have been procured for the navy and air force. This trend was exemplified, for example, in the 1995 weapons acquisition budget, in which the army received a mere 11 percent of the total.<sup>53</sup>

In comparison to the budget share, however, the number of troops in the army will still exceed the other two services combined, even after the completion of the Streamlining and Consolidation Plan of 2001. The personnel ratio among these three services in 2000 was a remarkable 3.58:1:1 (army: navy: air force), compared to 4.67:1:1 in 1995.<sup>54</sup> While the recent defense budgeting process has tried to achieve a balance without favoritism, the army feels slighted in weapons acquisition and has lost several rounds of strategic debates regarding defense planning for future battles. Prior to the 1995 missile crisis, some army commanders maintained the view that the Chinese missile threat would have little impact on ground troops.<sup>55</sup>

TMD might, however, offer the army an opportunity to regain a significant share of the military procurement budget. Even so, most TMD opponents in the Taiwanese military come from the army, due to concerns about technological feasibility and cost effectiveness. Former Minister of Defense Jiang Zhongling, who has an army background, has often disparaged TMD as a "money pit." The establishment of a "strategic partnership" between the United States and China during the 1997 Clinton-Jiang meeting finally swayed most Taiwanese military leaders to a pro-TMD stance, however. TMD became, in their

eyes, a necessity to link Taiwan with the United States through an informal military alliance, in principle as well as reality.<sup>56</sup> Interestingly, Tang Fei, who succeeded Jiang as Taiwanese Minister of Defense and who has an air force background, reversed his previous resistance to TMD.

Even within each service, budgetary competition is fierce. Further purchases of Stinger missiles after more than three years of hard negotiations with arms suppliers in the United States and France came to a sudden halt in December 1998, giving way to the possibility that TMD might come to dominate the budget.<sup>57</sup> The same happened with the planned acquisition of the Aegis system, whose eventual success would see a significant readjustment of several ship building programs in the navy's budget plan.<sup>58</sup> Ironing out differences in the military over TMD will require both arm-twisting by political leaders and back-room compromises among the services.

If TMD is incorporated into the budget and slated for deployment, those agencies or personnel involved in and related to the TMD system will be given first priority in the distribution of defense resources. They will likely emerge as a new privileged, vested interest coalition. As long as China continues to deploy more missiles, the TMD program is likely to be augmented with more interceptors, launch sites, and sensors. Hence it risks becoming a self-generating, self-sustaining mechanism constantly fed by the Chinese missile threat.<sup>59</sup> A cumulative resource chain backed up by current strategic emphasis on missile defense will surely breed constant disagreement and confrontation between resource advantage holders and opponents.<sup>60</sup>

Despite opposition and voices of dissent, a momentum has been built out of the churning of party politics and competition within the military for TMD construction. For TMD supporters, the ultimate question is what kind of missile defense system is suitable for Taiwan's defense needs, affordable for its budgetary purse, and efficacious with regard to the intended strategic plan.

### PROS AND CONS OF TMD FOR TAIWAN

TMD does offer political advantages to Taiwan. China's 1996 missile tests in the Taiwan Strait underscored Taiwan's vulnerability and need to protect itself vis-à-vis China's missile capability.<sup>61</sup> In Thomas J. Christensen's words, "Taiwan may be an unsinkable aircraft carrier, but it is also unmovable."<sup>62</sup> TMD, promoted as a shield to prevent missile assault, could potentially provide such

defense. Yet, constructing a TMD system in Taiwan would have widespread implications on cross-strait relations, regional stability in Asia, and the U.S.-Taiwan-China triangular relationship.

One key question is whether TMD will improve political relations across the Taiwan Strait, or whether it will create a sabre-rattling effect leading to a further deterioration of the situation. TMD supporters in Taiwan stress that TMD is designed specifically and exclusively for defensive purposes and should be viewed as a safety net limiting Chinese missile damage and thus deterring China from aggressive action. It is intended to be non-provocative and reactive only.

Nevertheless, the frequent portrayal of TMD technological superiority as a foolproof means of security implies that effective defense could be achieved. Such a development could potentially give Taiwan the capability to decide its own fate, including possibly declaring independence, without fearing Chinese missile attacks. Thus, this very dimension of TMD—its political impact—can transform its defensive character because Taiwanese deployment of TMD has the potential to generate a spiral of threat perception between China and Taiwan.

This picture emerges clearly when one considers strategic game theory. Because an effective offensive capability can be weakened by an adversary's deployment of defensive capabilities—and because such defensive capabilities can be weakened by the first state's improvement of its offensive capabilities—it is axiomatic that both states would be encouraged to engage in an arms race, either for self-help/self-protection (in a state of anarchy) or for the potential use of military means for political ends.

Aggravated by misperception, miscalculation, and hostility, this situation can easily evolve into a vicious cycle of competition and confrontation, aptly described by John Hertz as the "security dilemma."<sup>63</sup> The ironic result is that an attempt to boost Taiwanese security by deploying TMD would necessarily decrease China's security. In turn, China would be prompted to upgrade its military capability to regain its relative superiority—thereby ultimately degrading Taiwanese security.

