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Taiwan: Conventional Deterrence, Soft Power, and the Nuclear Option

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Taiwan (officially Republic of China [ROC]) meets most definitions of existential insecurity—through its entire experience as a separate political entity—in a way that few other Asian cases do (Solingen 2007: 115). Not only does it face the People’s Republic of China’s (PRC’s) unremitting political, economic, and military pressure, but its statehood is unrecognized by most major states and intergovernmental organizations. China’s rapid military buildup since 1990 has raised the concern that the cross-Strait military balance has begun to shift in China’s favor (Office of the Secretary of Defense 2006: 37; Shambaugh 2000). The military imbalance is seen as further endangering Taiwan’s political survival and way of life.

Yet Taiwan has no recourse to global or regional security organizations. No major power except the United States has a commitment to Taiwan’s security. And that commitment is not unconditional. Taiwan exemplifies Michael Mandelbaum’s definition of “orphan”—a state that was aligned with the United States during the Cold War but “felt more threatened and less protected than the allies” because it faced neighbors that did not accept the legitimacy of its existence as a sovereign state and had “neither formal treaties of alliance nor American troops on [its territory]” (Mandelbaum 1995: 28–29).

Nonetheless, Taiwan figures prominently in the security picture in twenty-first-century Asia for two reasons. First, facing an acute threat, Taiwan has been labeled a “virtual nuclear power” or “virtual proliferant” (Mack 1997)—that could acquire nuclear weapons in a relatively short time due to its well-developed industrial infrastructure, civilian nuclear expertise, and past attempt at developing a nuclear weapon program. The October 2006 North Korean nuclear test rekindled speculation as to whether Taiwan, Japan, and South Korea might become the “next nuclear states” should a nuclear arms race ensue in East Asia (Rosen 2006).
Taiwan is important to Asian regional security because of the possibility of a conflict between two major nuclear powers. China claims the right to use force against Taiwan while the United States, under the Taiwan Relations Act, might choose to intervene in a cross-Strait conflict.

This chapter makes four main arguments. First, to cope with its unique security situation and challenge, Taiwan has adopted a broad strategy combining elements of "hard power" and "soft power" (Nye 2004). Since 1949 Taiwan's security strategy has incorporated four elements: (1) self-defense, (2) alliance (explicit or implicit), (3) economic statecraft, and (4) democracy. Second, while Taiwan's economic power and democratic example increase the international community's stake in Taiwan, ultimately its survival depends on its own conventional deterrence capability and the U.S. security commitment. Third, since Taiwan has forsworn its own nuclear weapon program and China's objective concerning Taiwan is mainly political (unification), nuclear weapons play only an indirect role in Taiwan's defense strategy. The important question is whether the U.S. security commitment to Taiwan (including an implicit nuclear umbrella) remains credible. Fourth, while it is plausible to speculate that Taiwan might reconsider its nuclear option under certain conditions, its most realistic security strategy remains a prudent blend of strengthened self-defense, credible U.S. political and military support, increased international community stake in Taiwan, and denying China excuses to launch an unprovoked attack.

These arguments are developed in the rest of the chapter, which has four sections. The first section discusses the nature of the China threat to Taiwan. The subsequent section investigates how Taiwan has dealt with that threat. The third section reviews Taiwan's past attempt at developing nuclear weapons and draws some lessons. The final section explores the conditions under which Taiwan might reconsider nuclear or other offensive options.

The China Threat

Ever since the ROC moved to Taiwan in 1949 as a result of the Chinese civil war between the Kuomintang and the Chinese Communist Party, the PRC has sought to bring Taiwan under its control. While China's strategic objective of unifying Taiwan has remained unaltered, its tactics have evolved over time. In the 1950s-60s, China threatened to "liberate" Taiwan by force. However, as it lacked amphibious warfare capabilities, China's threats were more rhetorical than real. China's bombardment of the ROC-held islands of Kinmen and Matsu constituted arguably the most serious military episode during that period (Tsou 1959).

After the United States and the PRC established diplomatic relations in 1979, China shifted its emphasis to "peaceful reunification" but did not renounce the use of force against Taiwan. Over time, the China threat to Taiwan became
multifaceted, including constricting Taiwan’s international space, manipulating fissures in Taiwan’s young democracy, and absorbing Taiwan’s outward investment and trade flows. However, it is China’s military buildup in recent years that poses the greatest threat to Taiwan’s security.

Until the end of the 1980s, China’s military modernization was low priority—ranking last in Deng Xiaoping’s “Four Modernizations”—mainly due to budgetary constraints. China’s rapid economic growth and the availability of military hardware from Russia spurred China’s military modernization. Beginning in 1990, China’s defense expenditure has grown at double-digit rates. The Pentagon’s annual reports on China’s military power point out that while preparing for a “Taiwan contingency” remains the primary focus of China’s military modernization, it also aims to project military power in the broader Asia-Pacific region (Office of the Secretary of Defense 2006). In 2005, China passed the Anti-Secession Law, sanctioning the use of “non-peaceful means and other necessary measures to protect China’s sovereignty and territorial integrity” under certain conditions yet to be defined.

China’s military options against Taiwan include (1) persuasion and coercion; (2) limited force options—such as employing information operations, special operation forces on Taiwan, and missile or air strikes on key military or political sites—to try to break the will of Taiwan’s leadership and population; (3) air and missile campaign; (4) blockade; and (5) amphibious invasion. In recent years, China’s military modernization has placed greater emphasis on developing the capabilities to achieve air and naval superiority over Taiwan, deny or complicate possible U.S. intervention, and compel Taiwan to accept China’s terms for unification. If China decides to use force against Taiwan, its most plausible course of action would be a conventional war aimed at achieving quick victory and keeping Taiwan’s economic infrastructure intact.

This raises questions about the nuclear dimension. Unlike most analysts, James Nolt (1999) argues that China has no real military option in dealing with Taiwan and can only defeat Taiwan by using nuclear weapons. But as China’s goal is primarily political (unification), do nuclear weapons serve any purpose? China officially espouses a no-first-use (NFU) policy—it will not be the first to use nuclear weapons against other states. But former Chinese chief arms control negotiator, Sha Zukang, claimed that China’s NFU commitment does not extend to Taiwan, because “Taiwan is a province of China, not a state, so the policy of no-first-use does not apply” (Straits Times 1996: 3). Sha’s statement was later corrected by the Chinese government. In 1999 a Foreign Ministry spokesman, Sun Yuxi, when asked if China would use nuclear weapons against Taiwan, extended China’s NFU principle to Taiwan: “We will not be the first to use nuclear weapons and will not use nuclear weapons against non-nuclear weapon countries and regions, let alone against our Taiwan compatriots” (New York Times 1999).
From time to time certain statements by senior Chinese military officers raised doubt about China's NFU pledge and possible use of nuclear weapons in a Taiwan contingency. In October 1995, Xiong Guangkai, who is now the deputy chief of the general staff of the People's Liberation Army, told Chas Freeman, a former Pentagon official, that China would consider using nuclear weapons in a Taiwan conflict. Freeman quoted Xiong as saying that Americans should worry more about Los Angeles than Taipei (New York Times 2005). In July 2005, General Zhu Chenghu, then at National Defense University, said: "If the Americans draw their missiles and precision-guided ammunition on to the target zones on China's territory, I think we will have to respond with nuclear weapons" (New York Times 2005). His statement raised the possibility of miscalculation and escalation in a Sino-American war over Taiwan.

