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Nicholas L. Miller. ***Stopping the Bomb: The Sources and Effectiveness of US Nonproliferation Policy.*** Ithaca: Cornell University Press, 2018. ISBN: 9781501717802 (hardcover, $47.95).

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Introduction by Elizabeth N. Saunders, Georgetown University

The adjective 'timely' is perhaps overused, but in the case of Nicholas Miller's *Stopping the Bomb*—the subject of this roundtable review by four excellent scholars of nuclear politics—it is well-earned. Miller's book was published in the spring of 2018, just as President Donald Trump pulled the United States out of the Iran nuclear deal, and months before Trump and North Korean leader Kim Jong-un met in Singapore. Trump vowed to persuade North Korea to denuclearize, even as most nuclear experts, Miller included, argued that that particular train had already left the station.[1] Miller's book helps provide theoretical and historical context for understanding not only the causes but also the effectiveness of U.S. nonproliferation policy.

The reviewers in this roundtable are in general agreement that Miller has made a strong and significant theoretical and empirical contribution to our understanding of the U.S. role in nonproliferation, and especially the efficacy of nonproliferation sanctions. Several agree that one of the book's major contributions is, as Matthew Fuhrmann puts it, "providing us with a richer understanding of how sanctions work as a tool of nonproliferation." It is very difficult to observe whether sanctions are working, because leaders are strategic, and anticipate the effect of sanctions when deciding whether to pursue the bomb. Miller's argument accounts for such selection effects and shows us where to look for the effect of sanctions—and as Furhmann notes, the "book implies that the number of nuclear powers in the world today would be far greater than nine if Washington had not instituted the nonproliferation policies that it did." Andrew Coe agrees that *Stopping the Bomb* "convincingly establishes that U.S. sanctions have been an effective instrument" in nonproliferation policy. Julia MacDonald similarly concludes that "Miller's emphasis on the role of U.S. sanctions in limiting proliferation from the mid-1970s onwards is convincing and supported by a significant body of evidence."

The reviewers highlight several other strengths of the book. In praising the book's theoretical approach, Jayita Sarkar notes that Miller walks a difficult line in making a "rationalist" argument that also "incorporates the role of domestic politics, bureaucratic drivers, and norms while highlighting, but not overdetermining, the influence of national and international security concerns." Sarkar concludes that Miller pulls off this balancing act successfully, and "almost bridges the gap between constructivism and neoclassical realism in the literature on the politics of nuclear weapons, which in and of itself is no small feat." On the empirical side, MacDonald praises the book's empirical richness, noting in particular that "the qualitative chapters on the effectiveness of U.S. policies are persuasive, and the archival evidence documenting U.S. government behavior vis-à-vis France, Taiwan, Pakistan, and Iran is impressive."

The reviewers also raise some criticisms. Several reviewers quibble with Miller's account of U.S. fears of nuclear domino effects. While describing Miller's "theory for why changes in beliefs about domino effects transformed policy" as "logically coherent and plausible," Coe argues that "much in the book casts doubt on the idea that domino effects are that large." Nonetheless, Coe concedes that the book shows that while "several motives were usually present…domino expectations were a constant concern." Furhmann raises a question about the nuclear domino argument that seems to run in the opposite direction. He writes that he is "convinced, based on the evidence that Miller provides," that there were "major fears among U.S. officials of nuclear dominos falling after Beijing's test," but is "less convinced" that 1964 represented a sharp break—because some U.S. officials were "quite concerned about nuclear dominos falling prior to 1964."

Sarkar approaches the domino question from the angle of the Cold War—when another version of domino theory became famous. She asks, "was the fear that nuclear dominoes generated in U.S. policymakers completely unrelated from the fear of Communist dominoes in the Cold War?" She also raises the important question of whether there was a "North-South dimension" given that "the Chinese and the Indian nuclear tests triggered such acute fears of nuclear dominoes in U.S. policymakers in ways which the British and the French nuclear tests, and Israel's nuclear weapons capability never did." Coe raises a very different Cold War-related critique, arguing that Miller "neglects" the role of the Soviet Union. He argues,

[1] Nicholas L. Miller, "North Korea and the Problem of Managing Emerging Nuclear Powers," *Lawfare* (blog), 25 March 2018, https://www.lawfareblog.com/north-korea-and-problem-managing-emerging-nuclear-powers.

based on co-authored work with Jane Vaynman, that the USSR and the United States "colluded" in the universal nonproliferation approach Miller identifies.[2]

Additionally, both Sarkar and MacDonald argue that Miller's focus on countries who want the bomb, also known as "demand-side" nuclear concerns, does not adequately address the role of "supply side" nuclear considerations, i.e., "countries that provide technologies, materials, equipment, and know-how to actual and/or potential proliferators," as Sarkar defines them. MacDonald notes that in the mid-1970s, alongside the effect of the sanctions which Miller highlights, there were supply-side developments such as the Nuclear Suppliers Group, "which sought to restrict the market of materials available to nuclear aspirants." While MacDonald acknowledges that such a development "is not inconsistent with the book's argument," she notes that it shows how "separating out the effects of U.S. policies from other simultaneous changes in international nonproliferation policy is difficult."