The characteristics of TMD weaponry and the perception of the balance between parties intensify Taiwan's security dilemma. While the anarchic international environment gives states reason to pursue self-help for survival, the difficulty in differentiating defensive and offensive weapons can prompt other states to adopt coun-

termeasures. Two recent developments may cause potential aggravations with regard to the China-Taiwan security dilemma.

The Aegis system is believed by Chinese critics to be quasi-offensive because of its capability to deploy offensive weapons and because its maritime mobility allows it to be positioned close to the target area.<sup>64</sup> If the United States were to sell Aegis-class ships to Taiwan, one might expect China to place faster and more accurate missiles in the coastal region to compensate for its loss of missile superiority. This factor might partially explain Washington's reluctance to deliver the Aegis system to Taiwan. Similarly, claiming the need to improve its naval defensive capability, China's purchase of *Sovremenny*-class destroyers appears to be motivated by their capability to carry the earlier mentioned SS-N-22 Sunburn SSMs, which might be an effective countermeasure against Taiwanese naval forces, including those equipped with the Aegis system.<sup>65</sup> With the Taiwan Strait ranging from 130 km to 250 km in width, any missile with a range of more than 100 km might be obviously defensive in other geographic settings, but not in the Taiwan Strait. Geography, in this case, modifies the function of arms from purely defensive in character to offensive in usage and implication. As a result, it is difficult to achieve a consensus between China and Taiwan regarding the offensive or defensive nature of TMD.

One common claim, of course, is that the essence of TMD is purely defensive, because the system is not designed to attack China or launch a first strike. Experts argue that something must trigger the operation of the TMD system; therefore, Taiwan would theoretically await China's first move. It is plausible to argue, as Robert Jervis has noted, that arms races decline as the offense-defense balance shifts toward a greater defense advantage.<sup>66</sup> The irony, however, is that removing the Taiwanese population from a hostage situation with a "passive" TMD shield defense is likely to be perceived by China as an "active" measure to alter the status quo with regard to Taiwan's independence.<sup>67</sup> Strong nationalistic sentiments nurtured by past historical humiliation and the drive for national unification and territorial integrity have led China to interpret potential U.S.-Taiwan TMD collaboration as a malicious act. In short, China believes that such collaboration is intended to complete Taiwan's conspicuous scheme for independence, with the United States as a guarantor of Taiwan's future security.

"Defensive" weapons, therefore, have acquired an "offensive" connotation within the contextual semantic debates of the "one China" issue, especially given Chinese perceptions that Taiwan's independence drive has been gaining speed in the past few years. The cost of inaction against Taiwanese independence would be too high for any Chinese leader to bear. As two scholars have written, no Chinese leader can survive being labeled a "Lee Hongzhang," the Chinese leader who ceded Taiwan to Japan in the 1895 Treaty of Shimonoseki.<sup>68</sup> For this reason, China differentiates its responses to Taiwan and Japan with regard to each state's interest in developing a TMD program, expressing adamant opposition against the former and much less harsh criticism of the latter.<sup>69</sup>

The Chinese perception that Taiwanese interest in TMD is linked to plans for creeping independence, rather than the fulfillment of national security needs, has severely skewed the Chinese assessment of the cross-Strait balance. This view has developed even though Taiwan has no known military capability or strategy for striking China first, and the two are of unequal size in geography, resources, and military capability. Indeed, should Taiwan intend to build offensive forces, it would necessarily have to rely heavily on external suppliers. Still, TMD construction could give China a sense of urgency to cut short Taiwan's "salami tactics" in moving inch by inch into the final stage of independence.

At some crucial stage of economic transition, China might have a difficult time convincing itself that a dollar spent on offensive military capabilities was better spent than a dollar invested into its economy and social well being of the Chinese state. However, at this time it is clear that the Chinese leadership feels that assuming a hawkish pose by not renouncing the possibility of military action against Taiwan is the best policy. Chinese efforts to maintain military superiority over Taiwan and to prevent Taiwan from acquiring TMD intensify the security dilemma for Taipei. Moreover, since missiles are currently the primary "pocket of excellence" for China, and TMD would likely limit China's deterrent capabilities against Taiwan, one should expect strong Chinese opposition.

In the end, acquiring a TMD system would surely enlarge Taiwan's military defensive assets while also addressing its short-term security needs. Nevertheless, a Taiwanese TMD deployment would likely trigger an arms race and could result in the reduction of Taiwanese military capabilities necessary to achieve other long-term national security goals.<sup>70</sup> In addition, the lack of channels of

communication across the Strait in the past several years and constant China-Taiwan bickering have further eroded the confidence and mutual understanding that China and Taiwan built up in the early 1990s. Mutual suspicion undermines the credibility of any sincere move to ensure national security. Even when the intention to enhance defensive capabilities is not ambiguous, assessment by the counterpart tends to be distorted and exaggerated. Indeed, even the concept of “national security” in the context of Taiwan presents a complex set of theoretical and practical problems for Beijing.

Overall, then, given the far-reaching impacts of TMD, one would expect China to respond “in kind” by increasing its offensive missile deployments. The net result would likely be an expansion of China’s missile capability. In the long run, Taiwan would then find it harder to deter China or defend itself.

