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doi:10.7033/ISE.201309\_49(3).0004

Issues & Studies, 49(3), 2013

問題與研究（英文版），49(3), 2013

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頁數/Page： 111-150

出版日期/Publication Date：2013/09

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## Mostly Bark, Little Bite? Modeling US Arms Sales to Taiwan and the Chinese Response\*

SCOTT L. KASTNER, WILLIAM REED, AND PING-KUEI CHEN

*US arms sales to Taiwan generate considerable anger in Beijing. Yet China has typically been reluctant to retaliate strongly in response to US arms sales; rather, Beijing has tended to take more symbolic, temporary, actions—such as freezing military exchanges and postponing official visits. Why, on the issue of US arms sales to Taiwan, does the PRC response seem to be mostly bark, with little bite? In this article, we construct a formal model of US arms sales to Taiwan, and use the model to generate expectations about Chinese reactions to those sales. Our model suggests that China faces a tradeoff when responding to US arms sales. On the one hand, domestic pressures and concern that arms sales improve Taiwan's bargaining leverage vis-à-vis the PRC push China to retaliate against the US. By sanctioning the US, China both ameliorates*

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\*This article is a revised version of a paper presented at the Conference on U.S. Arms Sales to Taiwan: A Policy at a Crossroads, sponsored by Institute of European and American Studies, Academia Sinica, Taiwan, August 2012.

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domestic nationalists demanding strong action and at the same time raises the costs to Washington of continuing with arms sales. On the other hand, however, by responding strongly to US arms sales, Beijing runs the risk that the US will continue with the sales despite the high costs; in turn, the higher costs signal a stronger US commitment to Taiwan that could undercut the PRC's future bargaining leverage vis-à-vis the island. We show that several variables determine how China makes this tradeoff, including the magnitude of US arms sales to Taiwan, prior Chinese beliefs about how strongly committed to Taiwan the US is, and how much additional leverage revealed US support for Taiwan provides the island in its bargaining with Beijing over sovereignty-related issues.

**KEYWORDS:** Arms sales; Taiwan; US-China relations; bargaining; sanctions.

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US arms sales to Taiwan have long been a sensitive and significant issue in US-China relations. The issue was a key stumbling block as the two countries moved toward normalization in 1978, and PRC officials were frustrated by US insistence on continuing sales post-normalization. Although Chinese officials found this unacceptable, they ultimately decided to proceed with normalization and to revisit the issue later.<sup>1</sup> The 1979 passage of the Taiwan Relations Act (TRA), which contained explicit references to continued US arms sales to Taiwan, further angered Chinese leaders.<sup>2</sup> The issue came to a head in the early 1980s as the PRC demanded that the US commit to ending weapons sales to Taiwan; Beijing suggested that it would downgrade its diplomatic presence in the United States absent a satisfactory resolution.<sup>3</sup> After pro-

<sup>1</sup>See, e.g., James Mann, *About Face: A History of America's Curious Relationship with China, from Nixon to Clinton* (New York: Vintage, 1998), chapter 4; Harry Harding, *A Fragile Relationship: The United States and China since 1972* (Washington, D.C.: Brookings Institution, 1992), chapter 3.

<sup>2</sup>The act stipulates that the US would provide Taiwan with "such defense and defense services in such quantity as may be necessary to maintain a sufficient self-defense capability," and that the specific nature of these weapons would be determined by the President and Congress "based solely upon their judgment of the needs of Taiwan, in accordance with procedures established by law." For a discussion of the TRA and its consequences, see Steven M. Goldstein and Randall Schriver, "An Uncertain Relationship: The United States, Taiwan and the Taiwan Relations Act," *China Quarterly* 165 (2001): 147-72.

<sup>3</sup>See Harding, *A Fragile Relationship*, 114; June Teufel Dreyer, "China's Attitude toward the

longed negotiations, the two sides issued a joint communiqué on August 17, 1982, in which the US agreed “to reduce gradually its sales of arms to Taiwan,” but did not agree to a specific end-date. The US also promised that future arms sales to Taiwan “would not exceed, either in qualitative or quantitative terms,” those of recent years.<sup>4</sup> However, later US sales, such as in particular a 1992 decision to sell 150 F-16 fighter aircraft to Taiwan, called into question whether the 1982 communiqué served as a significant constraint on US arms sales decisions.<sup>5</sup>

US arms sales to Taiwan continue to generate considerable anger in Beijing. When the United States confirmed a US\$5.8 billion weapons package to Taiwan in 2011, for instance, official Chinese media referred to the sale as a “despicable breach of faith in international relations,” while one general wrote that the US was “cheating and making a fool of the Chinese people.”<sup>6</sup> In early 2010, PRC officials were “strongly indignant” after an arms sale announcement, calling such sales a “gross intervention in China’s internal affairs” that would have a “serious negative impact” on bilateral relations.<sup>7</sup> Given the emotional response US support

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Taiwan Relations Act.” in *United States-Taiwan Relations: Twenty Years after the Taiwan Relations Act*, ed. Jaw-Ling Joanne Chang and William W. Boyer (Baltimore, Md.: University of Maryland Law School, 2000), 221.

<sup>4</sup>The full text of the communiqué is available at: <http://www.taiwandocuments.org/communique03.htm>. The Reagan administration subsequently interpreted the commitments made by the US in loose terms, emphasizing that dollars would be inflation-adjusted, that quality would be assessed in relative terms, and that the restrictions on arms sales would apply only to weapons and not technology transfer. See Harding, *A Fragile Relationship*, 116-17. For a good discussion of the communiqué, please see: Richard C. Bush, *At Cross Purposes: U.S.-Taiwan Relations since 1942* (Armonk, N.Y.: ME Sharpe, 2004).

<sup>5</sup>Beijing frequently protested that the US violated the 1982 communiqué. For detailed discussion, see Zhang Qingmin, “Zhong-Mei Guanxi zhong de Meiguo shou Tai wuqi wenti” (The issue of US arms sales to Taiwan in Sino-American relations), *Waijiao xueyuan xuebao* (Journal of Foreign Affairs College) (Beijing), 1994, no. 1:84-92. For a detailed summary and discussion of US arms sales to Taiwan since 1990, see Shirley A. Kan, “Taiwan: Major U.S. Arms Sales since 1990,” in *Taiwan-U.S. Relations*, ed. Samantha E. Marshall (New York: Nova, 2010), 1-75.

<sup>6</sup>“Taiwan Arms Sale Draws Angry, but Familiar, Reaction,” *New York Times*, September 22, 2011, <http://www.nytimes.com/2011/09/23/world/asia/china-expresses-anger-over-latest-us-arms-sales-to-taiwan.html>.

<sup>7</sup>“US Sells Weapons to Taiwan, Angering China,” *Washington Post*, January 30, 2010, <http://www.washingtonpost.com/wp-dyn/content/article/2010/01/29/AR2010012904113>

for Taiwan can generate in China, combined with the growing importance of Sino-American cooperation to deal with a range of difficult global issues (ranging from climate change to weapons proliferation to global financial regulation), it is perhaps not surprising that some US analysts have suggested that Washington consider reducing its commitment to Taiwan. Often, recognizing the raw nerve that arms sales touch in China, these calls emphasize in particular the desirability of the US scaling back its weapons sales to Taipei.<sup>8</sup>

Proponents of this view, however, largely take it on face value that US arms sales to Taiwan do in fact act as a significant constraint on US-China cooperation.<sup>9</sup> Yet, despite the strong emotional response arms sales to Taiwan often generate in China, it is not obvious that these sales have a major effect on the broader US-China relationship. On the contrary, China has typically been reluctant to retaliate strongly in response to US arms sales; rather, Beijing has tended to take more symbolic, temporary, actions—such as freezing military exchanges and postponing official visits.<sup>10</sup> Given the importance China attaches to the Taiwan issue, it strikes

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.html. For a discussion of the role of emotion in China's Taiwan policy (focusing specifically on anger during the 1995-6 Taiwan Strait Crisis), see Todd H. Hall, "We Will Not Swallow This Bitter Fruit: Theorizing a Diplomacy of Anger," *Security Studies* 20, no. 4 (October-December 2011): 521-55.

<sup>8</sup>See, for instance, Bruce Gilley, "Not So Dire Straits: How the Finlandization of Taiwan Benefits US Security," *Foreign Affairs* 89, no. 1 (January-February 2010): 44-60; Charles Glaser, "Will China's Rise Lead to War? Why Realism Does Not Mean Pessimism," *Foreign Affairs* 90, no. 2 (March-April 2011): 80-91. Shelley Rigger provides a good catalogue of arguments along these lines. For counterarguments, see: Shelley Rigger, "Why Giving Up Taiwan Will Not Help Us with China" (online paper, American Enterprise Institute, November 29, 2011), <http://www.aei.org/outlook/foreign-and-defense-policy/regional/asia/why-giving-up-taiwan-will-not-help-us-with-china/>; Nancy Bernkopf Tucker and Bonnie Glaser, "Should the United States Abandon Taiwan?" *Washington Quarterly* 34, no. 4 (Fall 2011): 23-37.

<sup>9</sup>See, for instance, Jaushieh Joseph Wu, "Zhudaoxing baquan de kunjing: jiujiyi hou guoji jushi yu Mei-Zhong-Tai guanxi yanbian" (Dilemma of the dominant power changing US-China-Taiwan relations after September 11), *Dongwu zhengzhi xuebao* (Soochow Journal of Political Science) (Taipei) 28, no. 1 (March 2010): 23.

<sup>10</sup>On the Chinese response to US arms sales, see especially: Michael S. Chase, "'Strong Indignation,' but Limited Retribution: China's Response to U.S. Arms Sales to Taiwan," *China Brief* 11, no. 19 (2011): 3-7; and Lotta Danielsson, ed., "Chinese Reactions to Taiwan Arms Sales" (report prepared by the US-Taiwan Business Council and the Project 2049 Institute, Arlington, Va., March 2012). The report emphasizes that "past behavior indicates

us as somewhat puzzling that the typical PRC response to US arms sales hasn't been more forceful, especially since Beijing has been willing to retaliate against other countries and in other issue areas when its interests

that China is unlikely to challenge any fundamental U.S. interests in response to any future" arms sales to Taiwan (p. iv). In addition to strong verbal protests, suspended meetings and manipulation of bilateral military exchanges, China has at times hinted at a stronger response. In 2010, for instance, some Chinese officials suggested future US arms sales could lead to sanctions against US companies. See Danielsson, ed., "Chinese Reactions to Taiwan Arms Sales," 26. Douglas H. Paal suggests that China has in the past retaliated quietly against US companies involved in arms sales, noting that Boeing has "been made to sit in the penalty box previously for arms sales." Overall, though, Paal emphasizes the generally subdued nature of PRC responses to US arms sales (emphasizing, for instance, that "policy appears to be in cool and rational hands"). See Douglas H. Paal, "China: Reaction to Taiwan Arms Sales," Carnegie Endowment for International Peace Web Commentary, January 31, 2010, <http://carnegieendowment.org/2010/01/31/china-reaction-to-taiwan-arms-sales/3zc7>. Hickey notes that the large 2001 arms sales announcement was preceded by some implicit PRC threats; the actual Chinese response, however, was quite muted. See Dennis Van Vranken Hickey, "Continuity and Change: The Administration of George W. Bush and US Policy toward Taiwan," *Journal of Contemporary China* 13, no. 40 (August 2004): 466. Medeiros argues that the US decision to sell 150 F-16s to Taiwan in 1992 led to a less cooperative Chinese posture on proliferation issues, although the authors of the report "Chinese Reactions to Taiwan Arms Sales" are more skeptical in this regard (p. 23), suggesting instead that the sale provided but a pretext for the PRC to pursue policies that it would have pursued anyway. See Evan S. Medeiros, *Reluctant Restraint: The Evolution of China's Nonproliferation Policies and Practices, 1980-2004* (Stanford: Stanford University Press, 2007), 134-36. It is also worth noting that some Chinese experts see arms sales as only a short-term interruption to the development of Sino-US relations, rather than as something that undermines the foundation of the relationship. See Bian Qingzu, "Dui 2010 nian Zhong-Mei liangguo boyi de sikao" (A reflection on China-US gamesmanship in 2010), *Heping yu fazhan* (Peace and Development) (Beijing) 120, no. 2 (2011): 21-27. China's general unwillingness to react vigorously to US sales has led to some frustrations among Chinese analysts and military officials, who have at times advocated a tougher, tit-for-tat response. John W. Garver notes, for instance, that military leaders wanted to see a strong response to the 1992 F-16 sale, and were ultimately overruled by Deng Xiaoping. In 2010 Rear Admiral Yang Yi (杨毅), a prominent defense analyst, called for tougher sanctions against US companies involved in arms sales, and high-profile scholar Shi Yinong emphasized that China should impose more significant costs on the US in response to arms sales. See: John W. Garver, *Face Off: China, the United States, and Taiwan's Democratization* (Seattle: University of Washington Press, 1997), 52; "Zhuanjia: rang Mei geng tongku de ganshoudao sunhai Zhongguo liyi de daijia" (Experts: Make US painfully aware of the cost of damage to China's interest), *Xinhua Net*, January 8, 2010, [http://news.xinhuanet.com/mil/2010-01/08/content\\_12776204.htm](http://news.xinhuanet.com/mil/2010-01/08/content_12776204.htm); "Jiefangjun shaojiang jianyi zhicai Meiguodui Tai junshou qiye" (PLA rear admiral recommends imposing sanctions on US enterprises' arms sales to Taiwan), *Xinhua Net*, January 7, 2010, [http://big5.xinhuanet.com/gate/big5/news.xinhuanet.com/mil/2010-01/07/content\\_12767991.htm](http://big5.xinhuanet.com/gate/big5/news.xinhuanet.com/mil/2010-01/07/content_12767991.htm). See also remarks by Wang Jisi in Zhao's interview; Wang notes that some Chinese believe that Beijing needn't back down as much now that China had grown stronger. See: Zhao Lingmin, "Zhong-Mei guanxi: Zhongguo ruhe qude zhudong: zhuanfang Beijing daxue guoji guanxi xueyuan yuanzhang Wang Jisi jiaoshou" (Will China dominate U.S.-China relations? An interview with Professor Wang Jisi, dean of the School of International Studies at Peking University), *Nanfengchuang* (South Reviews) (Guangzhou), 2010, no. 12:44.