Given the opaque nature of the PRC military, it is difficult to know whether these nuclear threats represented the generals' own opinions or a test balloon for official policy. It is reasonable to argue that China's main threat to Taiwan is conventional, such as missile or amphibious attack, and that Beijing is gaining the upper hand in the conventional military balance across the Strait.

Taiwan's Response: Conventional Deterrence and Possible U.S. Intervention

Taiwan's grand strategy in coping with the China threat includes the key "soft power" dimension. In keeping with the purpose of this book and space constraint, here I provide only a brief overview of the soft power dimension. During the first two decades of the Cold War, Taiwan was a key frontline state in the U.S.-led geostrategic containment of the international communist threat (Garver 1997). It was protected by the U.S. defense commitment that included extended deterrence. In the 1960s-70s, its export-led economic development model became successful, but its diplomatic fortunes declined. Taiwan's importance in global trade and production became a key pillar of its security. And, starting in the late 1980s, Taiwan evolved into a vibrant democracy, in contrast to China's 1989 crackdown on democracy protestors and its continued poor human rights record. Taiwan positioned itself as a model in global Third Wave democratization worthy of international support and recognition. In the early 1990s, Taiwan launched a "Go South" policy—buttressed by trade and investment—toward Southeast Asia, an important region to Taiwan. In 1999, the global information industry was disrupted as a result of Taiwan's earthquake. This disruption demonstrated Taiwan's vital role in the global semiconductor industry, leading one analyst to argue that Taiwan had a "silicon shield" against Chinese attack (Addison 2001). "Soft power" instruments such as democracy, trade, and popular culture are key elements of Taiwan's comprehensive security strategy.
Although Taiwan's security is embedded in world trade and global democratization, the realist premise of self-help in an anarchic international system is critical. Given the asymmetry vis-à-vis China, Taiwan's defense preparation against the Chinese military threat rests on two pillars: a formidable conventional military force and a close relationship with the United States (Hickey 1997: 37). Taiwan appears to have a three-layered strategy: (1) deterring China by making the cost of invasion unacceptably high; (2) if that fails, engaging China independently long enough for (3) assistance from a powerful outside actor (the United States).

With the world's sixteenth largest active troop size (290,000) and nineteenth highest military expenditure (US$7.9 billion in 2005), Taiwan has a considerable conventional military force. However, its adversary has the world's largest active troop size (2.25 million) and the second largest military expenditure (US$65 billion in 2004). Purchasing advanced weapons has been important for Taiwan's security. According to Stockholm International Peace Research Institute (SIPRI) data, between 1977 and 2006 Taiwan imported US$28.4 billion worth of arms, making it the seventh largest importer of arms in the world (for the same period, China was the eighth largest arms importer, receiving US$28.2 billion, mostly after 1999).

Maintaining a close relationship with the United States is crucial for Taiwan. Its armed forces are equipped with weapons obtained primarily from the United States. In recent years, it has also procured some weapons from other Western countries (e.g., sixty French Mirage fighter jets in 1992) and has emphasized indigenous military production in certain fields to achieve greater "self-reliance." U.S. arms sales enabled Taiwan to maintain sufficient self-defense capabilities. From FY1950 to FY2006, the United States sold Taiwan US$18.3 billion of military equipment under the foreign military sales program and US$3.2 billion worth of commercial exports licensed under the Arms Export Control Act (Defense Security Cooperation Agency n.d.). In 2007, Taiwan's legislature approved funds for the purchase of certain weapon systems approved by the George W. Bush administration in 2001, including P-3 Orion antisubmarine aircraft, the Patriot Advanced Capability (PAC-2 upgrade) missile defense system, and a feasibility study of a diesel-electric submarine.

In recent years, to cope with the growing China threat, Taiwan has taken measures to counter a possible three-phased Chinese attack: (1) a sudden, overwhelming attack on critical strategic and military targets using air power and special forces designed to force a rapid end to the war; (2) an effective naval blockade of major ports, to be followed by an extended air campaign to cripple Taiwan economically and militarily; and (3) an amphibious landing to facilitate a multidivisional armored and mechanized attack on the political center (Yang 2007). To survive air strikes, Taiwan has hardened command, control, and communication
centers and improved its air defense system. To counter a naval blockade, the ROC Navy has put increasing emphasis on antisubmarine warfare. To thwart an amphibious landing, Taiwan's ground forces have undergone a major streamlining and restructuring into composite brigades capable of conducting two-dimensional operations. Taiwan is also developing offensive countermeasures in an attempt to destroy or degrade PLA war-fighting assets on the mainland.

Although Taiwan's efforts are considerable, its conventional deterrence capability may be in relative decline for three reasons. First, the rapid pace of Chinese military modernization—double-digit growths in annual defense spending since 1990—makes it difficult for Taiwan to keep pace with China. Second, in recent years, as a result of spending more on health care and social welfare, Taiwan's defense expenditure has declined in absolute and relative terms. Third, because the United States is mired in Iraq and is increasingly dependent on Chinese cooperation on various issues (e.g., North Korea), its commitment to Taiwan, whose leadership seems to be pushing for de jure independence, has become more ambiguous and contingent.

The last point illustrates an inherent alliance dilemma. In a seminal work, Glenn Snyder discusses the logics of “abandonment” and “entrapment” and concludes “alliance bargaining considerations . . . tend to favor a strategy of weak or ambiguous commitment” (Snyder 1984: 467). In the U.S.-Taiwan relationship, Taiwan has always feared abandonment by the United States. In contrast, the United States fears entrapment, “being dragged into a conflict over an ally’s interests that one does not share, or shares only partially.”

Historically, the United States has played a critical role in Taiwan's security. Under its defense treaty with Taiwan (1954-78), the United States dispatched the Seventh Fleet to patrol the Taiwan Strait and extended its nuclear umbrella to Taiwan. Recently declassified material shows that from January 1958 to July 1974, the United States stored nuclear weapons on Taiwan. U.S. protection prevented a Chinese attack on Taiwan.