### WIDER REGIONAL CONCERNS

An escalating arms race across the Taiwan Strait would likely provide yet another unwelcome consequence. China’s countermeasures, probably including a rapid increase in missile development and deployment, would in turn trigger fears in other Asian countries such as India and Japan. In part, these fears would be driven by the uncertain political atmosphere that would be generated by a China-Taiwan arms race. The arms race would be viewed by analysts in other Asian states as a sign that China was willing to use its military power more openly, a possibility that many would find threatening. Furthermore, some of the possible countermeasures that China might take to offset a Taiwanese deployment of a lower-tier TMD system, such as fielding additional DF-21 medium-range missiles, could also be viewed as directly threatening to other states near China, depending on where these missiles were deployed.

The deployment of a U.S.-backed TMD system in East Asia could also lead to strengthened military ties between Taiwan and Japan, because of the U.S.-Japan security treaty. Facing the unpredictable North Korean missile program and growing Chinese military capabilities, it is no wonder that Japan is interested in a missile defense program. However, Japan’s commitment to TMD has remained cautious, owing to: (1) the financial implications of the project amid the current sluggish Japanese economy; (2) the fact that TMD technology is substantially unproven in testing and real application; and (3) concerns about the inconsistency between TMD and Japan’s low military

profile vis-à-vis China (and more generally).<sup>71</sup> Moreover, should TMD be deployed in Taiwan with the backing of the United States, Japan could be potentially drawn into the conflict in the Taiwan Strait in accordance with the 1997 U.S.-Japan Defense Cooperation Guidelines.<sup>72</sup> According to the Guidelines, Japan’s Self-Defense Forces would offer logistical support to U.S. troops in the event that they are involved in military conflict in areas surrounding Japan. Given continuing U.S. ambiguity about the circumstances under which it would intervene in the Taiwan Strait, however, this scenario must be viewed as unlikely.

Taiwanese decisions about TMD decision must also be viewed in the context of the triangular Taiwan-U.S.-China relationship. Due to the superiority of the PRC in missile technology, Taiwanese reliance on the United States in the context of the deployment of TMD becomes a crucial factor, creating a “coupling” effect between Taiwan and the United States.<sup>73</sup> The implied message would boost the level of security felt by the Taiwanese people, by clearly demonstrating U.S. support of Taiwan’s continued autonomy. As suggested earlier, it could decrease the perceived security of China and lead to a deteriorating spiral in relations between China and Taiwan, as well as between China and the United States.

Another factor to be considered is the probable incongruence of strategic goals and interests between Taiwan and the United States. While a dependent power (e.g., Taiwan) might be credited occasionally for its shrewd bargaining tactics on certain issues, its inherent dependency will likely undermine its attempts to assert military autonomy. In this past, the demands of dependence on U.S. power have led Taiwan to frequent retreats, self-sacrifice, or excessive compromise to U.S. demands. In other words, the inherent asymmetry in the U.S.-Taiwan relationship is likely to generate serious difficulties for Taiwan at some point. If U.S. President Jimmy Carter’s termination of the 1954 U.S.-Taiwan security treaty in 1979 is any guide, an informal alliance relationship based on TMD should not inspire high expectations. For this reason, the TMD decision should not be evaluated principally in terms of its value as a means to achieve Taiwanese independence—a goal that has been renounced by the United States on numerous occasions for fear of igniting Chinese tempers.

The United States may also have to entertain the possibility of China reasserting authority over Taiwan, either peacefully or militarily, at some future point. This could potentially result in Chinese control of any TMD system transferred to Taiwan.<sup>74</sup> This worst-case scenario might

be yet another reason for the United States to take a cautious approach to introducing TMD in Taiwan, although a more likely scenario is that this capability, like other U.S.-supplied arms, would be destroyed by Taiwanese forces when a PRC take-over appeared imminent. Moreover, the United States would probably offer Taiwan only a "limited/restricted" version of TMD, involving close U.S. monitoring and supervision of the full operation.

TMD opponents in Taiwan have noted all of these larger regional considerations that should shape Taiwanese TMD decisionmaking. A question, however, remains: if the United States has been extremely cautious in the past in exporting sophisticated technology and weapons abroad, and highly selective and restrained in transferring arms to Taiwan, why do some U.S. officials appear eager to invite Taiwan and Japan to join its TMD efforts? Two potential reasons for this stance include: (1) a U.S. desire for "burden sharing" in the associated R&D costs; and (2) the geopolitical utility of Taiwan and other East Asian countries in forming an informal "containment" alliance against China.<sup>75</sup>

Nevertheless, the thunder of TMD continues to roll across the sky without any sign of letting up. This point appears to vindicate China's assertion that it has actually been the adversary target of TMD from the beginning.<sup>76</sup> From the Chinese point of view, North Korea, officially the principal target of U.S. missile defense efforts, including TMD collaboration with Japan, might simply be a stalking-horse for China.<sup>77</sup>

## CONCLUSION

Facing forward deployment of Chinese missiles advancing closer to the Taiwan Strait, Taiwan's airspace and security perimeter has slowly eroded to Taiwan proper.<sup>78</sup> Without TMD, Taiwan lives constantly in China's haunting missile shadow and may perhaps lose bargaining leverage in future bilateral interactions or negotiations with China. When China perceives Taiwan as unreasonable, "unpatriotic," and uncompromising, its offensive advantage fuels the likelihood of preemptive strikes to clamp down on Taiwan. Moving ahead with TMD and intensifying security ties with the United States and Japan, many argue, gives Taiwan the promise of protection and security. Psychologically, at least, Taiwan could maintain a symmetrical balance with China. The window of vulnerability would be partially closed.