are threatened. In the past, for instance, China was willing to sanction both the Netherlands and France for selling weapons to Taiwan, and both countries ultimately reversed course on the issue.<sup>11</sup> More recently, China reacted strongly to the 2010 Japanese arrest of a Chinese fishing boat skipper near the disputed Diaoyu/Senkaku islands, and has retaliated against Norway for the awarding of the 2010 Nobel Peace Prize to Chinese dissident Liu Xiaobo (劉曉波).<sup>12</sup> And China has at times been willing to retaliate against Washington when US actions threaten Chinese interests in other issue areas. After the US levied tariffs on Chinese tires in 2009, for instance, China quickly responded by imposing tariffs on US automobile products and chicken meat.<sup>13</sup>

Why, on the issue of US arms sales to Taiwan, does the PRC response seem to be mostly bark, with little bite? Is the PRC response likely to remain this way? Or should we expect—as implied by many advocating reduced US arms sales to Taiwan—that arms sales will in the future lead to more substantial turbulence in US-China relations?<sup>14</sup> What factors would lead to such an outcome? Answering these questions is difficult because the arms sales issue is exceptionally complicated.

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<sup>11</sup>On the Netherlands case, see: Cheng-yi Lin, “Bayiqi gongbao hou Meiguo dui Tai junshou zhengce” (US Arms Sales Policy towards Taiwan since the August 17 Communiqué), *Oumei yanjiu* (Journal of European and American Studies) (Taipei) 23, no. 3 (September 1993): 41. On the France case, see for instance: “China Threatens U.S. with Sanctions,” *Chicago Tribune*, January 8, 1993, [http://articles.chicagotribune.com/1993-01-08/business/9303151606\\_1\\_beijing-considers-taiwan-part-foreign-eco-economic-relations-chinese-development-projects](http://articles.chicagotribune.com/1993-01-08/business/9303151606_1_beijing-considers-taiwan-part-foreign-eco-economic-relations-chinese-development-projects). The text of the 1994 France-PRC communiqué, in which France promised not to allow French companies to sell arms to Taiwan, is available at: <http://big5.fmprc.gov.cn/gate/big5/www.fmprc.gov.cn/chn/pds/ziliao/1179/t23831.htm>. Also see Qian Qichen’s detailed discussion on the Sino-French relationship over the arms sales: Qian Qichen, *Wajiao shiji* (Ten stories of a diplomat) (Beijing: Shijie zhishi chubanshe, 2003), chapter 9.

<sup>12</sup>Keith Bradsher and Hiroko Tabuchi, “China Is Said to Halt Trade in Rare-Earth Minerals with Japan,” *New York Times*, September 24, 2010, [http://www.nytimes.com/2010/09/25/business/global/25minerals.html?\\_r=1&ref=asia](http://www.nytimes.com/2010/09/25/business/global/25minerals.html?_r=1&ref=asia); “Cold Shoulder: Norway Considers Avenging Chinese Bullying,” *The Economist*, February 18, 2012, <http://www.economist.com/node/21547832>.

<sup>13</sup>Keith Bradsher, “China Moves to Retaliate against U.S. Tire Tariff,” *New York Times*, September 13, 2009, <http://www.nytimes.com/2009/09/14/business/global/14trade.html>.

<sup>14</sup>For a discussion of possible future actions China might take in response to US arms sales, see: Danielsson, ed., “Chinese Reactions to Taiwan Arms Sales,” 36-37.

In this article, we construct a formal model of US arms sales to Taiwan, and use the model to generate predictions about future Chinese reactions to those sales. Our model suggests that China faces a tradeoff when responding to US arms sales. On the one hand, domestic pressures and concern that arms sales improve Taiwan's bargaining leverage vis-à-vis the PRC push China to retaliate against the US. By sanctioning the US, China both ameliorates domestic nationalists demanding strong action and at the same time raises the costs to Washington of continuing with arms sales. On the other hand, however, by responding strongly to US arms sales, Beijing runs the risk that the US will continue with the sales despite the high costs; in turn, the higher costs signal a stronger US commitment to Taiwan that could undercut the PRC's future bargaining leverage vis-à-vis the island. We show that several variables determine how China makes this tradeoff, including the magnitude of US arms sales to Taiwan, prior Chinese beliefs about how strongly committed to Taiwan the US is, and how much additional leverage revealed US support for Taiwan provides the island in its bargaining with Beijing over sovereignty-related issues. We then consider broader implications arising from the model, focusing in particular on two scenarios. First, we consider how the signing of a cross-Strait peace agreement would affect the dynamic of US arms sales to Taiwan and the PRC response to those sales. Second, we consider how partisan turnover in Taiwan, and PRC beliefs about the durability of KMT governance on the island, affect these dynamics.

### **The Determinants and Consequences of US Arms Sales to Taiwan: Insights from the Existing Literature**

In this section we briefly discuss some important insights that emerge from prior studies of US arms sales to Taiwan. We highlight some of the factors that other scholars have shown to affect US arms sales decisions, and we draw from the existing literature in considering some of the consequences of those arms sales decisions.



Existing studies make clear that a diverse set of motivations drives US arms sales to Taiwan.<sup>15</sup> On the one hand, strategic considerations are certainly salient. There exists a fairly widespread belief in the American policy community that the US has an important interest in Taiwan's security,<sup>16</sup> and a number of analysts, in turn, see US national interests as being a central factor driving US arms sales decisions.<sup>17</sup> Chinese analysts often point to a US desire to balance or contain Chinese power as being a key factor driving US arms sales,<sup>18</sup> while US analysts sometimes see

<sup>15</sup>For studies that consider, systematically, the determinants of US arms sales to Taiwan, see for instance: Zhang Qingmin, "Zhong-Mei guanxi zhong de Meiguo shou Tai wuqi wenti" (The issue of US arms sales to Taiwan in Sino-American relations), *Waijiao xueyuan xuebao* (Journal of Foreign Affairs College) (Beijing), 1994, no. 1:84-92; Zhang Qingmin and Luo Binhui, "Waijiao juece moshi yu Meiguo dui Tai junshou zhengce juejing yinsu fenxi" (Foreign policy decision-making models and analysis of factors determining American arms sales policy toward Taiwan), *Meiguo yanjiu* (American Studies Quarterly) (Beijing) 20, no. 3 (2006): 29-48; Wei-Chin Lee, "US Arms Transfer Policy to Taiwan: From Carter to Clinton," *Journal of Contemporary China* 9, no. 23 (2000): 53-75; John P. McClaran, "U.S. Arms Sales to Taiwan: Implications for the Future of the Sino-U.S. Relationship," *Asian Survey* 40, no. 4 (July-August 2000): 622-40; Du Yanyun, "Meiguo jieru taihai shiwu de dongyin fenxi" (Analysis of the US's motives in intervening in Taiwan Strait affairs), *Guoji wenti yanjiu* (China International Studies) (Beijing), 2008, no. 9 (September): 199-200.

<sup>16</sup>For arguments along these lines, and various reasons underpinning that interest, see for instance: Thomas J. Christensen, "The Contemporary Security Dilemma: Deterring a Taiwan Conflict," *Washington Quarterly* 25, no. 4 (Autumn 2002): 7-21; Rigger, "Why Giving Up Taiwan Will Not Help Us with China"; Tucker and Glaser, "Should the United States Abandon Taiwan?" Of course, these views are contested, and some have suggested that the US does not have a large interest in Taiwan. See, for instance, Bill Owens, "America Must Start Treating China as a Friend," *Financial Times*, November 17, 2009, <http://www.ft.com/intl/cms/s/0/69241506-d3b2-11de-8caf-00144feabdc0.html#axzz2REBX57hW>; Glaser, "Will China's Rise Lead to War?" For an overview of their arguments, see Dai Weilai, "Meiguo 'qitailun' fazhan yanbian fenxi" (Analysis on the issue of the "US abandoning Taiwan"), *Taiwan yanjiu* (Taiwan Studies) (Beijing), no. 118 (2012): 36-41.

<sup>17</sup>See for instance Zhang, "Zhong-Mei guanxi zhong de Meiguo shou Tai wuqi wenti"; He Huoping, "Ma Yingjiu shangtaihou Meiguo dui Tai junshou wenti tanxi" (Analysis of the issue of US arms sales to Taiwan since Ma Ying-jeou came to power), *Chanye yu keji luntan* (Industrial and Science Tribune) (Shijiazhuang) 8, no. 1 (2009): 45-47; Pan Zhongqi, "Meiguo dui Tai 'zhanlue mohu' zhengce de san da kunjing" (The triple dilemma of the "strategic ambiguity" policy of the United States toward the Taiwan issue), *Shijie jingji yu zhengzhi* (World Economics and International Politics) (Beijing), 2003, no. 1:21-25.

<sup>18</sup>See He Feng and Xu Xiaodi, "Xianshizhuyi zhudaoxia de Mei Tai junshou guanxi (1992-2008)" (US arms sales to Taiwan: relationship under realism [1992-2008]), *Guangzhou shehuizhuyi xueyuan xuebao* (Journal of Guangzhou Institute of Socialism) (Guangzhou), no. 34 (2010): 42-48; Wang Liang, Huang Chengjun, and Xie Yangbin, "Meiguo dui

arms sales as contributing to regional stability. Tucker and Glaser, for instance, suggest that arms sales facilitate peaceful settlement of the cross-strait dispute by giving Taiwan greater confidence when negotiating with Beijing.<sup>19</sup> On the other hand, however, a range of domestic political calculations also appear to be important drivers of arms sales decisions. For example, arms sales to Taiwan help to generate US jobs and stimulate the US economy.<sup>20</sup> They benefit politically important constituencies, such as arms manufacturers and the states/districts in which arms manufacturing facilities are located.<sup>21</sup> Other studies also highlight the importance of Congressional-Executive conflict<sup>22</sup> or bureaucratic politics<sup>23</sup> in helping to shape decisions.<sup>24</sup>

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Taiwan junshou fenxi" (Analysis of the United States' arms sales to Taiwan), *Xue lilun* (Theory Research) (Changsha), 2011, no. 21:34-36; Xia Liping, "Aobama zhengfu de Taihai zhengce jiqi yingxiang" (The Obama administration's Taiwan Strait policy and its impacts), *Meiguo yanjiu* (American Studies Quarterly) (Beijing) 25, no. 2 (2011): 70-94.

<sup>19</sup>Tucker and Glaser, "Should the United States Abandon Taiwan?"

<sup>20</sup>Ibid.; McClaran, "U.S. Arms Sales to Taiwan," 634-36; Wang, Huang, and Xie, "Meiguo dui Taiwan junshou fenxi," 34-36.

<sup>21</sup>For instance, many studies emphasize that the George H. W. Bush administration's 1992 decision to sell F-16s to Taiwan was heavily influenced by the fact that F-16s are manufactured in Texas, which was an important state for Bush to win in 1992. See: Dennis Van Vranken Hickey, *United States-Taiwan Security Ties: From Cold War to Beyond Containment* (Westport, Conn.: Praeger, 1994); Medeiros, *Reluctant Restraint*; Mann, *About Face*; Nancy Bernkopf Tucker, *Strait Talk: United States-Taiwan Relations and the Crisis with China* (Cambridge, Mass.: Harvard University Press, 2009).