In December 1978, as one of the conditions for normalizing relations with the PRC, the United States abrogated the 1954 defense treaty with Taiwan. U.S. Congress enacted the Taiwan Relations Act (TRA) to shore up Taiwan's security. However, it is debatable whether the “residual” U.S. commitment to Taiwan's security under the TRA constitutes an implicit nuclear umbrella. The TRA declares that it is the policy of the United States to “consider any effort to determine the future of Taiwan by other than peaceful means . . . a threat to the peace and security of the Western Pacific area and of grave concern to the United States,” to provide Taiwan with “arms of a defensive character,” and to “maintain the capacity of the United States to resist any resort to force or other forms of coercion that would jeopardize the security, or the social or economic system, of the people
on Taiwan” (Taiwan Relations Act 1979). But the TRA is silent on whether the United States will defend Taiwan in the event of a Chinese attack. Snyder’s insights on entrapment help explain why the United States adopts a policy of “strategic ambiguity” toward the Taiwan Strait. It is intended to keep both China and Taiwan in check. Unlike Japan or South Korea—both treaty allies of the United States—Taiwan cannot for certain rely on America’s extended deterrence commitment. It must work hard to cultivate American support.

Given its existential insecurity and the implicit and ambiguous commitment of its only ally, Taiwan has often been identified as a country with good reasons for possessing nuclear weapons as part of its comprehensive strategy of survival. Andrew Mack grouped Taiwan along with Japan, South Korea, and North Korea in a category called “virtual nuclear powers” who could acquire nuclear weapons in a relatively short time but have chosen not to do so (Mack 1997).

Taiwan’s Nuclear Programs and U.S. Policies During the Cold War

It is useful to discuss Taiwan’s past, present, and future nuclear policy in the context of the larger issue of why states build nuclear weapons. The Taiwan case confirms insights from theories on the role of nuclear weapons in a country’s security policy but also adds to its unique complexity. It can be fruitfully compared with other countries like Israel that face existential insecurity.

States seek nuclear weapons for many reasons: coping with an acute threat, prestige, political clout, technology, and economic benefits (Cirincione 2007; Pomper 2005). Scott Sagan (1996–97) advances three “models” of states’ nuclear decisions: (1) “the security model”: states build weapons to increase national security against foreign threats, especially nuclear threats; (2) the “domestic politics model”: nuclear weapons are viewed as political tools to advance parochial domestic and bureaucratic interests; and (3) “the norms model”: nuclear weapon decisions are made because weapons acquisition, or restraint in weapons development, provides an important normative symbol of a state’s modernity and identity.

Goldstein (2000) argues that despite the end of the Cold War, nuclear deterrence will remain at the core of the security policies of the world’s great powers and will continue to be an attractive option for many less powerful states worried about adversaries whose capabilities they cannot match. America’s extended deterrence during the Cold War persuaded many, but not all, of its allies to forego nuclear weapons, thus contributing to the success of the U.S.-led nonproliferation regime (Mandelbaum 1995: 25–26).

A patron can bolster the credibility of its extended deterrence commitment by establishing treaty obligations for the defense of the client state or storing nuclear weapons on the soil of the client state. Recently declassified material shows that
the United States secretly deployed nuclear bombs in twenty-seven countries and territories during the Cold War (National Security Archive Electronic Briefing Book 1999; Norris, Arkin, and Burr 1999).

During the Cold War the United States sought to achieve three goals in the nuclear domain: (1) nonproliferation and arms control (to enhance global security and norm development), (2) extended deterrence (to preserve alliance solidarity and U.S. reputation), and (3) commercial gain (to benefit the American nuclear power industry). This three-pronged strategy was linked by the quid pro quo mandated in the 1968 nuclear Non-Proliferation Treaty (NPT): the five nuclear weapon states (the United States, the USSR, Britain, France, and the PRC) agreed not to transfer nuclear weapons or other nuclear explosive devices to other states, and nonnuclear weapon states agreed not to seek or develop nuclear weapons in return for their "inalienable right" to use nuclear energy for peaceful purposes (Article IV, Sec. 1), subject to International Atomic Energy Agency (IAEA) safeguards. Under the NPT, nuclear powers have a responsibility to assist developing countries with their energy needs (Article IV, Sec. 2). These multiple goals—sometimes complementary and sometimes contradictory—were clearly at work in the various roles the United States played in Taiwan's civilian and military nuclear programs during the Cold War.

Taiwan's Nuclear Program During the Cold War

Taiwan’s civilian nuclear power and nuclear weapon programs started at about the same time—in the 1960s. It is useful to consider these two programs together because the United States played key roles in both, and because there is substantial technological overlap between them (the first stage of making nuclear weapons—the production of fissile materials, such as uranium-233, uranium-235, or plutonium-239—is the same as for generating nuclear power) (Chung 2004a: 137). Taiwanese officials are still reticent about Taiwan's abandoned nuclear weapon program, but in recent years more information has emerged. Table 14-1 summarizes the key developments of Taiwan's nuclear program during the Cold War.

The table reveals several important lessons. First, Taiwan's nuclear weapon aspirations were driven by an acute sense of insecurity. The genesis of the Hsin Chu Project was a direct result of China's successful explosion of a nuclear bomb in 1964. The prospect that the PRC could now use nuclear weapons to wipe out Taiwan was deeply unsettling to ROC President Chiang Kai-shek. Chiang tried to persuade U.S. President Lyndon Johnson to take out China's nascent nuclear arsenal but to no avail. So he, and especially his son, Chiang Ching-kuo, decided to develop an indigenous nuclear weapon program.

There was dissent. Professor Ta-you Wu, former president of Academia Sinica in Taipei and then director of the Science Development Advisory Committee of
### TABLE 14-I.