However, the drawbacks of moving ahead with TMD outweigh these benefits. Disadvantages include an accel-

erated and perhaps ceaseless arms race as well as the huge costs incurred at the expense of other military capabilities and civilian infrastructure. In addition, China would find TMD a perfect excuse for expanding its missile development and overall military buildup, creating potential instability in the East Asian region and a greater challenge to U.S. dominance in the Pacific. Moreover, there is no true guarantee of the effectiveness that TMD proponents promise in a real strike-and-counterstrike scenario. The Patriot missile was tested successfully before the Gulf War, but failed to intercept most Scud missiles during that conflict.<sup>79</sup> By the same token, the improved PAC-3 may not prove as effective as hoped, despite its relatively successful test program. Overly confident, even romantic beliefs in a seemingly "indestructible" or highly effective TMD system neglect the reality of the nature of military security and ignore the possibility of alternative solutions. For these reasons, at the current stage, the TMD option is a poor choice for Taiwan.

Alternative options that cost less and may be technologically more reliable should be explored. As noted above, some Taiwanese politicians have suggested that Taiwan develop medium-range missiles to retaliate against possible Chinese attacks. Despite several official denials, the development of medium-range missiles has been brought out on the table for discussion as one alternative option to TMD and as an assurance for Taiwan's air security.<sup>80</sup> But this path is also fraught with difficulties. The problem is that the obvious offensive capability of Taiwanese medium-range missiles would further aggravate the security dilemma, possibly even faster than one would anticipate as a result of TMD construction and deployment. In addition, the United States would almost certainly oppose the development of medium-range missiles by Taiwan.

The indigenous R&D of TMD interceptor missiles with foreign logistical support, such as the ATBM system designed by the Chungshan Institute of Science and Technology, might offer another alternative.<sup>81</sup> Its indigenous nature would avoid extensive foreign scrutiny and possibly even serve as a catalyst for U.S. arms sales of similar items. Yet, the system is definitely unsophisticated and rudimentary in operation, and it too would not eliminate the spiral action-reaction process that could trigger an arms race.

Finally, a third alternative to deter China's missiles is to seek a U.S. security guarantee, in which case Taiwan would not need TMD. But the United States has proven unwilling to provide such guarantees since 1972, instead

balancing its ties with both Taiwan and China. The development of democracy in Taiwan has made some in the U.S. more sympathetic to Taiwanese security requests, but has not yet led to a major change in U.S. policy. In this light, the best that Taiwan can realistically hope for is continued ambiguity by the United States about its actions in the event of a crisis in the Taiwan Strait.

Each of these alternatives seems to lead to pessimistic conclusions about the prospects for stability across the Taiwan Strait. Perhaps both sides—Taiwan and China—should seriously consider the possibility of implementing confidence-building measures to institutionalize political dialogue and a regular mutual exchanging of views, either bilaterally or multilaterally. This may be the sole option for truly deescalating the increased missile buildup across the strait.

Taiwan's recent plans to employ retired military personnel to engage in regular exchanges of views with their Chinese counterparts could be a positive step.<sup>82</sup> Furthermore, the dramatic increase in economic interaction between China and Taiwan since 2000 has begun to create an economic web of interdependence. The speed of economic integration will likely accelerate after both Taiwan and China join the World Trade Organization. Taiwan's decision in August 2001 to lift its long term *Jieji Yongren* ("no haste, be patient") policy against large-scale Taiwanese investment in China imposed in the 1990s reflects a realization that relations across the Taiwan Strait need not be zero-sum.<sup>83</sup> One would hope that this breakthrough in the economic sector eventually spills over into the political and military sectors. Both countries must eventually realize that investments in their economies and state infrastructures will provide the only true mutual long term security, rather than spending billions of dollars on missiles and countermeasures.

<sup>1</sup> The author would like to thank Jeffrey Scott Adair and two anonymous reviewers for their comments and suggestions on earlier versions of this article, as well as staff members of the Wake Forest Library for their research assistance. All errors and omissions remain the sole responsibility of the author.

<sup>2</sup> "Taiwan Urges President to Seek Names in French Frigate Kickback Case," AFP, November 27, 2000; "Ex-Bank Official Says Millions Paid in Frigate Kickbacks," Associated Foreign Press, July 11, 2001.

<sup>3</sup> Larry M. Wortzel, "U.S.-Chinese Military Relations in the 21st Century," in Larry M. Wortzel, ed., *The Chinese Armed Forces in the 21st Century* (Carlisle, PA: U.S. Army War College, 1999), p. 220.

<sup>4</sup> Chong-pin Lin, "Out of Balance?" *Topics* (Taipei) (August 1999), p. 43; Paul H.B. Godwin, "China's Nuclear Forces: An Assessment," *Current History* 98 (1999), pp. 260-270; Jiande Wu, *Zhongguo Weixie Lun* [On China Threat] (Taipei: Wu Nan, 1996), pp. 159-202. One qualification here is that Taiwan faces a shortage of experienced pilots.