<sup>22</sup>Goldstein and Shriver, "An Uncertain Relationship," 147-72; Zhang and Luo, "Waijiao juece moshi," 29-48; McClaran, "U.S. Arms Sales to Taiwan," 622-40; Winberg Chai, "The Taiwan Factor in U.S.-China Relations: An Interpretation," *Asian Affairs* 29, no. 3 (Fall 2002): 136.

<sup>23</sup>Zhang and Luo, "Waijiao juece moshi," 29-48; Zhang Qingmin, "Zhong Mei jianjiao qianhou Meiguo shou Tai wuqi jiqi zhengce de quelii" (U.S. arms sales to Taiwan before and after the normalization of Sino-U.S. diplomatic relations and the formulation of U.S. arms sales policy to Taiwan), *Waijiao xueyuan xuebao* (Journal of Foreign Affairs College) (Beijing), 2002, no. 3:24-35; Zhang Qingmin, "Meiguo dui Tai junshou juece de guanliao zhengzhi yinsu" (The bureaucratic politics of US arms sales to Taiwan), *Guoji zhengzhi kexue* (Quarterly Journal of International Politics) (Beijing), 2006, no. 1:28-61.

<sup>24</sup>Zhang and Luo, and Wu and Tung emphasize the need to consider both international and domestic political factors in tandem to get a full picture of US arms sales decisions. Zhang and Luo, "Waijiao juece moshi," 29-48; Wu Han and Tung Hui-ming, "Mei-Zhong-Tai sanjiao guanxi dui Mei-Tai junshou zhi yingxiang: cong shuangceng saiju lilun fenxi" (The impact of U.S.-Taiwan arms sales on U.S.-China-Taiwan trilateral relations: an analysis of "two-level games" theory), *Zhanwang yu tansuo* (Prospect & Exploration) (Taipei) 7, no. 5 (May 2009): 32-52.

The distinction between a national-interest based strategic logic for US arms sales, versus a domestic political logic, is an important one that we incorporate into our model below. Simply put, we believe that Beijing's understanding of US motivations in selling arms to Taiwan is likely to influence how China responds to those arms sales. If, for instance, PRC officials believe that arms sales are driven primarily by a domestic-political logic (as, for example, a payoff to politically influential defense contractors), then PRC decision-makers might conclude that retaliation against US companies will be an effective way to pressure the US on the issue. Doing so would create a new US domestic constituency with a strong stake in ending arms sales. On the other hand, if PRC officials believe that the US is motivated principally by national security considerations, then Chinese decision-makers might conclude that sanctions are likely to be ineffective—and indeed could backfire by heightening US concerns about Chinese intentions and thus perhaps increasing the perceived need in Washington to offer support to Taiwan.

Existing studies likewise suggest that US arms sales to Taiwan generate a complex set of consequences. In addition to improving Taiwan's defense capabilities,<sup>25</sup> arms sales have an important symbolic value, as they help to signal a continued US commitment to Taiwan's security.<sup>26</sup> Meanwhile, arms sales, as hinted at above, can provoke a strong nationalist response in the PRC,<sup>27</sup> and can also generate controversy in Taiwan due

<sup>25</sup>Although some suggest that actual US arms sales packages are inefficient in this regard. See, for instance, Murray, who is critical of some of the more expensive weapons systems considered in arms sales packages, arguing that Taipei should instead pursue what he terms a "porcupine" strategy. Yang makes a similar argument. Other scholars argue that even large arms sales packages might not be useful because of China's overwhelming capability. William S. Murray, "Revisiting Taiwan's Defense Strategy," *Naval War College Review* 61, no. 3 (Summer 2008): 13-38; Shih-yue Yang, "Junshi de zhuan ye huo zhengzhi de kaoliang? Dui 'haozhu zhanlüe' pipan de fansi" (Military? Politics? Reflections on the critiques of the "porcupine strategy"), *Yuanjing jijinhui jikan* (Prospect Quarterly) (Taipei) 10, no. 4 (October 2009): 83-120; David Shambaugh, "A Matter of Time: Taiwan's Eroding Military Advantage," *Washington Quarterly* 23, no. 2 (Spring 2000): 119-33.

<sup>26</sup>Chase, "'Strong Indignation,' but Limited Retribution," 3-7; Kenneth Lieberthal, "Preventing a War over Taiwan," *Foreign Affairs* 84, no. 2 (March-April 2005): 53-63.

<sup>27</sup>Many editorials in Chinese newspapers are strongly critical of announcements of US arms sales to Taiwan. See, for instance, Zhongsheng (pseudonym), "Huashengdun zhengzhi

in part to the large costs involved.<sup>28</sup> Finally, arms sales matter to the PRC not only because of their strategic implications (the arms, and the US commitment that they signal, help to neutralize PRC power vis-à-vis Taiwan) but also because they symbolize interference in China's internal affairs.<sup>29</sup> Just as the motivations for US arms sales are likely to influence China's response, so too are the consequences of those arms sales. For instance, we might suspect that PRC officials will be more alarmed by arms sales to the extent that they have a large impact on the cross-strait balance of power, or to the extent that they provoke nationalist outrage among Chinese "netizens."<sup>30</sup>

In the remainder of this article, we construct a formal model of US arms sales to Taiwan and explore its implications. We recognize at the

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de beiai" (Political sorrow in Washington, D.C.), *Renmin ribao* (People's Daily), September 9, 2011, <http://world.people.com.cn/GB/15624020.html>; "Meiguo shou Tai wuqi, hewei yierzai zaiersan?" (Why does the U.S. keep selling arms to Taiwan?), *Caixun*, September 21, 2011, <http://international.caixun.com/content/20110921/NE02u8m4-all.html>; Tianyuan (pseudonym), "Dui Tai junshou shi yikuai juda jiaoshi" (Arms sales to Taiwan is a huge rock), *Jiefangjun bao* (PLA Daily), September 23, 2011, [http://www.mod.gov.cn/intl/2011-09/23/content\\_4300182.htm](http://www.mod.gov.cn/intl/2011-09/23/content_4300182.htm). Arms sales also generate strong nationalist sentiments online. For instance, the results of a poll held on the Chinese website "Zhanlie wang" (china1iss.com) indicate that approximately 95% of respondents advocated a tough response to the 2011 arms sales announcement. See: <http://www.china1iss.com/pk/index/247>. See also the open letter to President Obama written by Liu Jinhua, a Chinese netizen, on the "Forum on Huanqiu wang" (bbs.huanqiu.com); the post attracted hundreds of supporters and was reposted on other online forums. See: <http://bbs.huanqiu.com/thread-834321-1-1.html>. See also: "China Fumes after US Arms Sales to Taiwan," *Financial Times*, February 1, 2010, <http://www.ft.com/cms/s/0/f0587fc6-0ee5-11df-bd79-00144feabdc0.html#axzz2YFOy5htA>.

<sup>28</sup>On the domestic politics of arms sales in Taiwan, see Michael S. Chase, "Taiwan's Arms Procurement Debate and the Demise of the Special Budget Proposal: Domestic Politics in Command," *Asian Survey* 48, no. 4 (July-August 2008): 703-24. One 2009 poll shows that 36.8% of Taiwan's respondents believe buying arms is unnecessary spending. See: Cao Yi-wen, "yuanjian mindiao 64% ren zhongguo buhui duitai dongwu, 43% biao meiguo zhongshi Taiwan" (Global Views Survey: 64% of people in Taiwan believe China will not use of force against Taiwan, 43% people consider the U.S. will emphasize Taiwan), *Nownews*, April 22, 2009, <http://www.nownews.com/2009/04/22/162-2440356.htm>.

<sup>29</sup>Chinese reactions to arms sales typically emphasize this point. See, for instance, John Pomfret, "US Sells Weapons to Taiwan, Angering China," *Washington Post*, September 30, 2010.

<sup>30</sup>On the growing importance of "netizens" in influencing PRC foreign policy, see for instance, Da Wei, "Has China Become 'Tough'?" *China Security* 6, no. 3 (2010): 38.

outset that some might question the utility of such an exercise.<sup>31</sup> Formalization comes with significant costs, in terms of readability and in terms of the simplifying assumptions that we embed in our model. However, we nevertheless believe that this endeavor is a highly useful one for several reasons.<sup>32</sup> First, as our discussion in this section makes clear, the issue of US arms sales to Taiwan is complex: existing studies have identified a range of determinants and consequences of these sales. One of our aims in constructing our model is to take some of these different variables identified as being germane in prior studies and incorporate them into a single framework, showing how they relate to each other. In this regard, our model serves an organizational purpose.<sup>33</sup> Second, and relatedly, our model aims to simplify this complex reality in such a way as to make it more navigable, in much the way that a map simplifies complex topographical realities.<sup>34</sup> In so doing, it is our hope that the model will shed light on some interesting empirical questions, such as China's general unwillingness to retaliate forcefully against the US for selling arms to Taiwan. Finally, the model provides a framework for assessing how possible scenarios might affect future PRC responses to US arms sales; the model, in other words, serves a predictive function. For instance, we use the model to consider how possible future events, such as the signing of a cross-Straits peace accord, or a change in governing party in Taiwan, could impact on US arms sales decisions and likely Chinese responses. We develop our model in the following section.

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<sup>31</sup>For a critique of the use of formal theory in security studies, see Stephen M. Walt, "Rigor or Rigor Mortis? Rational Choice and Security Studies," *International Security* 23, no. 4 (Spring 1999): 5-48.

<sup>32</sup>For a discussion of different types of models, and their purposes, see Kevin A. Clarke and David M. Primo, *A Model Discipline: Political Science and the Logic of Representations* (Oxford and New York: Oxford University Press, 2012). We draw heavily from their work in the sentences that follow.

<sup>33</sup>On organizational models, see *ibid.*, 87-90.

<sup>34</sup>Clarke and Primo make extended use of the map metaphor. On models deemed as being useful because they help to simplify complex realities, see also Emerson M. S. Niou and Peter C. Ordeshook, "Return of the Luddites," *International Security* 24, no. 2 (Fall 1999): 93-94.

## A Model of US Arms Sales to Taiwan

There are numerous ways one could go about constructing a model meant to capture important dimensions of the arms sales issue. For instance, one might build a model around the domestic U.S. politics of arms sales, focusing on dynamics such as executive-legislative conflict or different interests between principals (the President) and agents (the military and other bureaucratic actors). However, since our primary interest lies in understanding PRC responses to arms sales, we construct our model with an eye toward the important consequences of arms sales for Chinese interests. In this section, we present the basic structure of our model and discuss some of our modeling choices. We also summarize some of the findings emerging from the model. The full specification, including technical details and the formal solution to the model, are presented in the appendix. We begin by considering how US arms sales impact Chinese interests, and how these effects should be incorporated into a model.

### *Thinking about the Effects of Arms Sales on Chinese Interests*

US arms sales to Taiwan have the potential to impose at least two broad types of costs on China. First, as noted in the introduction to this article, arms sales are widely viewed in China as constituting a blatant infringement of Chinese sovereignty. Arms sales are thus costly to China because they represent an affront to national dignity. From the perspective of the Chinese leadership, arms sales may generate sincere anger (which we could model as a cost), but perhaps more importantly, arms sales have the potential to enrage public opinion. Chinese leaders could potentially incur significant audience costs, in other words, if they fail to defend China's dignity by responding to arms sales in a sufficiently resolute fashion.<sup>35</sup> Thus the first type of costs that arms sales impose on

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<sup>35</sup>On Chinese nationalism as a constraint on Chinese foreign policy, see for instance Susan L. Shirk, *China, Fragile Superpower: How China's Internal Politics Could Derail Its Peaceful Rise* (New York: Oxford University Press, 2007); Peter Hayes Gries, *China's New Nationalism: Pride, Politics, and Diplomacy* (Berkeley: University of California Press,



China centers on the effect of arms sales on national pride and the attendant audience costs the resulting public anger imposes on the Chinese leadership. Intuitively, the size of these costs should be contingent on both the magnitude of arms sales to Taiwan (in terms of quantity and quality) and the way in which China responds to the sales. Chinese officials and the Chinese public are likely to view high-magnitude sales as more insulting, *ceteris paribus*. The degree to which China suffers “dignity costs” in this regard, meanwhile, should be reduced to the extent that China is able to retaliate in a way that restores national dignity.