**Timeline of Taiwan's Nuclear Program During the Cold War**

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1956</td>
<td>Taiwan opened its first nuclear reactor, provided by the United States, at NTHU.</td>
</tr>
<tr>
<td>1964</td>
<td>China successfully tested nuclear weapons, stimulating Taiwan to develop a full-scale nuclear program.</td>
</tr>
<tr>
<td>1965</td>
<td>The predecessor of the military-run Chungshan Institute of Science and Technology (CSIST) was established. The proposed First Institute would become the Institute for Nuclear Energy Research (INER).</td>
</tr>
<tr>
<td>1967</td>
<td>The US$140 million Hsin Chu Project was launched, consisting primarily of procuring and operating a heavy-water reactor, a heavy-water production plant, a reprocessing research lab, and a plutonium separation plant.</td>
</tr>
<tr>
<td>1968</td>
<td>ROC joined the Non-Proliferation Treaty (NPT). Supervision of INER was moved to AEC.</td>
</tr>
<tr>
<td>1969</td>
<td>INER purchased a small heavy-water reactor (40 megawatt), dubbed Taiwan Research Reactor (TRR), from Canada, which became operational in 1973. INER served mainly to facilitate Taiwan's procurement of elements to produce plutonium.</td>
</tr>
<tr>
<td>1971</td>
<td>IAEA negotiation of safeguard agreement short-circuited by the U.N. transfer of recognition. Eventually, agreement reached so the United States became the ultimate legal guarantor of Taiwan's nonnuclear status.</td>
</tr>
<tr>
<td>1974</td>
<td>CIA concluded that Taiwan was working toward a nuclear weapon capability and would be capable of producing a nuclear weapon within five years.</td>
</tr>
<tr>
<td>1976</td>
<td>Premier Chiang Ching-kuo promised Taiwan would not acquire its own reprocessing facilities or engage in any activities related to reprocessing.</td>
</tr>
<tr>
<td>1977</td>
<td>United States pressured Taiwan to dismantle reprocessing facilities and return U.S.-supplied plutonium. Taiwan's nuclear program was brought under control, but concerns remained.</td>
</tr>
<tr>
<td>1978</td>
<td>President Jimmy Carter normalized relations with the PRC. Taipower's first nuclear reactor began producing electricity. Over the years, the amount of electricity generated by Taipower's six reactors, all U.S.-made, increased to 20 percent of Taiwan's electricity needs. The fourth nuclear plant, with two more modern reactors, is scheduled to begin operation in 2006-07 (with the delay in 2000, it was not finished as of March 2008).</td>
</tr>
<tr>
<td>1987</td>
<td>INER began building a multiple hot cell facility.</td>
</tr>
<tr>
<td>1988</td>
<td>Colonel Chang Hsien-yi, deputy director of INER and a CIA spy, defected and revealed Taiwan's plans. The CIA estimated that Taiwan was within one or two years of developing a nuclear bomb. President Chiang Ching-kuo died. U.S. government agencies and IAEA inspectors shut down TRR and the hot cell. President Lee Teng-hui promised President Ronald Reagan that Taiwan would agree to conclusively and verifiably end its nuclear weapon program.</td>
</tr>
</tbody>
</table>

**Sources:** Author's compilation using information in Mitchell (2004), Albright and Gay (1998), Burr (1999), and Chung (2004a).
National Science Council, wrote to Chiang to oppose the Hsin Chu Project on the grounds that the plan underestimated the true costs, risked confrontation with the United States, and overestimated the chance of success. Yet Taiwan’s authoritarian political leaders at the time overruled protests like that of Wu, thwarted an informed public debate, and permitted the clandestine execution of the project. The military fully supported the Hsin Chu Project by providing manpower and resources. The five-year US$140 million (NTS4.8 billion) project amounted to 15 percent of the central government net expenditures of NTS32.2 billion in 1968 (Chung 2004a: 158).

National pride was another impetus. In 1957, Drs. Chen-ning Yang and Tsung-dao Lee of the University of Chicago became the first ethnic Chinese scientists to win the Nobel Prize in physics. This inspired many young, bright, and idealistic students in Taiwan to study nuclear physics, and the military tapped into this talent pool.

“Dr. H’s” experience is illustrative. After graduating from one of Taiwan’s top high schools, he chose to study physics at the military-run Chung-cheng Institute of Technology (CCIT). CCIT, Chungshan Institute of Science and Technology (CSIST), and the Institute for Nuclear Energy Research (INER) are all located in Lung Tan, about forty minutes by car from Taipei. After college, Dr. H was assigned to INER and after two years was sent to study in the United States, where he received a Ph.D. and had a postdoctoral fellowship before returning to INER. He recalled: “At that time, INER employed over one thousand people. On average, each researcher had two support staffers. The pay was excellent and the morale was high. I felt proud about what I was doing, because I was young and prone to following orders.”

The reactor purchased by INER, the Taiwan Research Reactor (TRR), was the same design as Canada’s National Research eXperimental reactor; it had a “cousin” in South Asia—the CIRUS reactor India purchased in 1960. (Fourteen years later, in 1974, India made and tested a nuclear device fabricated from the plutonium produced by that reactor.) At full operation, TRR could produce ten kilograms of weapon-grade plutonium each year; in twelve years it could have produced sufficient weapon-grade plutonium for a small number of nuclear weapons. TRR reached critical mass on January 3, 1973.

Taiwan’s nuclear weapon program accelerated in the 1970s. The quickening pace correlated directly with the nation’s growing diplomatic and security concerns: the ROC was expelled from the United Nations (U.N.) in 1971, and thereafter from all U.N.-affiliated organizations. The Nixon Doctrine signified the U.S. desire to reduce its military burden in Asia, culminating in the fall of Saigon in 1975. In 1972, Nixon visited mainland China and signed the Shanghai Communiqué, committing the United States to normalize relations with China. On
December 15, 1978, President Jimmy Carter announced that the United States would recognize Beijing and sever diplomatic ties with Taipei on January 1, 1979. These diplomatic setbacks heightened Taiwan's insecurity and fear of abandonment by the United States.

The second lesson is that the attitudes and actions of the United States—informed by its national interests—was a key enabling or constraining factor in Taiwan's tortuous nuclear weapon development program. During the Cold War, the United States sought to pursue several goals—including preventing the spread of communism, nuclear nonproliferation, and commercial interests of its nuclear energy industry.

In 1954, Presidents Eisenhower and Chiang signed a mutual defense treaty, incorporating Taiwan in the United States alliance system in East Asia. Taiwan benefited from Eisenhower's Atoms for Peace program. During the Offshore Island Crises of 1955 and 1958, Eisenhower contemplated using nuclear weapons against the PRC but was also concerned about "embroilment" in Chiang's futile campaign to militarily retake the mainland, which could have triggered a wider conflict involving the two superpowers (Tsou 1959). His dilemma illustrated the patron state's fear of entrapment.

Taiwan's civilian and military nuclear programs benefited from direct and indirect U.S. assistance. The United States was both the guarantor of Taiwan's nonnuclear weapon status and the chief supplier of key materials, facilities, and technologies to Taiwan's nuclear power industry. Consequently, both the United States and Taiwan reached a reciprocal "bargain" under the NPT. All of the state-owned Taipower's eight light-water reactors used to generate electricity were provided by leading American companies (General Electric and Westinghouse) that sold package deals, including fuel and repossession of spent fuel.

Other than some hydraulic power, Taiwan lacks any significant raw energy sources. It imports over 97 percent of raw materials for its energy needs. Compared to other sources of energy, nuclear fuel is a better choice from a strategic standpoint (it is less susceptible to wartime energy shortage or blockade) because of its compactness and density. Its importance will increase in the future. So will the nuclear expertise.