<sup>5</sup> John Wilson Lewis and Di Hua offered an excellent review of China's ballistic missiles in "China's Ballistic Missile Programs: Technologies, Strategies, Goals," *International Security* (Fall 1992), pp. 5-40.

<sup>6</sup> A summary of Russian arms sales to China prior to 1997 can be found in Jennifer Anderson, *The Limits of Sino-Russian Strategic Partnership*, Adelphi Paper no. 315 (London: Oxford University Press and International Institute for Strategic Studies, 1997), pp. 69-73.

<sup>7</sup> *Aviation Week & Space Technology*, July 3, 2000, p. 33.

<sup>8</sup> *World Journal* [Shijie Ribao], February 25, 2001, p. 2; *Aviation Week & Space Technology*, July 3, 2000, p. 33; Chong-pin Lin, "Protect Taiwan, Win Over China," *Peace Forum Paper*, 2000, CST0004001e, <<http://www.dsis.org.tw/peaceforum/papers>>, p. 3; U.S. Department of Defense, *Annual Report on the Military Power of the People's Republic of China (Report to Congress pursuant to the FY2000 National Defense Authorization Act)*, 2000, pp. 21-22, <[www.defenselink.mil/news/Jun2000/p06232000\\_p111-00.html](http://www.defenselink.mil/news/Jun2000/p06232000_p111-00.html)>.

<sup>9</sup> Jinyi, "'Bu Duichen Zhanzheng' Yuanze Dui Taiwan Junshi Zhanlue Fazhan Zhi Tanta" [An Exploration of the Principles of 'Asymmetric Warfare' on Taiwan's Military Strategic Development], *Quanqiu Fangwei Zazhi* [Defense International] 31, No. 6 (2000), p. 32; Bernard D. Cole and Paul H.B. Godwin, "Advanced Military Technology and the PLA: Priorities and Capabilities for the 21st Century," in Wortzel, ed., *The Chinese Armed Forces in the 21st Century*, pp. 195-199; *Minribao*, May 17, 2000, <<http://www.ttimes.com.tw/2000/05/18/1/politics/200005170214.html>>. China has launched more than 40 satellites. Seventeen of them were deployed for military purposes. See *World Journal*, February 1, 2001, p. A7.

<sup>10</sup> This list does not include all Chinese ballistic missiles. It includes short and medium-range, which are the focus of the TMD debate and controversy in Taiwan. According to U.S. estimates, there were 200-300 SRBMs deployed by China close to the Taiwan Strait in 2000, an increase from fewer than 50 in 1998. See *China Times*, February 5, 2001, <[news.chinatimes.com/moment/900205004.htm](http://news.chinatimes.com/moment/900205004.htm)>. For table sources, see: Mark A. Stokes in Susan M. Puska, ed., "China's Military Space and Conventional Theater Missile Development: Implications for Security in the Taiwan Strait," in *People's Liberation Army After Next* (Carlisle, PA: Strategic Studies Institute, U.S. Army War College, 2000), pp. 119-121; Ministry of Defense, Taiwan, *Zhonghua Minguo Bashijiu Nian Guofang Baogaoshu* [Republic of China, 2000 National Defense Report] (Taipei: Ministry of Defense, 2000), <[www.mnd.gov.tw/report/](http://www.mnd.gov.tw/report/)>; U.S. Department of Defense, *The Security Situation in the Taiwan Strait (Report to Congress pursuant to the FY1999 Appropriations Bill)* (Washington DC, February 26, 1999), <[www.cc.columbia.edu/sec/dlc/ciao/wps/dod05/dod05.html](http://www.cc.columbia.edu/sec/dlc/ciao/wps/dod05/dod05.html)>; and U.S. Department of Defense, *Annual Report on the Military Power of the People's Republic of China (Report to Congress pursuant to the FY2000 National Defense Authorization Act)*, (Washington DC, June 2000), <[www.defenselink.mil/news/Jun2000/p06232000\\_p111-00.html](http://www.defenselink.mil/news/Jun2000/p06232000_p111-00.html)>; *Guangjiaojing Yuekan* [Wide Angle Monthly] (Hong Kong) (August 1998), p. 111; John W. Lewis and Di Hua, "China's Ballistic Missile Programs: Technologies, Strategies, Goals," *International Security* 17 (Summer 1992), pp. 10-11.

For other models and types of Chinese missiles, see U.S. Department of Defense, *Proliferation: Threat and Response*, January 2001, pp. 13-17, <<http://www.defenselink.mil/pubs/ptr20010110.pdf>>; *Brassey's World Aircraft and Systems Directory, 1999/2000* (London & New York: Brassey's, 1999), pp. 715-739; and Ji You, *The Armed Forces of China* (London: I.B. Tauris, 1999), p. 91.

<sup>11</sup> *Minribao*, May 17, 2000; Cole and Godwin, "Advanced Military Technology and the PLA," pp. 174-175, 205; Chong-pin Lin, "Out of Balance," p. 44; *World Journal*, May 13, 2000, p. A2.

<sup>12</sup> The TMD issue is discussed in "Taiwan Should Join TMD or Not?" *Jianduan Keji* [Defense Technology Monthly] No. 175 (March 1999), pp. 36-53.