The second type of cost US arms sales to Taiwan impose on China centers on PRC bargaining power in the Taiwan Strait. In a nutshell, US arms sales to Taiwan make it more difficult for the PRC to achieve a settlement to its liking on the issue of Taiwan’s sovereign status. This sort of effect can materialize in at least two distinct ways. First, arms sales improve Taiwan’s defense capabilities, at least to some extent. On the margins, then, arms sales should make military force a less attractive option for the PRC, as they increase the costs the PRC would incur in a cross-Strait military conflict. Second, arms sales may have a more indirect effect on Taiwan’s bargaining power by signaling some level of US commitment to Taiwan. The United States has been ambiguous about whether and how it would intervene in a China-Taiwan conflict, for reasons that are beyond the scope of the present article.<sup>36</sup> What is important for our purposes is that US intervention would at a minimum greatly complicate the PRC’s ability to prevail in a cross-Strait conflict. To the extent

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2005); Yanan He, *The Search for Reconciliation: Sino-Japanese and German-Polish Relations since World War II* (New York: Cambridge University Press, 2009). On audience costs in China, see Jessica Chen Weiss, “Autocratic Signaling, Mass Audiences and Nationalist Protest in China,” *International Organization* 67, no. 1 (January 2013): 1-35.

<sup>36</sup>For discussions of the US policy of strategic ambiguity in the Taiwan Strait, see for instance, Christensen, “The Contemporary Security Dilemma,” 7-21; Scott L. Kastner, “Ambiguity, Economic Interdependence, and the US Strategic Dilemma in the Taiwan Strait,” *Journal of Contemporary China* 15, no. 49 (November 2006): 651-69; Richard C. Bush, *Untying the Knot: Making Peace in the Taiwan Strait* (Washington, D.C.: Brookings Institution, 2005); Nancy Bernkopf Tucker, “Strategic Ambiguity or Strategic Clarity?” in *Dangerous Strait: The U.S.-Taiwan-China Crisis*, ed. Nancy Bernkopf Tucker (New York: Columbia University Press, 2005), 186-211.

that US intervention is seen by Taiwan and China as likely, then, Taiwan's bargaining power vis-à-vis the PRC should increase. Moreover, to the extent that US arms sales to Taiwan are costly for Washington, they could inform PRC and Taiwan assessments of likely US behavior by signaling some US interest in Taiwan's security. That is, if the US continues to sell arms to Taiwan despite these sales imposing high costs on the US (for instance, due to Chinese retaliation), then the sales effectively indicate a strong US interest in Taiwan's security.<sup>37</sup>

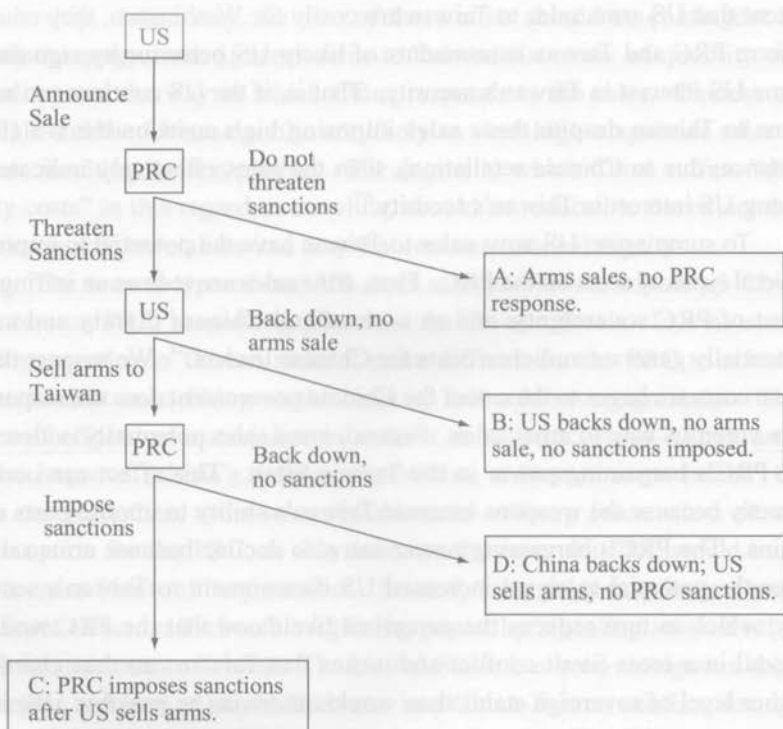
To summarize, US arms sales to Taiwan have the potential to impose several types of costs on the PRC. First, arms sales are seen as an infringement of PRC sovereignty, and as such offend Chinese dignity and can potentially generate audience costs for Chinese leaders.<sup>38</sup> We suspect that these costs are larger to the extent the Chinese government does not respond in a vigorous way to arms sales. Second, arms sales potentially undercut the PRC's bargaining power in the Taiwan Strait. This effect can occur directly because the weapons increase Taiwan's ability to impose costs on China. The PRC's bargaining power can also decline because arms sales have the potential to signal increased US commitment to Taiwan's security, which in turn reduces the perceived likelihood that the PRC would prevail in a cross-Strait conflict and means that Taiwan can thus claim a higher level of sovereign status than would otherwise be possible. We integrate these different types of costs into the model outlined below.

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<sup>37</sup>In other words, when the US sells arms to Taiwan even in the face of PRC retaliation, the arms sales represent a costly signal of US support. For applications of costly signals to international politics, see for instance: James D. Fearon, "Signaling Foreign Policy Interests: Tying Hands versus Sinking Costs," *Journal of Conflict Resolution* 41, no. 1 (February 1997): 68-90; Erik Gartzke, Quan Li, and Charles Boehmer, "Investing in the Peace: Economic Interdependence and International Conflict," *International Organization* 55, no. 2 (Spring 2001): 391-438; James D. Morrow, "Signaling Difficulties with Linkage in Crisis Bargaining," *International Studies Quarterly* 36, no. 2 (June 1992): 153-72.

<sup>38</sup>On the concept and application of audience costs in the international relations literature, see, for instance, Michael Tomz, "Domestic Audience Costs in International Relations: An Experimental Approach," *International Organization* 61, no. 4 (October 2007): 821-40; Kenneth A. Schultz, *Democracy and Coercive Diplomacy* (Cambridge: Cambridge University Press, 2001); Jessica L. Weeks, "Autocratic Audience Costs: Regime Type and Signaling Resolve," *International Organization* 62, no. 1 (January 2008): 35-64; Weiss, "Autocratic Signaling," 1-35.

Figure 1  
A Simple Model of US Arms Sales to Taiwan



### Model

In this subsection we present the basic structure and intuition behind our model (see figure 1). For a full specification, see the appendix.

We assume two actors, the United States and China. The United States begins by announcing an arms sale to Taiwan (where the US chooses the amount of arms to be sold), after which the PRC is given the opportunity to threaten sanctions against the US. If the PRC does not threaten sanctions, the game ends at outcome A; here the US sells the weapons it had previously announced with no PRC retaliation. If the PRC does threaten sanctions, it also chooses the level of sanctions (low, medium or high). The US can then either back down, or it can follow through on the

sale. If the US backs down, the game ends with outcome B; here the US does not sell the weapons it had announced and the PRC consequently does not carry through on its threat. If the US follows through on the sale, the PRC has the option either to implement the threatened sanctions, or back down. If it implements the sanctions, the game ends with outcome C: here, the US sells the weapons to Taiwan and the PRC imposes sanctions in retaliation. If the PRC backs down, the game ends with outcome D; here the US sells the weapons to Taiwan and the PRC does not impose sanctions in response.<sup>39</sup>

As noted in the previous subsection, the US has been ambiguous about whether and how it would intervene in the event of a cross-strait military confrontation. The model takes into account this ambiguity by assuming that there are two possible types of US, one that has a strong interest in Taiwan's security, and one that does not. The model assumes that both types of US obtain some economic and political benefits associated with selling weapons to Taiwan, but the type of US that is strongly committed to Taiwan's security derives additional benefits associated with improving the island's defense capabilities. We also assume that both types of US would incur some audience costs (the US would look weak internationally, domestic critics of the president would make political hay, etc.) for announcing a weapons sale and then backing down, and both types of

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<sup>39</sup>Our model follows the basic structure embedded in many formal sanctions models, where a sanctioning state is given the opportunity to make a demand. The target state is given the option of acquiescing, and the sanctioning state then has the option of imposing sanctions if the target state does not acquiesce (some models again allow for target state acquiescence after sanctions have been imposed). Given the nature of our puzzle, we have chosen to endogenize the level of sanctions threatened by the PRC, and to incorporate uncertainty concerning US type. In so-tailoring our model to the specific issue of arms sales to Taiwan, we depart from some other formal sanctioning models, such as Krustev and Drezner, who endogenize the demands made by the state threatening sanctions, or Lacy and Niou, who incorporate two-sided uncertainty. See Daniel W. Drezner, "Conflict Expectations and the Paradox of Economic Coercion," *International Studies Quarterly* 42, no. 4 (December 1998): 709-31; Valentin L. Krustev, "Strategic Demands, Credible Threats, and Economic Coercion Outcomes," *International Studies Quarterly* 54, no. 1 (March 2010): 147-74; Dean Lacy and Emerson M. S. Niou, "A Theory of Economic Sanctions and Issue Linkage: The Role of Preferences, Information, and Threats," *Journal of Politics* 66, no. 1 (February 2004): 25-42.

US would also suffer some costs—proportional to the level of sanctions imposed by China—if the PRC chooses to impose sanctions after the US sells arms to Taiwan.

The model further assumes that the PRC is uncertain as to which type the US is; instead, the PRC only has prior beliefs in this regard. As also noted in the previous subsection, we assume that the PRC and Taiwan have similar beliefs about US type. To the extent that the US is believed to be the sort that has a strong interest in Taiwan, Taiwan is able to claim more sovereign status than would otherwise be possible, implying higher costs to the PRC. The PRC is thus assumed to pay costs proportional to PRC beliefs about what type the US is; the more confident the PRC is that the US is the type that is strongly committed to Taiwan, the higher these costs are assumed to be. The model assumes, moreover, that US arms sales behavior can inform PRC assessments of US type. More specifically, if the US proceeds with an arms sale to Taiwan despite a credible PRC sanctioning threat (more on this momentarily), the sale reveals the US to be the type that is strongly committed to Taiwan when the cost of the sanctions is high enough relative to (a) the economic/political benefits the US reaps from arms sales and (b) the audience costs the US incurs for backing away from an announced arms sale (only the type of US with a strong interest in Taiwan's security would continue with the sales under these conditions). The model thus paints sanctions as a double-edged sword for China: on the one hand, sanctions can impose costs on the US for selling arms to Taiwan, which can lead to reduced arms sales if the US is not highly committed to Taiwan's security. On the other hand, sanctions can potentially reveal the US to be more strongly committed to Taiwan than previously believed, which in turn imposes costs on China by enabling Taiwan to claim a greater level of status than would otherwise be possible.

All arms sales to Taiwan are assumed to impose direct costs on the PRC in proportion to the level of the sales; these direct costs arise due to the improvement in Taiwan's bargaining leverage (relative to how much leverage Taiwan would otherwise have). We assume that the PRC pays some "dignity" costs for allowing US arms sales without any response (i.e., if the game ends in outcome A). These costs are proportional to the

amount of arms sold by the US to Taiwan. Sanctions are assumed to be costly for China if implemented, proportional to the level of sanctions (high, medium or low). And China is assumed to incur some audience costs for threatening sanctions and then backing down.

### *Findings*

The appendix provides a detailed discussion of how the model is solved. Here we simply note a few interesting findings that emerge.

Some of the findings are quite straightforward. For instance, as the value of the announced arms sale to Taiwan increases, *ceteris paribus*, the PRC becomes more likely to threaten, and impose, more substantial sanctions in response. Driving this result, in large measure, are the “dignity costs” the PRC pays for non-response in the event of US arms sales. More substantial sales impose greater dignity costs, which in turn make the PRC less tolerant of outcome A. As arms sales increase, moreover, the direct costs imposed on the PRC as a consequence of Taiwan’s improved leverage increase; the PRC thus has more to gain by trying sanctions that are strong enough to force the types of US not strongly committed to Taiwan’s security to back down.