These reviews give less attention to the role of Congress in Miller's account. But given the long-term decline in congressional oversight of foreign policy, it is notable that Miller highlights the active role Congress has played in nonproliferation policy.[3] A question that arises is whether congressional activism on nonproliferation can withstand the era of partisan polarization.[4] Trump's overturning of the Iran deal showed how tempting it is to defect from commitments made by a president of the other party.[5] Since the end of the Cold War, arms control agreements—which were never immune from domestic politics—have been increasingly subject to polarized party politics.[6]

In the end, no theory can explain everything—indeed, Miller has written (with Vipin Narang) on why North Korea's nuclear success eluded most international relations theories.[7] But taken as a whole, this roundtable suggests that Miller has made a theoretically and empirically strong case for the role of the United States in slowing the spread of nuclear weapons. Understanding that role is vital for managing future proliferation challenges—a set of problems that are not likely to leave the headlines, or disappear from scholarly agendas, any time soon.

Participants:

Nicholas L. Miller is an Assistant Professor of Government at Dartmouth College. His research focuses on nuclear proliferation and international security. His book, *Stopping the Bomb,* was published by Cornell University Press in 2018.

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[2] Andrew J. Coe and Jane Vaynman, "Collusion and the Nuclear Nonproliferation Regime," *Journal of Politics* 77:4 (2015): 983-997.

[3] On the decline of congressional oversight, see Linda L. Fowler, *Watchdogs on the Hill: The Decline of Congressional Oversight of U.S. Foreign Relations* (Princeton: Princeton University Press, 2015).

[4] Kenneth A. Schultz, "Perils of Polarization for U.S. Foreign Policy," *Washington Quarterly* 40:4 (Winter 2018): 7–28.

[5] Schultz, "Perils of Polarization for U.S. Foreign Policy," 19–21.

[6] Carrie A Lee, "Electoral Politics, Party Polarization, and Arms Control: New START in Historical Perspective," *Orbis* 63:4 (2019): 473-492; Sarah E. Kreps, Elizabeth N. Saunders, and Kenneth A. Schultz, "The Ratification Premium: Hawks, Doves, and Arms Control," *World Politics* 70:4 (October 2018): 479-514. On domestic politics and arms control during the Cold War, see also James Cameron, *The Double Game: The Demise of America's First Missile Defense System and the Rise of Strategic Arms Limitation* (Oxford: Oxford University Press, 2017).

[7] Nicholas L. Miller and Vipin Narang, "North Korea Defied the Theoretical Odds: What Can We Learn from Its Successful Nuclearization?" *Texas National Security Review* 1:2 (March 2018): 58-75; https://tnsr.org/2018/02/north-korea-defied-theoretical-odds-can-learn-successful-nuclearization/.

Miller's research has also been published in a variety of scholarly journals including the *American Political Science Review, International Security, International Organization, International Studies Quarterly,* and *Security Studies.* He received his PhD in political science from MIT.

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Review by Andrew J. Coe, Vanderbilt University

This book is an interesting, valuable contribution to the rapidly-expanding literature on nuclear proliferation. Its first section documents and explains the evolution of U.S. nonproliferation policy from the 1950s through the 70s. Its second section studies when U.S. sanctions will be effective in stopping proliferation.

Miller argues that U.S. nonproliferation policy changed as a result of the first nuclear tests of China in 1964 and then India in 1974. These tests "strengthened expectations of nuclear domino effects," which are defined as occurring when "proliferation in one state increases the probability of proliferation in other states" (7). This concentrated the government's attention on proliferation and empowered nonproliferation advocates. Chapters 2 and 3 carefully trace the transformation in the U.S. government's attitude toward proliferation from lackadaisical to strict, documenting serious consideration by the U.S. of allowing certain allies to acquire nuclear weapons before the transformation as well as its subsequent commitment to universal nonproliferation. Together they form a thorough, well-written narrative of the formative years of U.S. nonproliferation policy that synthesizes and expands on earlier work by Hal Brands, Frank Gavin, and Roland Popp.[1]

The book's theory for why changes in beliefs about domino effects transformed policy is logically coherent and plausible. Initially, the U.S. thought domino effects were small. This meant that it could allow allies to get nuclear weapons and still stop others from doing so, so that selective proliferation was an attractive policy. After China tested, the U.S. learned that it had underestimated domino effects. If domino effects are large enough, then "a selective nonproliferation policy would likely spiral out of control" (20), forcing the U.S. to choose between universal nonproliferation and widespread proliferation. This explains why it switched to a policy of universal nonproliferation.