<sup>13</sup> Joseph Cirincione, "Missile Defense Failures Offer Lessons," *Carnegie Endowment for International Peace*, March 30, 1999, <[www.cc.columbia.edu/sec/dlc/ciao/pbei/ceip/cij07.html](http://www.cc.columbia.edu/sec/dlc/ciao/pbei/ceip/cij07.html)>.

<sup>14</sup> Dean A. Wilkening, *Ballistic Missile Defense and Strategic Stability*, Adelphi Paper No. 334 (London: Oxford University Press and International Institute for Strategic Studies, 2000), p. 23; Michael O'Hanlon, "Star Wars Strikes Back," *Foreign Affairs* (November/December 1999), p. 69.

<sup>15</sup> For a description of current U.S. missile defense programs and system

architecture, see the U.S. Department of Defense, Ballistic Missile Defense Organization website, <<http://www.acq.osd.mil/bmdo/bmdolink/html/bmdolink.html>>.

<sup>16</sup> John Deutch, Harold Brown, and John P. White, "National Missile Defense: Is There Another Way?" *Foreign Policy* No. 119 (2000), pp. 91-100; *CQ Weekly*, June 24, 2000, p. 1548; *Time*, July 20, 2000, pp. 30-35; *Financial Times*, October 4, 2000, p. viii; Center for Defense Information, *National Missile Defense: What Does It All Mean?* (Washington, DC: Center for Defense Information, 2000).

<sup>17</sup> The technical boundary of 40 km is that "below 40 km aerodynamic forces are appreciable, potentially causing warheads to maneuver, thus making them hard to intercept." See Wilkening, *Ballistic Missile Defense*, p. 46.

<sup>18</sup> James Clay Moltz, "Missile Proliferation in East Asia: Arms Control vs. TMD Responses," *Nonproliferation Review* 4 (Spring-Summer 1997), pp. 65-67; Xuotong Yan, "Theater Missile Defense and Northeast Asian Security," *Nonproliferation Review* 6 (Spring-Summer 1999), pp. 65-74; Dean A. Wilkening, "How Much Ballistic Missile Defense Is Too Much?" Working Paper, Center for International Security and Cooperation, Stanford University, 1998, p. 10, <<http://www.cc.columbia.edu/sec/dlc/ciao/wps/wgd04/wgd04.html>>.

<sup>19</sup> The hit-to-kill method of destroying targets is reportedly more effective than previous methods, which "destroyed their targets by detonating near the target and propelling metal fragments toward it." U.S. General Accounting Office (GAO), *Missile Defense: Cost Increases Call for Analysis of How Many New Patriot Missiles to Buy*, GAO/NSIAD-00-153, June, 2000, p. 2. For more information on the PAC-3 system, see U.S. Department of Defense, Ballistic Missile Defense Organization, "Patriot Advanced Capability-3," BMDO Fact Sheet 203-00-11, November, 2000, <<http://www.acq.osd.mil/bmdo/bmdolink/pdf/qa9904.pdf>>. However, it is claimed that a single Aegis defensive system equipped with SM-2 Block IVA can defend more effectively than an entire Patriot battalion. See John D. Gresham, "Navy Area Ballistic Missile Defense: Coming On Fast," *U.S. Naval Institute Proceedings* 125, No. 150 (1999), p. 62.

<sup>20</sup> Dean A. Wilkening provides readers with a good summary of these technical terms and system designs in *Ballistic Missile Defense*, pp. 46-49.

<sup>21</sup> *Xin Xinwen Zhoubao* (The Journalist Weekly, Taipei), January 26-30, 2000, p. 22.

<sup>22</sup> *Central Daily* (*Zhongyang Ribao*, overseas edition), December 9, 1999, p. 3; *Xin Xinwen Zhoubao*, September 6-12, 1998, p. 67.

<sup>23</sup> *Republic of China Yearbook 2000* (Taipei: Government Information Bureau), p. 133.

<sup>24</sup> Stephen Van Evera, *Causes of War: Power and the Roots of Conflict* (Ithaca: Cornell University Press, 1999), p. 166.

<sup>25</sup> The Aegis cruiser *USS Bunker Hill* closely tracked these four missiles. See Gary W. Schnurppusch, "Asian Crisis Spurs Navy TBMD," *Proceedings of the U.S. Naval Institute* 125, No. 159 (1999), pp. 46-49.

<sup>26</sup> *Central Daily*, August 31, 1999, p. 1.

<sup>27</sup> There is no definite, precise cost estimate for NMD. The figure of \$30 billion is reportedly a conservative estimate; see *Time*, July 10, 2000, p. 30. Please see John Isaacs, "A Political Decision," *Bulletin of the Atomic Scientists* (March/April 2000), pp. 22-25. If we think about different phases of research, development, and acquisition cost for all three phases of deployment and construction up to 2031, the total cost is surely higher than the \$30 billion estimate; see Wilkening, *Ballistic Missile Defense*, p. 33. In fact, one recent estimate of the TMD cost is \$60 billion; see *Financial Times*, October 4, 2000, p. viii.

<sup>28</sup> The ratio is based on overall cost versus territory. Undoubtedly, for example, a fuller picture would have to include population density and relative wealth of each unit of comparison.