As noted above, our model suggests that the PRC faces a tradeoff when considering sanctions in response to arms sales. On the one hand, if China threatens sanctions, it opens the door to the possibility that the US will back down and end its arms sales to Taiwan. However, on the other hand, sanctions are potentially costly for the PRC on two levels. First, sanctions impose direct costs on China, due to their economic and diplomatic fallout. For instance, sanctions would likely lead to increased tensions in US-China relations. Second, sanctions impose indirect costs on China if the US proceeds with arms sales despite the sanctions: by selling arms despite PRC sanctions, the US reveals a level of sincere commitment to Taiwan’s defense (which undercuts PRC bargaining power in cross-Strait interactions). Our model offers some guidance in how the PRC is likely to make this tradeoff. Not surprisingly, our findings suggest the PRC should only threaten sanctions if it is at least somewhat confident that the sanctions will work. Since the type of US that is strongly com-



mitted to Taiwan will sell arms even if sanctions are imposed, the PRC only imposes strong sanctions if it believes it likely that the US is not this type. In short, the PRC is more likely to threaten, and impose, stronger sanctions to the extent that it believes the US to be the type that is not strongly committed to Taiwan's security.

More interestingly, our findings suggest that the perceived differences between the two possible "types" of US matter a great deal. In a nutshell, if it is much more costly for the PRC if the US is known to be the type that is committed to Taiwan, relative to how costly it is for the PRC if the US is known not to be highly committed to Taiwan, then the PRC becomes more cautious about using costly sanctions. To see what this means in practice, consider a hypothetical example. Suppose that Beijing believes that Taiwan's foreign policies are highly contingent on perceptions of US commitment to Taiwan. So, for instance, imagine that Beijing believes some hypothetical government in Taiwan will adopt a strongly pro-independence agenda to the extent Taipei believes that the US will "have its back" in the event of a cross-Strait conflict. But imagine that Beijing also believes that this same Taiwan government will be much more cautious—and support the status-quo—if Taiwanese leaders think the US is unlikely to support Taiwan in a cross-Strait conflict. In this case, the difference between the two "types" of US matter a great deal from Beijing's perspective: the difference between a committed US and an uncommitted US is the difference between a pro-independence agenda in Taiwan and a pro-status-quo agenda in Taiwan. In this scenario, our model predicts that Beijing will be relatively cautious in pursuing sanctions against the US, because revealing a stronger US commitment to Taiwan would be highly costly for Beijing. Now consider a second scenario where Beijing believes Taiwan's government to be pro-status quo regardless of likely US behavior in the event of a Taiwan crisis. That is, imagine that the PRC is confident that a hypothetical Taiwan government is sincerely committed to the status quo, and will refrain from pro-independence policies even if Taipei can be confident of US support. In this case, a revealed US commitment to Taiwan is less costly from the PRC's perspective. Our model predicts that the PRC will be more likely

to threaten and impose sanctions against the US in this sort of scenario. More generally, the PRC is more likely to threaten only light sanctions or no sanctions to the extent that there are large downside risks associated with revealing the US to be the highly committed type. If, on the other hand, the costs to the PRC of the US being strongly committed to Taiwan are not so high, then the downside risks of revealing this information are lower, and the PRC becomes more likely to threaten and implement more costly sanctions against the US in response to arms sales. We expand on this point in the following section.

### Broader Implications

In this section we briefly discuss some of the broader implications arising from our model. We structure our discussion here around two possible future scenarios: the signing of a cross-Strait peace agreement, and partisan turnover in Taiwan. We discuss, with reference to our model, what these scenarios might mean for US arms sales to Taiwan and the Chinese response.

#### *A Cross-Strait Peace Agreement*

The possibility of a cross-Strait peace agreement has been kicked around since at least the 1990s, but the idea seemed to gain greater purchase with the election of Ma Ying-jeou (馬英九) as Taiwan's president in 2008. Ma had advocated such an agreement in the past,<sup>40</sup> and a peace agreement—if constructed properly—seemed like it could be the culmination of the rapid improvement in cross-Strait relations that followed Ma's entry into office. Five years later, a peace agreement seems once again to be a remote possibility. Ma again broached the idea in the fall of 2011,<sup>41</sup>

<sup>40</sup>Zoher Abdoolcarim and Natalie Tso, "Interview with Ma Ying-jeou," *Time Asia*, July 10, 2006, <http://www.taiwandc.org/time-2006-01.htm>.

<sup>41</sup>For Ma's statement about a cross-Strait peace agreement, see Wang Yu-chung, "Ma Talks Peace Deal with China," *Taipei Times*, October 18, 2011, <http://www.taipetimes.com/News/front/archives/2011/10/18/2003516029>.

during his re-election campaign, only to run into a buzz saw of criticism from domestic audiences; Ma quickly set the idea aside.<sup>42</sup> Thus, the idea of a cross-Strait peace agreement strikes us as moribund, at least for the time being. Nevertheless, given the attention this concept has garnered, it is perhaps worthwhile to consider what a cross-Strait peace agreement would mean for US arms sales to Taiwan, if such an agreement were ever to materialize. Our model, in turn, has a good deal to say about these implications.

Since serious negotiations over a cross-Strait peace agreement have never gotten off the ground, what such an agreement would actually look like in practice remains quite murky. Indeed, it is possible to imagine a wide range of possible agreements that differ in terms of formality, specificity, and duration, among other dimensions.<sup>43</sup> Here, we assume a hypothetical future agreement would have the following properties: it would combine a PRC commitment not to use force with a Taiwan commitment not to move toward *de jure* independence; it would gain bipartisan acceptance in Taiwan;<sup>44</sup> and it would be broadly viewed as at least somewhat credible both in the PRC and in Taiwan. What would such an agreement mean for US arms sales to Taiwan?

Obviously, to the extent that a peace agreement were to be viewed as credible in Taiwan, it should lead to reduced demand in Taiwan for US

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<sup>42</sup>For example, DPP leader Tsai Ing-wen criticized the peace agreement as “irresponsible and impetuous.” Ma’s proposal did not receive wide support; one poll found that only 41% of respondents supported the peace agreement. Two days later, Ma issued a statement to defend his proposal and he became silent on this issue thereafter. See Chris Wang, “Peace Proposal Puts Taiwan at Risk: Tsai,” *Taipei Times*, October 20, 2011, <http://www.taipetimes.com/News/front/archives/2011/10/20/2003516192>; “Opinion Poll on Cross-Strait Peace Agreement,” *United Daily News*, October 25, 2011, <http://www.kmt.org.tw/english/page.aspx?type=article&mnum=114&anum=10313>; Cindy Sui, “Taiwan’s Ma: No China Peace Talks without Referendum,” *BBC News*, October 20, 2011, <http://www.bbc.co.uk/news/world-asia-pacific-15387374>.

<sup>43</sup>For an extended discussion of what a cross-Strait peace agreement might look like in practice, see Phillip C. Saunders and Scott L. Kastner, “Bridge over Troubled Water? Envisioning a China-Taiwan Peace Agreement,” *International Security* 33, no. 4 (Spring 2009): 87-114.

<sup>44</sup>For reasons discussed in Saunders and Kastner’s research, a peace agreement that did not enjoy broad support in Taiwan would most likely be ineffectual. See *ibid.*, 87-144.

arms since the principal threat to Taiwan's security would be greatly ameliorated. Of course, it is hard to imagine that a peace agreement would completely alleviate Taiwanese concerns about the possible Chinese use of force, and so Taiwan might potentially continue to seek US arms sales even after reaching a peace agreement with the PRC. However, our model gives some reasons to think that a cross-Strait peace agreement might also influence the arms sales dynamic through other mechanisms.

One possibility is that a cross-Strait peace agreement would affect the broader stake the US has in Taiwan's security. It is possible to imagine, for instance, that some in the United States would interpret a cross-Strait peace agreement as implying that Taiwan is drifting more tightly into China's orbit. The probability that the US is the sort of country with a strong interest in Taiwan's security, in the eyes of China and Taiwan, might consequently decline in such a scenario. If this turns out to be the case, then our model predicts that a peace agreement would lead China to be more willing to impose relatively costly sanctions against the US in response to US arms sales to Taiwan, and for the US, in turn, to be less willing to proceed with extensive sales.

Even if perceptions of US commitment to Taiwan do not change after the signing of a peace agreement, China might still be more willing to impose costly sanctions in response to arms sales for other reasons. More specifically, if an agreement is indeed viewed as at least somewhat credible in Beijing, meaning that PRC leaders believe that Taiwan will likely honor its commitment not to move toward *de jure* independence, then China in essence has less to lose in the event the US is revealed to be the type that is strongly committed to Taiwan's security. In other words, a cross-Strait peace agreement may make costly sanctions less risky for China, because Taiwan is unlikely to capitalize on a revealed strong US commitment by claiming a greater level of sovereign status.

Our analysis here, of course, is conditioned on a peace agreement being both effective and reasonably credible. If such an agreement comes about, our model suggests that it would become much harder for the US to sustain substantial weapons sales to Taiwan, and that the PRC would be more willing to retaliate strongly against US sales. But we remain

skeptical about the likelihood of a cross-Strait peace agreement being realized, at least in the near term.

### *Partisan Turnover in Taiwan*

Perhaps a more likely future scenario concerns partisan turnover in Taiwan. More to the point: is there reason to think that US arms sales to Taiwan, and the PRC response to those sales, are likely to vary depending on which party is in power in Taiwan? Our model suggests some reasons to think this might be the case.

While both the Kuomintang (國民黨, KMT) and especially the Democratic Progressive Party (民主進步黨, DPP) encompass a range of different viewpoints on sovereignty-related issues, we believe it reasonable to start with the assumption here that the DPP's "ideal point" lies closer to formal independence than is the case for the KMT's ideal point. That is, if it were possible to achieve such an outcome, we assume that the DPP would opt for a formally independent Taiwan; we assume that the KMT would prefer to keep some ties to China even if the opportunity for formal independence were to arise.<sup>45</sup>

Given these assumptions, our model suggests that party change in Taiwan should have somewhat counter-intuitive effects. More specifically, our model suggests that the PRC should be more willing to impose costly sanctions against the US in retaliation for arms sales when the KMT is in power, and less willing to do so when the DPP is in power. The reasoning parallels our discussion relating to the peace agreement. In a nutshell, when the DPP is in power, the PRC faces more substantial downside risks if it retaliates strongly in response to US arms sales: strong retaliation could potentially reveal the US to be highly committed to Taiwan's security, which in turn could make the DPP feel more comfortable claiming a higher level of sovereign status than would otherwise be possible. On the other hand, the PRC can feel more confident that the

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<sup>45</sup>These assumptions are consistent with a number of studies of Taiwan voter preferences, such as Emerson M. S. Niou, "Understanding Taiwan Independence and Its Policy Implications," *Asian Survey* 44, no. 4 (July-August 2004): 555-67.

KMT will not capitalize on a strong US commitment by moving closer to formal independence. As such, the PRC need not worry too much about the key downside risk associated with costly sanctions: the possibility the sanctions will reveal the US to be highly committed to Taiwan's security. Presumably this logic would be especially likely to hold to the extent that PRC leaders believe that KMT leadership in Taiwan is entrenched for the long-haul. On the other hand, PRC leaders may be less inclined to sanction the US to the extent they believe the DPP is likely to return to power in Taiwan, as this again opens the door to revealing a US that is strongly committed to Taiwan, which future DPP governments could capitalize on by moving closer to legal independence (than would otherwise be possible).<sup>46</sup>

Our discussion here requires a good deal of qualification, however. Events during the Lee Teng-hui (李登輝) and Chen Shui-bian (陳水扁) administrations suggest that, even to the extent that the US cares strongly about Taiwan's security, its utility arises primarily from preserving a status quo of de facto independence, and that the US derives little benefit from steps toward formal independence by Taiwan. It is thus possible, indeed likely, that some of the assumptions embedded in our model would break down if a future DPP government were to move sharply toward de jure independence. The US, in such a scenario, would likely view arms sales to Taiwan as having declining utility—even if the US cares deeply about Taiwan's security—because they have the potential to facilitate further moves toward independence, which in turn could lead to instability in the region.

## Conclusion

In this article we have constructed a simple model of US arms sales to Taiwan, and the factors that determine how the PRC responds to those

<sup>46</sup>It is worth pointing out that the differences between KMT and DPP positions on arms sales issues are not large, which makes it even more counter-intuitive that party turnover in Taiwan could have a significant impact on PRC handling of the arms sales issue. We thank an anonymous reviewer for making this point.



sales. The model highlights a difficult tradeoff faced by the PRC when responding to US arms sales. Strong retaliation can both make arms sales more costly to the US (and hence potentially bring about a reduction in those sales) and can satisfy domestic PRC audiences frustrated by perceived US intervention in China's internal affairs. But strong retaliation also can potentially reveal stronger US support for Taiwan than previously believed, which in turn can undercut the PRC's bargaining power in the Taiwan Strait. Our model suggests that the signing of a cross-Strait peace agreement could have a significant impact on the arms sales dynamic; in particular, a peace agreement—if credible—could lead the PRC to be much more willing to retaliate strongly against US arms sales to Taiwan. Our model also suggests that the PRC response to US arms sales may be influenced by the party in power in Taiwan. Here, our model suggests that the PRC may have reason to be more cautious in its response to arms sales when the DPP is in power than is the case when the KMT is in power. The model that we constructed, of course, greatly simplifies a complex reality, and as such needs to be treated with some caution. But we believe that this exercise has been useful, and has enabled us to better understand the difficult tradeoffs faced by Beijing in responding to US arms sales to Taiwan.