The U.S. attitude toward Taiwan's military nuclear program was even more intriguing. The United States assisted Taiwan in acquiring the TRR from Canada, and enriched uranium from South Africa. Most of Taiwan's scientists in nuclear physics and related fields studied in the United States or Canada. Thus it appears that the United States permitted (or wanted) Taiwan to possess certain nuclear capabilities as a potential strategic counterweight to China. Yet as the main architect and chief enforcer of the nonproliferation regime, the United States did not want Taiwan's nuclear program to get out of control.
In January 1988, a U.S.-trained scientist and spy dealt a decisive blow to Taiwan's nuclear weapon program. Colonel Chang Hsien-yi, deputy director of INER, defected to the United States, carrying with him sensitive information about the nuclear weapon program at INER. While studying in the United States, Chang had been recruited by the Central Intelligence Agency (CIA). At the INER, he monitored Taiwan's nuclear program for the U.S. government. Armed with incriminating evidence provided by Chang, President Reagan demanded that the new president of Taiwan, Lee Teng-hui, conclusively and verifiably shut down Taiwan's nuclear weapon program. The Chang Hsien-yi incident marked the end of Taiwan's nuclear weapon program and the associated Tien Ma (Sky House) missile program (Minnick 2002).

Since 1988, Taiwan's official position has been that it will not apply its scientific know-how to build nuclear weapons (China Post 1997). Those closely involved in Taiwan's nuclear weapon program (e.g., President Chiang Ching-kuo and General Hau Pei-tsun, chairman of the Joint Chiefs of Staff) viewed Chang as a traitor who caused the fatal setback to Taiwan's nuclear aspirations. Americans generally viewed the end of Taiwan's nuclear weapon program as a success. The Bulletin of the Atomic Scientists hailed this as a “nuclear nightmare averted” (Albright and Gay 1998). Ambassador James Lilley said that he believed it was time for the Chang Hsien-yi case to be “publicly acknowledged as a success, a classic in the annals of intelligence” (Weiner 1997).

However, today in Taiwan's open environment, opinions about Chang seem to be changing. Those who believe that reviving the nuclear option is a bad choice for Taiwan generally have a more balanced view on Chang (there were technical and nontechnical limitations to Taiwan's nuclear project, and what Chang did may have averted a disaster for Taiwan). Others argue that in Taiwan's democratic and open society today it is highly unlikely that a serious undertaking such as developing nuclear weapons could proceed secretly without public knowledge or media scrutiny. A former national security aide to President Chen Shui-bian opines that it would be hard to prevent a second “Chang Hsien-yi incident” from happening.

The Chang incident threw INER into disarray. Many INER researchers suddenly lost their raison d'être. Although the United States took decisive measures to end Taiwan's nuclear weapon program, it did not ask (or allow) the INER to disband. What explains the United States' mixed response? One view is that the United States regarded these researchers with concern, so having them in one place facilitated monitoring and control and prevented “proliferation” of nuclear manpower. Another view is that the United States wanted Taiwan to maintain some kind of “near-nuclear capability” by retaining these researchers' expertise. An author of Taiwan's Defense White Paper, Chien Chung, opined that
the United States wanted Taiwan to "keep the engine warm and await further instructions" (nuanji daiming). He estimates that there are still over 800 "national treasures" today. He notes: "It would have been quite easy to totally dissolve Taiwan's nuclear manpower; just give all these people U.S. passports! This is one reason why, although it is difficult to obtain the material, Taiwan's capability to research and develop nuclear weapons can never be completely ruled out."\(^\text{18}\)

The key is U.S. interests and attitudes. The George W. Bush administration's forceful approach toward the nuclear challenges posed by Iraq, North Korea, and Iran notwithstanding, if changing national interests due to geopolitical shifts (e.g., if the United States sees China as the main threat) require that the United States choose a reliable nuclear partner or proxy with sufficient technological capabilities and compatible national values, Chung thinks Taiwan is a good choice.\(^\text{19}\)

The concern, however, is that a nuclear-capable Taiwan may become intransigent in disputes with China due to its confidence in America's support, causing the United States to lose escalation control in a conflict with China. Entrapment thus becomes plausible for the United States.

The third lesson is that Taiwan's deep dependence on the U.S. security commitment gave the United States exceptional leverage over Taiwan's nuclear aspirations. Taiwan's dependence on the United States is more acute than that of Japan and South Korea. It is no longer under explicit treaty protection of the United States and U.S. support for Taiwan would have to factor in China's reaction. This gives the United States unusually large leverage over Taiwan's nuclear aspirations. For the foreseeable future, the United States can manage Taiwan's nuclear program using a mixed strategy of preventing proliferation, maintaining near-nuclear capability, and sharing the fruits of peaceful use of nuclear energy.

Needing access to international markets and nuclear technology, dependent on the United States, and concerned about China's possible preemptive strike, Taiwan's best choice was and is nuclear restraint.

Taiwan's Current Nuclear Orientation

Today Taiwan does not have nuclear weapons (Federation of American Scientists, n.d.), but it has a fairly sophisticated civilian nuclear power industry, which produced over 20 percent of Taiwan's total electric power in recent years (Government Information Office 2004: 149). Many sources put Taiwan in the category of "abstaining countries"—industrialized nations with the technical capacity but not the political desire to develop nuclear weapons (Cirincione 2007: 44; Manning 1997–98: 80; Spector, McDonough, and Medeiros 1995: 8).

Officially, Taiwan adheres to the nuclear nonproliferation regime.\(^\text{20}\) Its 1988 commitment to the United States went beyond the obligations mandated by the NPT (Mitchell 2004: 301). Although Taiwan is not a member of the IAEA, the
AEC conforms to IAEA code and guidance (Atomic Energy Council 2005). The government position on nuclear weapons is a categorical “four no's” policy—Taiwan will not “develop, produce, store, or use” nuclear weapons (Agence France Presse 2004), or a stricter “five no's” policy (the four no's plus no acquisition) (Ministry of National Defense 2004: 221)—intended to dispel any doubt. The ruling party from 2000 to 2008, the Democratic Progressive Party (DPP), went a step further by espousing a “nuclear-free homeland” (feihe jiayuan) on Taiwan (Executive Yuan Nuclear-Free Homeland Commission 2003).

Since the termination of Taiwan's nuclear weapon program in 1988 there has been a normative change in Taiwan's nuclear research (Chien 2005: 475; also cited in Chung 2005: 21, 28). Today, all of Taiwan's nuclear programs are ostensibly for peaceful use. The DPP espouses a fundamentally antinuclear policy. To maintain its security, Taiwan counts on America's tacit security commitment and the international norm against the use of nuclear arms against nonnuclear weapon states, and maintains itself as a “virtual proliferant” through the technological infrastructure of a thriving civilian nuclear program. But is a “nuclear option” completely out of the question?