<sup>29</sup> Chaoqin Xiao, "Zhonggong Daodan Gongtai Zhi Kexing Xing Pinggu" [The Feasibility Appraisal of Chinese Communist Missile Attacks on Taiwan], *Mainland China Studies* 42, No. 12 (1999), p. 65.

<sup>30</sup> *Minribao*, March 31, 2000.

<sup>31</sup> *Central Daily*, April 2, 2000, p. 3.

<sup>32</sup> *World Journal*, March 23, 2001, p. A2.

<sup>33</sup> *World Journal*, October 23 1999, p. A2; *World Journal*, May 7, 2000, p. B14.

<sup>34</sup> *China Times*, January 11, 1999.

<sup>35</sup> Cirincione, "Missile Defense Failures Offer Lessons."

<sup>36</sup> U.S. GAO, *Theater Missile Defense: Significant Technical Challenges Face*

*the Airborne Laser Program*, GAO/NSIAD-98-37, October, 1997, p. 4.

<sup>37</sup> Gary Klintonworth's estimate of the PAC-2 intercept success rate against old SCUD missiles was only about 10 percent, while the PAC-3 has an estimated kill rate of 30 percent against Scud targets. Gary Klintonworth, "To TMD or Not to TMD," *Free China Review* 49, No. 9 (1999), p. 45. Similar views can be found in Moltz, "Missile Proliferation in East Asia," p. 65.

<sup>38</sup> U.S. Department of Defense, Ballistic Missile Defense Organization, "First PAC-3 Missiles Delivered," <<http://www.acq.osd.mil/bmdo/bmdolink/html/pac3del.html>>. Some of the intercepts were against aircraft, not missile targets, however.

<sup>39</sup> U.S. GAO, *Missile Defense: Cost Increases Call for Analysis*, June, 2000, pp. 5-12.

<sup>40</sup> Nick Jonson, "Some HASC members Say PAC-3 Costs Too Much for Army, Others Say PAC-3 Needs More Money," *Aerospace Daily*, July 19, 2001, p. 1; Marc Selinger, "House Panel Votes to Revamp SBIRS-Low, Cut DD-21, Speed Up PAC-3," *Aerospace Daily*, October 25, 2001, p. 1.

<sup>41</sup> Taiwan's Minister of Defense Wu Shiwen optimistically estimated a 90 percent interception rate of Chinese missiles. See *World Journal*, December 7, 2000, p. A2.

<sup>42</sup> Michael J. Green and Toby F. Dalton, "Asian Reactions to U.S. Missile Defense," *NBR Analysis* (November 2000), p. 26.

<sup>43</sup> *Xin Xinwen Zhoubao*, January 14-20, 1999, p. 21; Juliana Chen, "TMD or Not TMD," *Topics* (August 1999), p. 47.

<sup>44</sup> Center for Nonproliferation Studies, China Profiles Database, "Chinese Ballistic Missile Characteristics and Designations," February 2001, <<http://www.cns.miis.edu>>.

<sup>45</sup> *Republic of China Yearbook 2001*, pp. 126-127; Taiwan Ministry of Defense, *2000 National Defense Report*, <<http://www.mnd.gov.tw/report/830/html/3-3.html>>.

<sup>46</sup> *World Journal*, November 4, 2000, p. A5.

<sup>47</sup> *Free China Journal* (Taipei, renamed *Taipei Journal* after 2000), January 22, 1999, p. 6.

<sup>48</sup> T. Y. Wang, "'One China, One Taiwan': An Analysis of the Democratic Progressive Party's China Policy," in Wei-chin Lee, ed., *Taiwan in Perspective* (Leiden: Brill, 2000), pp. 159-182.

<sup>49</sup> *Central Daily*, December 9, 1999, p. 3; *Xin Xinwen Zhoubao*, December 16-22, 1999, pp. 42-45; Cheng-yi Lin, "Taiwan Presidential Candidates' Perspectives on National Defense," *Peace Forum Paper* (2000), <<http://www.dsis.org.tw/peaceforum/papers/2000-02/TP0002002.htm>>.

<sup>50</sup> *World Journal*, December 12, 2000, p. A4. It was reported that China's Long March rocket could travel to Taiwan in nine minutes, after its launch from Xichang in Western China; see *Xin Xinwen Zhoubao*, September 6-12, 1998, p. 67. Hence, it seems to be a good estimate that missiles from coastal China will need approximately two to three minutes to reach Taiwan.

<sup>51</sup> *World Journal*, January 13, 2001, p. A2.

<sup>52</sup> *Lifa Yuan Gongbao* 88, No. 7 (1999), p. 31.

<sup>53</sup> Fu-cheng Chen, *Fangwei Da Taiwan* [Defending the Big Taiwan] (Taipei: Jin Taiwan Publishers, 1995), p. 97.