APPENDIX

We begin by assuming that there are two possible types of US, one that has a strong interest in Taiwan's security (and would aggressively intervene in the event of a cross-Strait military conflict), denoted by  $US_h$ , and one type that does not have such a strong interest (and that would intervene but not as aggressively), denoted by  $US_l$ . We assign  $q$  to denote the costs imposed on China as a consequence of expected US behavior in the event of a cross-Strait conflict. Recall from our discussion in the text that expected US behavior affects the probability of PRC victory in the event of a cross-Strait conflict. In turn, as the probability of PRC victory declines, Taiwan is able to claim a greater level of sovereign status. One way to think about  $q$ , then, is as the amount of additional sovereignty Taiwan can claim (as a consequence of expected US behavior in the event of a Taiwan Strait conflict) relative to how much sovereignty Taiwan would otherwise be able to claim. Assume now that if it is known that the US is the type that has a strong interest in Taiwan,  $q$  takes on a relatively high value, equal to  $q_h$ , while if it is known that the US has a low interest in Taiwan,  $q$  takes on a relatively low value, equal to  $q_l$ . The US has been ambiguous about its likely behavior in the event of a cross-Strait conflict; as such, we assume that at the outset of the game the PRC is uncertain of which type the US is, and hence is uncertain over the value of  $q$ . Rather, the PRC has prior beliefs in this regard, which are as follows:

$$q = q_l \text{ with probability } \alpha;$$

$$q = q_h \text{ with probability } 1 - \alpha.$$

The PRC's expected costs associated with US involvement are incorporated in all PRC payoffs in our model. These costs vary depending on  $\alpha$ , and can be expressed as:

$$\alpha q_l + (1 - \alpha) q_h$$

The United States makes the initial move by announcing the sale of some amount of arms to Taiwan, represented by  $x$ , where:  $x \in [0, \infty)$ ; please refer to figure 1 for the basic structure of the game. The parameter  $x$  can be thought of as capturing both the quality and quantity of the arms; to simplify, we currently assume that  $x$  is exogenous (and then allow it to vary in comparative statics emerging from the model). The PRC then chooses whether to threaten the US with sanctions or not. If the PRC does not make a threat, then the US sells  $x$  arms to Taiwan and the game ends. Both types of US,  $US_h$  and  $US_l$ , are assumed to derive some economic and/or political benefits from selling arms to Taiwan, which for simplicity we

assume are equal to  $x$ . But we assume that  $US_h$  derives some additional benefit from arms sales because the sales improve Taiwan's security to some degree. Thus, for simplicity, we assume that type  $US_l$  derives utility  $x$  from the sale of  $x$  weapons to Taiwan, while type  $US_h$  derives  $k(x)$  utility from the sale of  $x$  arms to Taiwan, where  $k(x)$  is increasing in  $x$ . The PRC, meanwhile, incurs three types of costs in this outcome. First, the PRC suffers a direct loss of bargaining power vis-à-vis Taiwan, which we assume is equal to  $x$ . Second, as discussed above, the PRC pays the costs associated with likely US involvement equal to  $(\alpha q_l + (1 - \alpha)q_h)$ .<sup>47</sup> Finally, the PRC suffers "dignity" costs by allowing arms sales to Taiwan without responding (as suggested in the previous section); these costs take on a value of  $w$  for each unit of arms sold to Taiwan, where  $w \in [0, \infty)$ . The PRC's utility for outcome A is thus:  $-x - (\alpha q_l + (1 - \alpha)q_h)^2 - w(x)$ . The utility  $US_l$  reaps from outcome A is:  $x$ . And the utility  $US_h$  reaps from outcome A is:  $k(x)$ .

If the PRC threatens sanctions, for simplicity we assume these can take one of three values: low ( $s_l$ ), medium ( $s_m$ ), or high ( $s_h$ ). If the PRC makes a sanctioning threat, the United States then chooses whether to proceed with the arms sale. If the US does not carry through with the sale, the PRC does not carry out its threat and the game ends in outcome B. Neither type of US reaps any benefits associated with arms sales, and both types pay some domestic audience costs ( $a_{US}$ ) for backing down from an announced sale. Utilities for both types of US for outcome B are thus:  $-a_{US}$ . The PRC pays no direct or audience costs in outcome B; the PRC utility for this outcome is thus simply:  $(\alpha q_l + (1 - \alpha)q_h)^2$ .

If the US proceeds with the arms sale, the PRC then chooses whether to carry out its sanctioning threat or not. Whether or not it carries out the threat, both types of US reap the same benefits from the sales as they do in outcome A. But if the PRC imposes sanctions, the US pays some costs ( $s$ ) proportional to the size of the sanctions. The PRC also pays costs ( $s$ ) for carrying out the sanctions, and pays some audience costs ( $a_{prc}$ ) if it backs down in outcome D. Utilities for outcome C (the PRC carries out the threat) are thus as follows:

$$\begin{aligned} US_l: x - s; \quad US_h: k(x) - s; \\ PRC: -x - (\alpha q_l + (1 - \alpha)q_h)^2 - s. \end{aligned}$$

Utilities for outcome D (PRC backs down) are as follows:

$$\begin{aligned} US_l: x; \quad US_h: k(x) \\ PRC: -x - (\alpha q_l - (1 - \alpha)q_h)^2 - a_{prc}. \end{aligned}$$

<sup>47</sup>Following convention we assume a quadratic utility function for the PRC.

We make a few additional assumptions to facilitate a solution to the model. First, we assume that low sanctions are not enough to cause even  $US_l$  to back down. That is, we assume:  $s_l < x - a_{us}$ . Second, we assume that medium-sized sanctions are on the other hand enough to make only  $US_l$  back down from selling arms, but not  $US_h$ . That is:  $k(x) + a_{us} > s_m > x + a_{us}$ . Next, we assume that high-level sanctions will force both types of US to back down. That is:  $s_h > k(x) + a_{us}$ . Finally, we assume that high level sanctions are not credible for the PRC because they are more costly to implement than the audience costs associated with backing down. In other words, we assume:  $s_l < s_m < a_{prc} < s_h$ .

### Solution

Since we assume that the amount of arms that that US proposes to sell to Taiwan is exogenous, the decision of the PRC to use sanctions or not depends on the parameters in the model. Likewise, if the PRC does sanction the US, the type of sanction (low, medium, or high) is also a function of the parameters. Specifically, the amount of arms that the US proposes selling to Taiwan affects the probability of a sanction and the type of sanction from the PRC. This game can be solved through backwards induction. At the final decision point in the game, the PRC must decide between backing down and sanctioning the US. If the costs of sanctioning for the PRC are high,  $s_h$ , the PRC will back down because  $a_{prc} < s_h$ . As a consequence, the PRC will never threaten sanctions if  $s = s_h$ , because the threat to impose the sanctions is incredible. If the costs of imposing sanctions are not high  $s < s_h$ , then the PRC will either impose low sanctions or medium sanctions. Moving backwards, when the US is deciding to sell or back down from its proposed arms transfer, the US will sell if the PRC imposes low sanctions. If the PRC imposes medium sanctions, the US will sell if Washington is committed to Taiwan. Otherwise, the US will back down. Finally, after the US proposes an arms sale, the PRC will threaten sanctions if the cost of doing nothing is greater than the costs to the PRC of the arms sale and the risk associated with the information-revealing effect of imposing sanctions.

Since the PRC's decision to use sanctions explicitly depends on the proposed arms sale, we define two thresholds for  $x$  that condition the PRC's response. The first threshold,  $x_1$ , specifies the amount of arms that the US must propose selling that makes the PRC indifferent between imposing low sanctions and not imposing sanctions at all. The second threshold specifies the amount of arms the US must propose selling that makes the PRC indifferent between imposing low and medium sanctions. If the proposed arms sale falls below  $x_1$ , the PRC will not sanction. If the proposed arms sale is above  $x_1$  and below  $x_2$ , the PRC will impose low sanctions. Finally, proposed arms sales that are above

$x_2$ , will result in medium sanctions from the PRC. The PRC never uses high sanctions because of the assumption that  $s_l < s_m < a_{prc} < s_h$ . As discussed above, the costs of high sanctions are sufficiently high that the PRC will back down and incur the audience costs  $a_{prc}$ , making the threat of high sanctions incredible. The thresholds  $x_1$  and  $x_2$  are defined in terms of the other parameters of the model:

$$x_1 = s_l + (q_h - q_l\alpha + q_l\alpha)^2$$

$$x_2 = -\frac{s_l + (\alpha - 1)(s_m + (q_h - q_l)^2\alpha)}{\alpha}$$

The PRC's choice to use sanctions or not hinges on a comparison between the costs of the low sanctions and the costs of appearing weak. If the costs of the sanctions fall roughly below the proposed arms sale, the PRC will impose sanctions. Otherwise, the PRC will do nothing. The decision between low and medium sanctions depends on a comparison between the amount of arms proposed and the difference between the costs of low and medium sanctions. The difference between the costs of the low and medium sanctions comes down to the direct difference in the costs of the sanctions  $s_m - s_l$  and the information-revealing effect of the sanctions. Low sanctions do not reveal any information because regardless of the US's interest in Taiwan, the US continues to sell the arms when faced with low sanctions. The only benefit the PRC gains from low sanctions is the avoidance of the costs of appearing weak. If the PRC uses medium-level sanctions, the US will continue to sell the weapons if the US is committed to Taiwan. Otherwise, the US will not sell the weapons. Therefore the PRC faces a risk-return calculation when deciding to use medium sanctions. The PRC risks revealing that the US is committed to Taiwan; however, if the US is not committed to Taiwan, medium sanctions will stop the arms transfer.

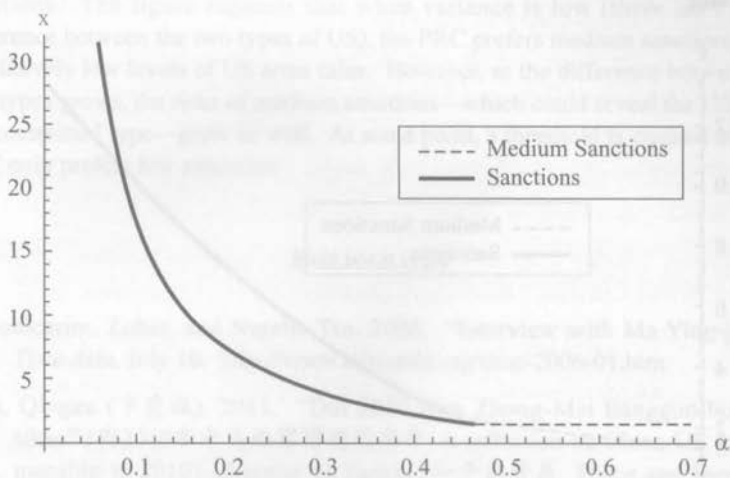
### Comparative Statics

The probability of the PRC sanctioning the US changes with values of the parameters in the model. As the US proposes a larger arms transfer, the PRC is more likely to sanction and more likely to use medium sanctions:

$$\frac{\partial \Pr(\text{Sanction})}{\partial x} > 0, \quad \frac{\partial \Pr(\text{Sanction Medium})}{\partial x} > 0.$$

Given that the PRC decides to sanction the US, the probability of the PRC using low sanctions increases with the difference between the costs of

**Figure 2**  
**US Arms Sales; PRC Beliefs about US Resolve; and Expected PRC Behavior**



medium sanctions and low sanctions ( $\frac{\partial \Pr(\text{Low Sanction})}{\partial (s_m - s_l)} > 0$ ). As the PRC's

prior belief that the US is uncommitted to Taiwan increases, the probability that the PRC will use medium sanctions to stop the arms sales also increases

( $\frac{\partial \Pr(\text{Medium Sanction})}{\partial \alpha} > 0$ ). Finally, when there is a large difference between

$q_h$  and  $q_l$ , the PRC is less likely to use medium sanctions. To see why, imagine first that there is no difference between the two types of US in terms of the cost that China incurs (i.e.,  $q_l = q_h$ ). In such a special case, there are no risks to China in imposing medium sanctions, since if the US is revealed to be the strongly committed type, the costs to China are no worse than if China were to remain uncertain over the US type. However, as the difference between  $q_l$  and  $q_h$  increases, China runs greater risks for choosing medium sanctions, since the costs the PRC incurs for finding out that the US is strongly committed to Taiwan are increasing relative to the costs the PRC incurs for remaining uncertain

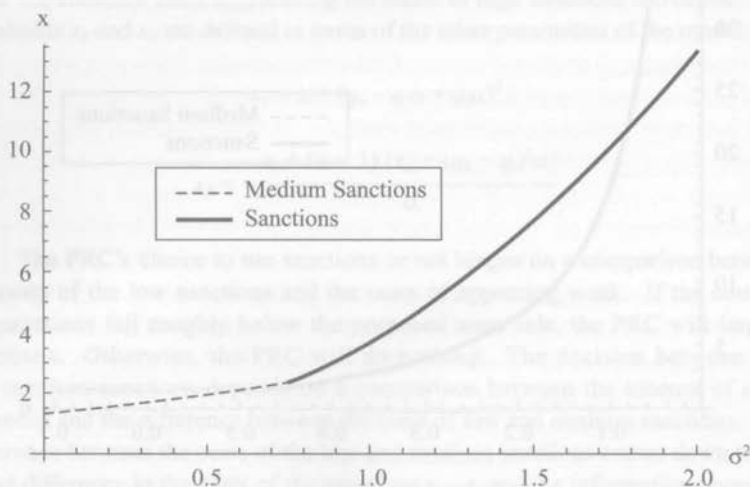
( $\frac{\partial \Pr(\text{Medium Sanction})}{\partial (q_h - q_l)} < 0$ ).