Assessing the Nuclear “Option”

Although it is not a member of the United Nations, as a state dependent on the United States for its security, it is important for Taiwan to adhere to the nonproliferation regime to ensure U.S. support. However, Taiwan has never felt completely comfortable about the U.S. commitment to its security. Every few years certain news reports or official comments would surface that called into question whether Taiwan still has a secret nuclear weapon program.

Rather than judging these inconclusive reports and subsequent official denials and clarifications, I analyze the role of nuclear weapons, if any, in Taiwan’s security strategy, by taking into account both capabilities and intentions. These two interrelated aspects roughly correspond to “supply-side” and “demand-side” factors, respectively. The former relates to feasibility (whether Taiwan can do it), whereas the latter relates to desirability (whether Taiwan ought to do it). In the arms control lexicon, supply-side strategies seek to prevent the transfer of weapons technologies to would-be proliferators, whereas demand-side strategies seek to address the security concerns behind the drive for the bomb (Mack 1997: 51–52).

For Taiwan, both its capabilities and intentions are influenced by broader factors, such as the international nonproliferation regime, technological availability, the regional security environment, and its threat perception, but none is more important than the relationship with the United States and the robustness of the U.S. security commitment. As the history of Taiwan’s nuclear program shows, these larger strategic and diplomatic factors on the demand side played a key part
in shaping Taiwan’s nuclear choices. They will also be crucial for understanding, or even predicting, Taiwan’s nuclear future. Table 14-2 summarizes the enabling and inhibiting factors that would influence Taiwan’s decision to develop nuclear weapons in terms of feasibility and desirability.

Overall, although several enabling factors favor Taiwan's development of nuclear weapons from the standpoints of both desirability (the demand side) and feasibility (the supply side), the cost outweighs the benefit, suggesting that a “virtual” nuclear capability is the more plausible option.

Under what conditions can and should Taiwan cross the nuclear threshold to formally incorporate a nuclear weapon capability in its national security planning? Both capabilities and intentions are important in this calculus.

There are divergent views on feasibility. Some believe that if Taiwan decided to develop nuclear weapons, it could do so quickly, perhaps within a year or two (Mitchell 2004: 301). With the infrastructure for nuclear research (INER and National Tsinghua University [NTHU]) and experience with nuclear power generation, as the world’s sixteenth largest economy, and with the fourth largest foreign exchange reserve, Taiwan appears, prima facie, to possess the human and financial capital needed to resume its nuclear weapon program. Others are skeptical. They point to the high cost to restart the program (US$10 billion), the predictable resistance by opposition parties, the tight monitoring and control by the United States and the IAEA, and the inability to find suitable locations on the island to conduct nuclear tests as reasons why the nuclear option is infeasible.

There are divergent views on the desirability of nuclear weapons as well. For the rare voices that advocate the development of nuclear weapons, it is unclear whether their unorthodox comments reflect simply bravado or hint at the existence of a secret program. Officials who have made these types of remarks have invariably retracted their comments to defuse unwanted attention. Former Presi-
dent Lee Teng-hui, replying to a question in the National Assembly on July 28, 1995 about Taiwan’s nuclear intentions, said: “Whether or not we need the protection of nuclear weapons, we should restudy the question from a long-term point of view.” Reuters ran a story saying that Taiwan meant to reconsider the use of nuclear weapons. This prompted Taiwan’s foreign minister, Fredrick Chien, to issue a categorical denial that Taiwan had any intention of developing nuclear weapons, blaming the reporters for misunderstanding and misinterpreting a Chinese phrase that President Lee had used (Lin 1995: 13).

A vocal minority stresses Taiwan’s need to have offensive weapons, including nuclear weapons, to deter China from attacking the island. A researcher affiliated with the Taiwan Research Institute, which is closely tied to former President Lee Teng-hui, argues that Taiwan cannot rely on China’s pledge not to use nuclear weapons against Taiwan and should instead develop a counter-value nuclear deterrent against possible Chinese use of nuclear arms against Taiwan (Liao 1999). A *Taipei Times* (2004) editorial argues that “the ability to obliterate China’s ten largest cities and the Three Gorges Dam would be a powerful deterrent to China’s adventurism.” To rally support for arms procurement, on September 25, 2004, former premier Yu Shyi-kun said that Taiwan should rely on a Cold War-style “balance of terror” to safeguard national security in the face of intimidation from Beijing (Hille 2004). It is unclear how much weight to give to these voices, but they are clearly a minority in Taiwan.

A cautious international relations scholar who was close to the DPP government believes that Taiwan should forgo the production and development of nuclear weapons to avoid the predictable intense international scrutiny and pressure, but keep quiet about acquiring nuclear weapons. He hinted that the international black market would be the fastest way for Taiwan to acquire nuclear weapons. However, Chung disagrees: “Without testing, the quality of acquired weapons cannot be assured, and the numbers so acquired would be insufficient to constitute a deterrent, but Taiwan’s reputation would surely suffer.” Andrew Yang of the Council on Advanced Policy Studies, a top think tank on security issues, thinks that nuclear weapons are actually a liability for Taiwan’s security because they further complicate Taiwan’s security challenge.

There are good instrumental reasons for Taiwan to choose nuclear restraint owing to what international relations scholars call “security interaction”: Taiwan’s development of nuclear weapons for self-defense might be seen as offensive by China and a casus belli. In an article criticizing Premier Yu’s call for a “balance of terror,” Chien Chung concludes that developing WMD for the sake of engaging in a “balance of terror” with the adversary is not indispensable to Taiwan’s national strategy nor will it enhance Taiwan’s national security (Chung 2004b). Most government officials think that there cannot be any ambiguity in Taiwan’s nuclear policy and that 100 percent transparency is the best option.
However, Table 14-2 illustrates the scenarios for contemplating the "nuclear option": Taiwan may cross the nuclear Rubicon if it believes that the cross-Strait military imbalance has become so lopsided and the prospect for Beijing to use force to unify Taiwan has become so imminent that only nuclear weapons can serve as a quick "equalizer" to preserve Taiwan's independence or as a last-ditch effort to draw the United States into the conflict (Rosen 2006: 12).