<sup>54</sup> *China Times*, January 28, 2001; Fu-cheng Chen, pp. 104-105. The approximate 3.58:1:1 ratio was expected upon the completion of the *Jingshi* Program [Streamlining and Consolidation Plan] of June 2001. Taiwan's military manpower is to be trimmed to 400,000 in total. The army will have 200,000, while the navy and the air force will each maintain 56,000. The rest of the military personnel will go to units such as military police and logistics. See Arthur Shu-fan Ding and Alexander Chieh-cheng Huang, "Taiwan's Military in the 21st Century: Redefinition and Reorganization," in Wortzel, ed., *The Chinese Armed Forces in the 21st Century*, p. 272; Taiwan Ministry of Defense, *2000 National Defense Report*, <[www.mnd.gov.tw/report/830/html/3-1.html](http://www.mnd.gov.tw/report/830/html/3-1.html)>.

<sup>55</sup> *Xin Xinwen Zhoubao*, August 28, 1999.

<sup>56</sup> *China Times*, June 18, 2000, p. 2.

<sup>57</sup> *World Journal*, December 23, 1998, p. A4.

<sup>58</sup> *Xin Xinwen Zhoubao*, January 21-27, 1999, p. 45.

<sup>59</sup> Aaron Karp, *Ballistic Missile Proliferation: The Politics and Technics* (New York: Oxford University Press, 1992), p. 13.

<sup>60</sup> Van Evera, *Causes of War*, pp. 105-108.

<sup>61</sup> The U.S. experience in tracking Chinese missile tests in 1996 is discussed in Schnurppusch, "Asian Crisis Spurs Navy TBMD."

<sup>62</sup> Thomas J. Christensen, "Theater Missile Defense and Taiwan's Security," *Orbis* 44, No. 1 (2000), p. 85.

<sup>63</sup> John Hertz, "Idealist Internationalism and the Security Dilemma," *World Politics* 2 (January 1950), pp. 157-180. Many scholars later elaborated the concept of the security dilemma. See, for example, Robert Jervis, "Cooperation Under the Security Dilemma," *World Politics* 30 (January 1978), pp. 167-213; Charles L. Glaser, "The Security Dilemma Revisited," *World Politics* 50 (October 1997), pp. 171-201.

<sup>64</sup> Green and Dalton "Asian Reactions to U.S. Missile Defense," p. 26.

<sup>65</sup> *China Times*, December 29, 2000.

<sup>66</sup> Jervis, "Cooperation Under the Security Dilemma," p. 187.

<sup>67</sup> This argument, readers will find, rests on a similar rationale to that proposed by some opponents of the 1972 ABM Treaty.

<sup>68</sup> Richard K. Betts and Thomas J. Christensen, "China: Getting the Questions Right," *The National Interest* No. 62 (Winter 2000/01), p. 26. For a discussion about whether arms transfers to East Asia would create instability see Jennifer M. Lind and Thomas J. Christensen "Correspondence: Spirals, Security, and Stability in East Asia," *International Security* 24 (Spring 2000), pp. 190-200.

<sup>69</sup> Green and Dalton, "Asian Reactions to U.S. Missile Defense," p. 35.

<sup>70</sup> Here I adopt the term of "military capability" as is used by Charles Glaser. See Glaser, "The Security Dilemma Revisited," p. 175. The article refers here to the "state's ability to perform military missions, not the size of its forces or its total military assets."

<sup>71</sup> Green and Dalton, "Asian Reaction to U.S. Missile Defense," pp. 16-19.

<sup>72</sup> Xuotong Yan, "Theater Missile Defense and Northeast Asian Security," p. 71.

<sup>73</sup> For example, European officials were concerned about the U.S. limited

national missile defense plan that excluded Europe. In the view of some Europeans, the Clinton administration's plan for missile defense might have led to "decoupling," a splintering in military ties between the United States and its NATO allies. See *New York Times*, May 2, 2000, p. A8.

<sup>74</sup> Moltz, "Missile Proliferation in East Asia," p. 68.

<sup>75</sup> Yunyi Wang, "Changcheng Yujin Yu Zhong Cheng Feidan" [Long Range Warning and Medium-Range Missile], *Minzhu Yu Fazhi* (Taipei), No. 109 (1999), pp. 45; Patrick Tyler, *A Great Wall: Six Presidents and China: An Investigative Report* (New York: Century Foundation, 1999), pp. 420-421.

<sup>76</sup> *World Journal*, December 9, 2000, p. A7.

<sup>77</sup> Joseph Cirincione observed that many people in the current Bush administration view as inevitable some conflict between the United States and China. See Peel, "Face It, the Cold War Is Over," p. 11.

<sup>78</sup> For example, following Chinese deployment in 2000 of S-300PM surface-to-air missiles with a range of 150 km, Taiwan's aircraft, including F-16s, must be more cautious in the Taiwan Strait, considered Taiwan's "internal sea" in the past.

<sup>79</sup> Lewis, Postol, and Pike, "Why National Missile Defenses Won't Work," p. 39.

<sup>80</sup> Kent E. Calder, "The New Face of Northeast Asia," *Foreign Affairs* (January/February 2001), p. 115; *World Journal*, April 20, 1999, p. A2; *Central Daily*, December 10, 1999, p. 3; *Xin Xinwen Zhoubao*, December 16-22, 1999, p. 45.

<sup>81</sup> *World Journal*, February 12, 2000, p. A5; *Xin Xinwen Zhoubao*, March 25-31, 1999, p. 57.

<sup>82</sup> *World Journal*, August 16, 2001, p. A2.

<sup>83</sup> *World Journal*, August 15, 2001, p. A4.