Figure 2 and 3 illustrate some of these comparative statics. The magnitude of the proposed arms sale appears on the y-axis in both figures. As the US



Figure 3

US Arms Sales; Variance in PRC Beliefs about US Type; and Expected PRC Behavior



proposes larger arms transfers, the values on the y-axis are increasing. In figure 2, PRC beliefs about US resolve are plotted on the x-axis such that for low values of  $\alpha$ , the PRC believes that the US is highly resolved. All other model parameters are held constant at plausible values. The line represents China's indifference point between sanctions and no-action. For points below the line, China prefers no action. For points above the solid portion of the line, China adopts low sanctions. And for points above the dashed part of the line, China adopts medium sanctions. In other words, our model predicts that if China strongly believes the US to be committed to Taiwan (that is,  $\alpha$  is very low), then the PRC imposes no sanctions. As  $\alpha$  rises, meaning the PRC becomes more confident that the US is the weak type, the PRC in turn becomes more willing to impose sanctions at progressively lower thresholds of US arms sales to Taiwan. At some point, the PRC becomes confident enough that the US is weakly committed to Taiwan so that it imposes moderate sanctions even for relatively low levels of US arms sales. (Recall that in our model the PRC never imposes high sanctions).

In figure 3, values on the x-axis represent the variance in PRC beliefs about the commitment of the US to Taiwan. The measure captures the difference between  $q_h$  and  $q_l$  such that the variance becomes larger as the difference between the two types gets larger. Again, for all points below the line, the PRC prefers to

take no action. For points above the solid line, the PRC prefers to impose low sanctions, and for points above the dashed line the PRC prefers to impose medium sanctions. The figure suggests that when variance is low (there isn't much difference between the two types of US), the PRC prefers medium sanctions even at relatively low levels of US arms sales. However, as the difference between the two types grows, the risks of medium sanctions—which could reveal the US to be the committed type—grow as well. At some point, a threshold is crossed and the PRC only prefers low sanctions.

#### BIBLIOGRAPHY

- Abdoolcarim, Zoher, and Natalie Tso. 2006. "Interview with Ma Ying-jeou." *Time Asia*, July 10. <http://www.taiwandc.org/time-2006-01.htm>.
- Bian, Qingzu (卞慶祖). 2011. "Dui 2010 nian Zhong-Mei liangguo boyi de sikao" (對2010年中美兩國博奕的思考, A reflection on China-US gamesmanship in 2010). *Heping yu fazhan* (和平與發展, Peace and Development) (Beijing) 120, no. 2:21-27.
- Bradsher, Keith. 2009. "China Moves to Retaliate against U.S. Tire Tariff." *New York Times*, September 13. <http://www.nytimes.com/2009/09/14/business/global/14trade.html>.
- Bradsher, Keith, and Hiroko Tabuchi. 2010. "China Is Said to Halt Trade in Rare-Earth Minerals with Japan." *New York Times*, September 24. [http://www.nytimes.com/2010/09/25/business/global/25minerals.html?\\_r=1&ref=asia](http://www.nytimes.com/2010/09/25/business/global/25minerals.html?_r=1&ref=asia).
- Bush, Richard C. 2004. *At Cross Purposes: U.S.-Taiwan Relations since 1942*. Armonk, N.Y.: ME Sharpe.
- \_\_\_\_\_. 2005. *Untying the Knot: Making Peace in the Taiwan Strait*. Washington, D.C.: Brookings Institute.
- Caixun (財訊). 2011. "Meiguo shou Tai wuqi, hewei yierzai zaiersan?" (美國售臺武器：為何一而再再而三？Why does the U.S. keep selling arms to Taiwan?). September 21. <http://international.caixun.com/content/20110921/NE02u8m4-all.html>.
- Cao, Yi-wen (曹逸雯). 2009. "Yuanjian mindiao: 64% ren Zhongguo buhui dui Tai dongwu, 43% biao Meiguo zhongshi Taiwan" (遠見民調：64%認中國不會對臺動武, 43%表美國重視臺灣, Global Views Survey: 64% of people in Taiwan believe China will not use of force against Taiwan, 43% people consider the U.S. will emphasize Taiwan). *Nownews*, April 22. <http://>

[www.nownews.com/2009/04/22/162-2440356.htm](http://www.nownews.com/2009/04/22/162-2440356.htm).

- Chai, Winberg. 2002. "The Taiwan Factor in U.S.-China Relations: An Interpretation." *Asian Affairs* 29, no. 3 (Fall): 131-47.
- Chase, Michael S. 2008. "Taiwan's Arms Procurement Debate and the Demise of the Special Budget Proposal: Domestic Politics in Command." *Asian Survey* 48, no. 4 (July-August): 703-24.
- \_\_\_\_\_. 2011. "'Strong Indignation,' but Limited Retribution: China's Response to U.S. Arms Sales to Taiwan." *China Brief* 11, no. 19:3-7.
- Christensen, Thomas J. 2002. "The Contemporary Security Dilemma: Detering a Taiwan Conflict." *Washington Quarterly* 25, no. 4 (Autumn): 7-21.
- Clarke, Kevin A., and David M. Primo. 2012. *A Model Discipline: Political Science and the Logic of Representations*. Oxford and New York: Oxford University Press.
- Da, Wei. 2010. "Has China Become 'Tough'?" *China Security* 6, no. 3:35-42.
- Dai, Weilai (戴維來). 2012. "Meiguo 'qitailun' fazhan yanbian fenxi" (美國「棄臺論」發展演變分析, Analysis on the issue of the "US abandoning Taiwan"). *Taiwan yanjiu* (臺灣研究, Taiwan Studies) (Beijing), no. 118:36-41.
- Danielsson, Lotta, ed. 2012. "Chinese Reactions to Taiwan Arms Sales." Report prepared by the US-Taiwan Business Council and the Project 2049 Institute, Arlington, Va.
- Dreyer, June Teufel. 2000. "China's Attitude toward the Taiwan Relations Act." In *United States-Taiwan Relations: Twenty Years after the Taiwan Relations Act*, edited by Jaw-Ling Joanne Chang and William W. Boyer, 203-30. Baltimore, Md.: University of Maryland Law School.
- Drezner, Daniel W. 1998. "Conflict Expectations and the Paradox of Economic Coercion." *International Studies Quarterly* 42, no. 4 (December): 709-31.
- Du, Yanyun (杜雁芸). "Meiguo jieru taihai shiwu de dongyin fenxi" (美國介入臺海事務的動因分析, Analysis of the US's motives in intervening in Taiwan Strait affairs). *Guoji wenti yanjiu* (國際問題研究, China International Studies) (Beijing), 2008, no. 9 (September): 199-200.
- Economist*. 2012. "Cold Shoulder: Norway Considers Avenging Chinese Bullying." February 18. <http://www.economist.com/node/21547832>.
- Fearon, James D. 1997. "Signaling Foreign Policy Interests: Tying Hands versus Sinking Costs." *Journal of Conflict Resolution* 41, no. 1 (February): 68-90.

*Financial Times*. 2010. "China Fumes after US Arms Sales to Taiwan." February 1. <http://www.ft.com/cms/s/0/f0587fc6-0ee5-11df-bd79-00144feabdc0.html#axzz2YFOy5htA>.

Gartzke, Erik, Quan Li, and Charles Boehmer. 2001. "Investing in the Peace: Economic Interdependence and International Conflict." *International Organization* 55, no. 2 (Spring): 391-438.

Garver, John W. 1997. *Face Off: China, the United States, and Taiwan's Democratization*. Seattle: University of Washington Press.

Gilley, Bruce. 2010. "Not So Dire Straits: How the Finlandization of Taiwan Benefits US Security." *Foreign Affairs* 89, no. 1 (January-February): 44-60.

Glaser, Charles. 2011. "Will China's Rise Lead to War? Why Realism Does Not Mean Pessimism." *Foreign Affairs* 90, no. 2 (March-April): 80-91.

Goldstein, Steven M., and Randall Schriver. 2001. "An Uncertain Relationship: The United States, Taiwan and the Taiwan Relations Act." *China Quarterly* 165: 147-72.

Gries, Peter Hayes. 2005. *China's New Nationalism: Pride, Politics, and Diplomacy*. Berkeley: University of California Press.

Hall, Todd H. 2011. "We Will Not Swallow This Bitter Fruit: Theorizing a Diplomacy of Anger." *Security Studies* 20, no. 4 (October-December): 521-55.

Harding, Harry. 1992. *A Fragile Relationship: The United States and China since 1972*. Washington, D.C.: Brookings Institution.

He, Feng (何鋒), and Xu Xiaodi (徐曉迪). 2011. "Xianshizhuyi zhudaoxia de Mei Tai junshou guanxi (1992-2008)" (現實主義主導下的美臺軍售關係 [1992-2008], US arms sales to Taiwan: relationship under realism [1992-2008]). *Guangzhou shehuizhuyi xueyuan xuebao* (廣州社會主義學院學報, Journal of Guangzhou Institute of Socialism) (Guangzhou), no. 34:42-48.

He, Huoping (何火萍). 2009. "Ma Yingjiu shangtaihou Meiguo dui Tai junshou wenti tanxi" (馬英九上台後美國對臺軍售問題探析, Analysis of the issue of US arms sales to Taiwan since Ma Ying-jeou came to power). *Chanye yu keji luntan* (產業與科技論壇, Industrial and Science Tribune) (Shijiazhuang) 8, no. 1:45-47.

He, Yanan. 2009. *The Search for Reconciliation: Sino-Japanese and German-Polish Relations since World War II*. New York: Cambridge University Press.

- Hickey, Dennis Van Vranken. 1994. *United States-Taiwan Security Ties: From Cold War to Beyond Containment*. Westport, Conn.: Praeger.
- \_\_\_\_\_. 2004. "Continuity and Change: The Administration of George W. Bush and US Policy toward Taiwan." *Journal of Contemporary China* 13, no. 40 (August): 461-78.
- Kan, Shirley A. 2010. "Taiwan: Major U.S. Arms Sales since 1990." In *Taiwan-U.S. Relations*, edited by Samantha E. Marshall, 1-75. New York: Nova.
- Kastner, Scott L. 2006. "Ambiguity, Economic Interdependence, and the US Strategic Dilemma in the Taiwan Strait." *Journal of Contemporary China* 15, no. 49 (November): 651-69.
- Krustev, Valentin L. 2010. "Strategic Demands, Credible Threats, and Economic Coercion Outcomes." *International Studies Quarterly* 54, no. 1 (March): 147-74.
- Lacy, Dean, and Emerson M. S. Niou. 2004. "A Theory of Economic Sanctions and Issue Linkage: The Role of Preferences, Information, and Threats." *Journal of Politics* 66, no. 1 (February): 25-42.
- Lee, Wei-Chin. 2000. "US Arms Transfer Policy to Taiwan: From Carter to Clinton." *Journal of Contemporary China* 9, no. 23:53-75.
- Lieberthal, Kenneth. 2005. "Preventing a War over Taiwan." *Foreign Affairs* 84, no. 2 (March-April): 53-63.
- Lin, Cheng-yi (林正義). 1993. "Bayiqi gongbao hou Meiguo dui Tai junshou zhengce" (八一七公報後美國對臺軍售政策, US arms sales policy towards Taiwan since the August 17 Communiqué). *Oumei yanjiu* (歐美研究, Journal of European and American Studies) (Taipei) 23, no. 3 (September): 27-60.
- Mann, James. 1998. *About Face: A History of America's Curious Relationship with China, from Nixon to Clinton*. New York: Vintage.
- McClaran, John P. 2000. "U.S. Arms Sales to Taiwan: Implications for the Future of the Sino-U.S. Relationship." *Asian Survey* 40, no. 4 (July-August): 622-40.
- Medeiros, Evan S. 2007. *Reluctant Restraint: The Evolution of China's Nonproliferation Policies and Practices, 1980-2004*. Stanford: Stanford University Press.
- Morrow, James D. 1992. "Signaling Difficulties with Linkage in Crisis Bargaining." *International Studies Quarterly* 36, no. 2 (June): 153-72.