Table 14-3A shows that China has all classes of WMD and delivery systems, but Taiwan only has short-range ballistic missiles capable of carrying conventional

<table>
<thead>
<tr>
<th>Indicator</th>
<th>China</th>
<th>Taiwan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nuclear weapon status</td>
<td>Confirmed</td>
<td>None</td>
</tr>
<tr>
<td>Chemical weapon status</td>
<td>Probable</td>
<td>Suspected</td>
</tr>
<tr>
<td>Biological weapon status</td>
<td>Suspected</td>
<td>Suspected</td>
</tr>
<tr>
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<td>Confirmed</td>
</tr>
<tr>
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</tr>
<tr>
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<td>None</td>
</tr>
<tr>
<td>Submarine-launched ballistic missile status</td>
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<td>None</td>
</tr>
<tr>
<td>Intercontinental ballistic missile status</td>
<td>Confirmed</td>
<td>None</td>
</tr>
<tr>
<td>Strategic bomber status</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Strategic submarine status</td>
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<td>None</td>
</tr>
<tr>
<td>WMD commitments</td>
<td>BTWC, CWC, NPT</td>
<td>NPT</td>
</tr>
</tbody>
</table>

**TABLE 14-3 A AND B**

*Military Power of China and Taiwan*


<table>
<thead>
<tr>
<th>Indicator</th>
<th>China</th>
<th>Taiwan</th>
</tr>
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<tbody>
<tr>
<td>Nuclear weapon status</td>
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</tr>
<tr>
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</tr>
<tr>
<td>Intermediate-range ballistic missile status</td>
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<tr>
<td>Submarine-launched ballistic missile status</td>
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<td>None</td>
</tr>
<tr>
<td>WMD commitments</td>
<td>BTWC, CWC, NPT</td>
<td>NPT</td>
</tr>
</tbody>
</table>


CSS-6 (DF-15/M9), CSS-7 (DF-11/M-11), CSS-8 (DF-7). Over 650 DF-11 (M-11) and DF-15 (M-9) are deployed opposite Taiwan.

CSS-3 (DF-2), CSS-5 (DF-21). Several dozen that can reach Japan, India, and Russia.

CSS-N-3 (J-4). Two dozen or so can reach the U.S. and Europe.

CBT: acceded; CTBT: signed but not ratified; CWC: signed and ratified; NPT: acceded.

Ching Feng, Tien Chi.

The ROC ratified the NPT in 1970. After its expulsion from the United Nations in 1971, ROC said it would abide by CWC, BTWC, and NPT.


<table>
<thead>
<tr>
<th>Year</th>
<th>China GDP ($ billions, PPP)</th>
<th>China Defense expenditure ($ billions)</th>
<th>China Defense expenditure (% of GDP)</th>
<th>Taiwan GDP ($ billions, PPP)</th>
<th>Taiwan Defense expenditure ($ billions)</th>
<th>Taiwan Defense expenditure (% of GDP)</th>
</tr>
</thead>
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<tr>
<td>1990</td>
<td>413</td>
<td>11.3</td>
<td>3.1</td>
<td>151</td>
<td>8.7</td>
<td>5.4</td>
</tr>
<tr>
<td>1995</td>
<td>3,500</td>
<td>33.0</td>
<td>5.9</td>
<td>291</td>
<td>13.1</td>
<td>5.0</td>
</tr>
<tr>
<td>2000</td>
<td>4,500</td>
<td>42.0</td>
<td>3.9</td>
<td>386</td>
<td>17.6</td>
<td>5.6</td>
</tr>
<tr>
<td>2005</td>
<td>8,182</td>
<td>81.5</td>
<td>4.3</td>
<td>612</td>
<td>7.9</td>
<td>2.4</td>
</tr>
</tbody>
</table>

warheads. Table 14-3B shows the rapid increase in China’s defense spending since 1990, powered by the huge expansion of China’s economy. As the Pentagon’s recent reports on China’s military power indicate, China has devoted substantial resources to weapon systems that can be used in asymmetric war to intimidate or actually attack Taiwan and prevent U.S. intervention (Office of the Secretary of Defense 2006).

The only imaginable scenario in which Taiwan could pursue the nuclear option is if three conditions were present concurrently: (1) there is a serious problem in the credibility of America’s tacit extended deterrence commitment; (2) the United States is perceived as ready to abandon Taiwan in the face of Chinese assertiveness; and (3) the cross-Strait military balance has become so lopsided in favor of China that only nuclear weapons could restore some (semblance of) balance. These are extraordinary conditions under which the unthinkable could happen. Only a “perfect storm” caused by an increasing Chinese military threat, deteriorating regional security, and abandonment by the United States might force Taiwan to cross the nuclear Rubicon.

The impact of Taiwan becoming a nuclear weapon state on regional security is expected to be largely negative. China has declared that Taiwan’s development of nuclear weapons would be a casus belli. The dual shock caused by the “demonstration effect” of America’s abandonment of Taiwan and a militarily more belligerent China could cause Japan to renounce its decades-old pacifist policy and reconsider the nuclear option.

However, there is at least one scenario in which nuclear weapons might be used on behalf of Taiwan. The U.S. Nuclear Posture Review (2002) listed “a military confrontation over the status of Taiwan” as one of the “immediate contingencies” that the United States must prepare for and mentions China by name as a nuclear target. That scenario, representing a breakdown of deterrence, risks escalation with incalculable consequences.

Assessing Taiwan’s Nonnuclear Options

Taiwan can certainly explore two political strategies of security: (1) negotiating with the PRC—the only state that threatens Taiwan’s survival—to establish confidence-building measures; and (2) joining regional or global institutions to socialize the international community and mitigate the risk China poses to Taiwan’s security. However, the first strategy is fraught with problems. At the very least, it would require Taiwan to renounce the pursuit of de jure independence in return for Beijing’s promise not to use force against Taiwan. The DPP government is unwilling to consider this compromise, although the incoming Ma Ying-jeou administration may be so inclined. Some question Beijing’s trustworthiness. It seems confidence-building measures result from, rather than give rise to, a long period of fostering mutual trust. Given the deep mistrust between the two sides,
counting on China for Taiwan's security requires a leap of faith unsupported by evidence.

The second political strategy is also impractical. Beijing's isolation strategy—that demands all states and international organizations to respect its "one China" principle—means that few are willing to take on the issue of Taiwan's security for fear of antagonizing China. Beijing's refusal to permit Taiwan more "international space" contributes to Taiwan's alienation from China.

This leaves only the United States as a possible counterweight to China. As long as Taiwan feels reasonably assured by the U.S. security commitment, albeit implicit and not unconditional, it can forgo the costly nuclear option. Pursuing such an option might alienate its chief security backer.

Can Taiwan address its security challenges with conventional military force and other "low politics" measures? As argued earlier, Taiwan relies on economic globalization, democracy, self-defense, and possible U.S. intervention to protect its security. On the self-defense front, apart from nuclear weapons, Taiwan has enjoyed a qualitative edge and is currently improving its conventional capability.

Military conflict in the Taiwan Strait is likely to be conventional in nature, launched by China to either punish Taiwan for taking measures Beijing deems as crossing the "red line" or to compel Taipei to accept unification on Beijing's terms. Because China's political objective is to unify and not destroy Taiwan's economy and infrastructure, its nuclear arsenal is basically irrelevant to that objective. If China were to threaten nuclear weapons against Taiwan, it would result in worldwide condemnation and sanctions. Any hope of winning Taiwanese hearts would be dashed.

China's rapid acquisition of ballistic and cruise missiles and power projection capabilities suggests it is pursuing coercive diplomacy. As section two showed, Taiwan has responded by adopting various defensive measures, such as hardening critical facilities, creating redundancy in command and control systems, maintaining air superiority, strengthening antisubmarine capability, and developing ballistic missile defense (BMD) capability.

Taiwan also has achieved some progress on offensive conventional force. In 2006, Chinese-language media reported that Taiwan's Ministry of Defense was building the country's first-ever "strategic force" that would have a small-scale fighting capability in 2007 (United Daily News 2006). This capability will rely on Taiwan's improved missiles, which now have a range of 600–1,000 kilometers—enough to reach Chinese cities like Shanghai; the aim is to further improve the range to 2,000 kilometers, the distance to Beijing. In April 2007, upon completing its Han Kuang computer war games, Taiwan's Defense Ministry informed the American observers that Taiwan now has "Tactical Shorebase Missiles for Fire Suppression" (TSMFS) with a range of up to 1,000 kilometers. The Ministry said
that TSMFS is a passive system designed to counter an attack by China and will only target the mainland's airports and missile batteries, not civilian installations (China Post 2007). Although the United States did not support Taiwan’s development of such systems, Taiwanese officials argued that such systems are necessary for self-defense, enabling the island to counter a mainland attack for some time before friendly countries can come to Taiwan's assistance. To assuage the United States, President Chen Shui-bian promised that Washington would have the last say over the island using such weapons against the mainland (South China Morning Post 2007; New York Times 2007).

Taiwan’s progress in missile technology represents a notable technological accomplishment for countering China’s rapid missile buildup. It is inconceivable that Taiwan will fire the first shot, because it would be met with massive retaliation by China. Yet from Taipei’s standpoint, possessing some longer-range missiles might complicate China's force calculus and raise the cost of coercive diplomacy. Until BMD becomes more reliable, many countries will find that offense is much cheaper than defense. Taiwan will thus simultaneously pursue BMD and quietly develop TSMFS. In light of China’s continual missile buildup and improved performance, the United States will soon face two critical choices that could cause diplomatic controversies—whether to sell Taiwan the Aegis-equipped destroyers (“postponed” in 2001) and whether to include Taiwan in the U.S.-led BMD in East Asia.

If the improved missiles carry only conventional warheads, they are unlikely to deter a China that is willing to use nuclear weapons against Taiwan, although China would have to pay a very high political price for such blatant deviation from its NFU policy. The missile accomplishment has rekindled speculation on the status of Taiwan’s strategic (including nuclear) capabilities. Might Taiwan’s missile program provide China with a pretext for a “preventive war”? While the Bush Doctrine may have lowered the bar for countries to justify this traditionally dubious concept in international law, it is difficult to deny that Taiwan developed these missiles as a reaction to China's missile intimidation.

Given the current security situation in East Asia, Taiwan has to walk a tightrope with its security strategy. It must continue increasing the stake for the international community in its economic and democratic example. It must do everything possible to maintain U.S. political and military support. It must not give China any excuse to make an unprovoked attack. If it should seek to acquire a nuclear weapon capability, Taiwan must do so in the most discreet manner. These are stringent requirements. Nevertheless, the “nuclear option” will always exist for a Taiwan facing existential threat from a powerful adversary. Meanwhile, Taiwan needs a comprehensive strategy that combines hard and soft power to ensure its continued survival as a separate state.
Notes

1. For more discussion, see Tan, Walker, and Yu (2003) and Swaine (1999).
2. Swaine, Yang, Medeiros, with Mastro (2007) examine the various military options.
3. Roberts (2007) explores the "how likely?" and "how stable?" of the nuclear dimension in a Taiwan contingency.
6. Welfare spending absorbed 17.7 percent of government expenditure in 2004, but only 8.9 percent in 1994. The share of defense spending dropped from 23.7 percent in 1994 to 15.4 percent in 2004. Defense expenditure has been in decline in the last decade: 5.7 percent of GDP or US$11.2 billion in 1994; 3.2 percent or US$9.1 billion in 1999; 2.4 percent or US$7.9 billion in 2005 (Ministry of National Defense 2004: 144).
8. For the text of the NPT, see http://disarmament2.un.org/wmd/npt/npttext.html.
11. Interview with Dr. H, former INER researcher, Taipei suburb, Taiwan, December 21, 2005.
12. Chung (2004a: 155); interview with Dr. H.
13. The U.N.'s recognition of the PRC as the only legal government of all China—the so-called "one China" policy—raised the interesting possibility that Taiwan could claim nuclear weapon state status, but in the end, Taiwan decided to accede to the requirements of the NPT and the IAEA, and through a trilateral nuclear agreement the United States became the ultimate guarantor of Taiwan's nonnuclear status, facilitated by IAEA inspections (Mitchell 2004: 297–98).
14. Weiner (1997); China Post (2000). Chang had apparently been recruited by the CIA some ten years earlier during his doctoral study at the University of Tennessee. There were more suspected moles planted by the CIA inside INER. Interview with Dr. H.
17. Interview with Arthur Ding, December 23, 2005.
18. Interview with Chien Chung, National Tsing-hua University, Hsinchu, Taiwan, December 20, 2005.
19. Interview with Chien Chung.
20. Interview with Michael Tsai, deputy minister of national defense, Taipei, Taiwan, December 23, 2005.
21. See also ibid.; and interview with Chien Chung.
23. Taiwan’s gross domestic product (in purchasing power parity) in 2006 was estimated at US$668.3 billion, and its foreign exchange reserves as of 2006 were US$280.6 billion (CIA, The World Factbook).
25. Arthur Ding, interview.
26. Interview with an international relations scholar, Taipei, Taiwan, December 16, 2005.
27. Chien Chung, interview.
28. Interview with Andrew Yang, December 21, 2005, Taipei, Taiwan.
29. Interviews with Deputy Minister Michael Tsai and Minister Ouyang.
30. Over the years, depending on the changing situation in the Taiwan Strait, China has altered the conditions under which it might use force against Taiwan, despite its professed policy of “peaceful reunification.” The most recent such conditions are included in the 2000 white paper on the Taiwan issue and the 2005 Anti-Secession Law.

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Strait Times. 1996. “N-weapons Use Does Not Apply to Taiwan.” August 6.