- Murray, William S. 2008. "Revisiting Taiwan's Defense Strategy." *Naval War College Review* 61, no. 3 (Summer): 13-38.
- Niou, Emerson M. S. 2004. "Understanding Taiwan Independence and Its Policy Implications." *Asian Survey* 44, no. 4 (July-August): 555-67.
- Niou, Emerson M. S., and Peter C. Ordeshook. 1999. "Return of the Luddites." *International Security* 24, no. 2 (Fall): 84-96.
- Owens, Bill. 2009. "America Must Start Treating China as a Friend." *Financial Times*, November 17. <http://www.ft.com/intl/cms/s/0/69241506-d3b2-11de-8caf-00144feabdc0.html#axzz2REBX57hW>.
- Paal, Douglas H. 2010. "China: Reaction to Taiwan Arms Sales." Carnegie Endowment for International Peace Web Commentary, January 31. <http://carnegieendowment.org/2010/01/31/china-reaction-to-taiwan-arms-sales/3zc7>.
- Pan, Zhongqi (潘忠岐). "Meiguo dui Tai 'zhanlüe mohu' zhengce de san da kunjing" (美國對臺「戰略模糊」政策的三大困境, The triple dilemma of the "strategic ambiguity" policy of the United States toward the Taiwan issue). *Shijie jingji yu zhengzhi* (世界經濟與政治, World Economics and International Politics) (Beijing), 2003, no. 1:21-25.
- Pomfret, John. 2010. "US Sells Weapons to Taiwan, Angering China." *Washington Post*, September 30.
- Qian, Qichen (錢其琛). 2003. *Waijiao shiji* (外交十記, Ten stories of a diplomat). Beijing: Shijie zhishi chubanshe (世界知識出版社).
- Rigger, Shelley. 2011. "Why Giving Up Taiwan Will Not Help Us with China." American Enterprise Institute, November 29. <http://www.aei.org/outlook/foreign-and-defense-policy/regional/asia/why-giving-up-taiwan-will-not-help-us-with-china/>.
- Saunders, Phillip C., and Scott L. Kastner. 2009. "Bridge over Troubled Water? Envisioning a China-Taiwan Peace Agreement." *International Security* 33, no. 4 (Spring): 87-114.
- Schmetzer, Uli. 1993. "China Threatens U.S. with Sanctions." *Chicago Tribune*, January 8. [http://articles.chicagotribune.com/1993-01-08/business/9303151606\\_1\\_beijing-considers-taiwan-part-foreign-economic-relations-chinese-development-projects](http://articles.chicagotribune.com/1993-01-08/business/9303151606_1_beijing-considers-taiwan-part-foreign-economic-relations-chinese-development-projects).
- Schultz, Kenneth A. 2001. *Democracy and Coercive Diplomacy*. Cambridge: Cambridge University Press.

- Shambaugh, David. 2000. "A Matter of Time: Taiwan's Eroding Military Advantage." *Washington Quarterly* 23, no. 2 (Spring): 119-33.
- Shirk, Susan L. 2007. *China, Fragile Superpower: How China's Internal Politics Could Derail Its Peaceful Rise*. New York: Oxford University Press.
- Sui, Cindy. 2011. "Taiwan's Ma: No China Peace Talks without Referendum." *BBC News*, October 20. <http://www.bbc.co.uk/news/world-asia-pacific-15387374>.
- Tianyuan (田源) (pseudonym). 2011. "Dui Tai junshou shi yikuai juda jiaoshi" (對臺軍售是一塊巨大礁石, Arms sales to Taiwan is a huge rock). *Jiefangjun bao* (PLA Daily), September 23. [http://www.mod.gov.cn/intl/2011-09/23/content\\_4300182.htm](http://www.mod.gov.cn/intl/2011-09/23/content_4300182.htm).
- Tomz, Michael. 2007. "Domestic Audience Costs in International Relations: An Experimental Approach." *International Organization* 61, no. 4 (October): 821-40.
- Tucker, Nancy Bernkopf. 2005. "Strategic Ambiguity or Strategic Clarity?" In *Dangerous Strait: The U.S.-Taiwan-China Crisis*, edited by Nancy Bernkopf Tucker, 186-211. New York: Columbia University Press.
- \_\_\_\_\_. 2009. *Strait Talk: United States-Taiwan Relations and the Crisis with China*. Cambridge, Mass.: Harvard University Press.
- Tucker, Nancy Bernkopf, and Bonnie Glaser. 2011. "Should the United States Abandon Taiwan?" *Washington Quarterly* 34, no. 4 (Fall): 23-37.
- United Daily News*. 2011. "Opinion Poll on Cross-Strait Peace Agreement." October 25. <http://www.kmt.org.tw/english/page.aspx?type=article&mnum=114&anum=10313>.
- Walt, Stephen M. 1999. "Rigor or Rigor Mortis? Rational Choice and Security Studies." *International Security* 23, no. 4 (Spring): 5-48.
- Wang, Chris. 2011. "Peace Proposal Puts Taiwan at Risk: Tsai." *Taipei Times*, October 20. <http://www.taipeitimes.com/News/front/archives/2011/10/20/2003516192>.
- Wang, Liang (王亮), Huang Chengjun (黃成軍), and Xie Yangbin (謝揚斌). 2011. "Meiguo dui Taiwan junshou fenxi" (美國對臺灣軍售分析, Analysis of the United States' arms sales to Taiwan). *Xue lilun* (學理論, Theory Research) (Changsha), 2011, no. 21:34-36.
- Wang, Yu-chung. 2011. "Ma Talks Peace Deal with China." *Taipei Times*, October



18. <http://www.taipeitimes.com/News/front/archives/2011/10/18/2003516029>.

- Weiss, Jessica Chen. 2013. "Autocratic Signaling, Mass Audiences and Nationalist Protest in China." *International Organization* 67, no. 1 (January): 1-35.
- Weeks, Jessica L. 2008. "Autocratic Audience Costs: Regime Type and Signaling Resolve." *International Organization* 62, no. 1 (January): 35-64.
- Wu, Han (吳漢), and Tung Hui-ming (董慧明). 2009. "Mei-Zhong-Tai sanjiao guanxi dui Mei-Tai junshou zhi yingxiang: cong shuangceng saiju lilun fenxi" (美中臺三角關係對美臺軍售之影響：從雙層賽局理論分析, The impact of the U.S.-Taiwan arms sales on the U.S.-China-Taiwan trilateral relations: an analysis of "two-level games" theory). *Zhanwang yu tansuo* (展望與探索, Prospect & Exploration) (Taipei) 7, no. 5 (May): 32-52.
- Wu, Jaushieh Joseph (吳釗燮). 2010. "Zhudaoxing baquan de kunjing: jiuyiyi hou guoji jushi yu Mei-Zhong-Tai guanxi yanbian" (主導性霸權的困境：九一一後國際局勢與美中臺關係演變, Dilemma of the dominant power changing US-China-Taiwan relations after September 11). *Dongwu zhengzhi xuebao* (東吳政治學報, Soochow Journal of Political Science) (Taipei) 28, no. 1 (March): 1-32.
- Xia, Liping (夏立平). 2011. "Aobama zhengfu de Taihai zhengce jiqi yingxiang" (奧巴馬政府的臺海政策及其影響, The Obama administration's Taiwan Strait policy and its impacts). *Meiguo yanjiu* (美國研究, American Studies Quarterly) (Beijing) 25, no. 2:70-94.
- Xinhua Net (新華網). 2010a. "Jiefangjun shaojiang jianyi zhicai Meiguo dui Tai junshou qiye" (解放軍少將建議制裁美國對臺軍售企業, PLA rear admiral recommends imposing sanctions on the US enterprises' arms sales to Taiwan). January 7. [http://big5.xinhuanet.com/gate/big5/news.xinhuanet.com/mil/2010-01/07/content\\_12767991.htm](http://big5.xinhuanet.com/gate/big5/news.xinhuanet.com/mil/2010-01/07/content_12767991.htm).
- \_\_\_\_\_. 2010b. "Zhuanjia: rang Mei geng tongku de ganshoudao sunhai Zhongguo liyi de daijia" (讓美更痛苦地感受到損害中國利益的代價, Experts: Make US painfully aware of the cost of damage to China's interest). January 8. [http://news.xinhuanet.com/mil/2010-01/08/content\\_12776204.htm](http://news.xinhuanet.com/mil/2010-01/08/content_12776204.htm).
- Yang, Shih-yue (楊仕樂). 2009. "Junshi de zhuanye huo zhengzhi de kaoliang? Dui 'haozhu zhanlue' pipan de fansi" (軍事的專業或政治的考量？對「豪豬戰略」批判的反思, Military? Politics? Reflections on the critiques of the "porcupine strategy"). *Yuanjing jijinhui jikan* (遠景基金會季刊, Prospect Quarterly) (Taipei) 10, no. 4 (October): 83-120.

- Yang, Yunzhong (楊運忠). "Xinshiji Meiguo de dui Tai zhengce he zhanlue wuqū" (新世紀美國對臺政策和戰略誤區). *Dangdai yatai* (當代亞太, Journal of Contemporary Asia-Pacific Studies) (Beijing), 2000, no. 6:3-7.
- Zhang, Qingmin (張清敏). "Zhong-Mei guanxi zhong de Meiguo shou Tai wuqi wenti" (中美關係中的美國售臺武器問題, The issue of US arms sales to Taiwan in Sino-American relations). *Waijiao xueyuan xuebao* (外交學院學報, Journal of Foreign Affairs College) (Beijing), 1994, no. 1:84-92.
- \_\_\_\_\_. "Zhong Mei jianjiao qianhou Meiguo shou Tai wuqi jiqi zhengce de quelì" (中美建交前後美國售臺武器及其政策的確立, U.S. arms sales to Taiwan before and after the normalization of Sino-U.S. diplomatic relations and the formulation of U.S. arms sales policy to Taiwan). *Waijiao xueyuan xuebao* (外交學院學報, Journal of Foreign Affairs College) (Beijing), 2002, no. 3:24-35.
- \_\_\_\_\_. "Meiguo dui Tai junshou juece de guanliao zhengzhi yinsu" (美國對臺軍售決策的官僚政治因素, The bureaucratic politics of US arms sales to Taiwan). *Guoji zhengzhi kexue* (國際政治科學, Quarterly Journal of International Politics) (Beijing), 2006, no. 1:28-61.
- Zhang, Qingmin (張清敏), and Luo Binhui (羅斌輝). 2006. "Waijiao juece moshi yu Meiguo dui Tai junshou zhengce jue ding yinsu fenxi" (外交決策模式與美國對臺軍售政策決定因素分析, Foreign policy decision-making models and analysis of factors determining American arms sales policy toward Taiwan). *Meiguo yanjiu* (美國研究, American Studies Quarterly) (Beijing) 20, no. 3:29-48.
- Zhao, Lingmin (趙靈敏). "Zhong-Mei guanxi: Zhongguo ruhe qǔde zhudong: zhuanfang Beijing daxue guoji guanxi xueyuan yuanchang Wang Jisi jiaoshou" (中美關係：中國如何取得主動—專訪北京大學國際關係學院院長王緝思教授, Will China dominate U.S.-China relations? An interview with Professor Wang Jisi, dean of the School of International Studies at Peking University). *Nanfengchuang* (南風窗, South Reviews) (Guangzhou), 2010, no. 12:42-44.
- Zhongsheng (鐘聲) (pseudonym). 2011. "Huashengdun zhengzhi de bei'ai" (華盛頓政治的悲哀, Political sorrow in Washington, D.C.). *Renmin ribao* (人民日報, People's Daily), September 9. <http://world.people.com.cn/GB/15624020.html>.