However, much in the book casts doubt on the idea that domino effects are that large. The theory assumes "that policymakers generally perceive a significant degree of political efficacy—in other words, they believe that proliferation is not totally inevitable and stands a reasonable chance of being prevented or at least limited by US efforts" (24). The second section of the book offers convincing evidence that this perception is accurate, as even after the USSR, UK, France, China, Israel, and India got nuclear weapons, the U.S. was still able to stop most other states from doing so. But this implies that domino effects are modest, so that selective proliferation actually could be controlled. If the U.S. can stop most of the rest of the dominoes from falling after all this proliferation, why couldn't it do the same after allowing some of its friends to proliferate under a selective policy? Apparently, the U.S. has the power to stop most states from proliferating under a universal nonproliferation policy, but not under a selective one. Why is that?

I think the answer lies in the role of the USSR in nonproliferation, which this book neglects. As Jane Vaynman and I explained in an article published in 2015, selective proliferation is feasible but it will end up being to both friends and foes, because as the U.S. allows its friends to acquire nuclear weapons, the USSR will react by allowing its friends to do the same.[2] Indeed, the book includes evidence that the U.S. recognized this dynamic: President John F. "Kennedy 'expressed his concern that the Israeli reactor might stimulate Egypt to press the Soviet Union for aid in nuclear weapons development'" (97). The Johnson and Nixon administrations had the same concern (100-102), and we see it again with South Korea, where the U.S. worried that proliferation would lead the Soviets or Chinese to give nuclear weapons to North Korea (111).

[1] See Hal Brands, "Rethinking Nonproliferation: LBJ, the Gilpatric Committee, and U.S. National Security Policy," *Journal of Cold War Studies* 8:2 (2006): 83-113; Francis J. Gavin, "Blasts from the Past: Proliferation Lessons from the 1960s," *International Security* 29:3 (2005):100-135; Roland Popp, "Introduction: Global Order, Cooperation between the Superpowers, and Alliance Politics in the Making of the Nuclear Non-Proliferation Regime," *The International History Review* 36:2 (2004): 195-209.

[2] Andrew J. Coe and Jane Vaynman. "Collusion and the Nuclear Nonproliferation Regime." *Journal of Politics* 77:4 (2015): 983-997.

Miller acknowledges but misinterprets our work, arguing that it and other theories "cannot explain why the United States ultimately adopted an undifferentiated, across-the-board nonproliferation policy" (21). In fact our paper does so expressly. Because selective proliferation will lead to allies of both superpowers acquiring nuclear weapons, it will in aggregate advantage neither superpower by much, and cost *both* a large loss of influence over these states, as the Gilpatric report observed (55). This means that selective proliferation policies are negative-sum: both superpowers will end up worse off than they would if they instead colluded to enforce universal nonproliferation. This is why the U.S. (and the USSR) adopted a policy of universal nonproliferation, and why this policy was coordinated between the two. The Gilpatric Committee recognized that the U.S. could only be effective at preventing proliferation with the collusion of the Soviets (58), and the USSR would obviously not collude in a policy by which only U.S. friends could have nuclear weapons.

Miller also avers that we erred in attributing the change in U.S. attitudes in part to the American experience with nuclear-armed France, whereas "the historical evidence presented in this book suggests that it was Chinese (and not French) acquisition of nuclear weapons that was the key trigger for strengthened US nonproliferation efforts" (12). But consider some of the book's evidence. Beginning in 1961, well before China's test but after that of France, the Kennedy administration issued a change in policy toward discouraging allies from getting nuclear weapons, tried to get France to give up its nuclear weapons, implemented permissive action links to increase U.S. control over nuclear weapons stationed in Europe and altered the MLF proposal to provide a U.S. veto, established the Arms Control and Disarmament Agency, announced support for the Irish UN resolution that was a precursor to the Nuclear Nonproliferation Treaty (NPT), and negotiated a limited test ban treaty (45-46). Kennedy and Secretary of Defense Robert McNamara also publicly warned of runaway proliferation. Some of these shifts were later moderated or reversed, but this still seems like the beginning of the transformation.

Grousing aside, one of the best things about Miller's narrative is that it reveals several different beliefs that may have influenced the change in U.S. policy. Miller documents that President Dwight Eisenhower and others believed that proliferation to certain allies would not lead other states to get nuclear weapons, and attributes the preference for selective proliferation to this belief. That is plausible, but the evidence offered in these chapters also seems consistent with another interpretation: that Eisenhower and others believed that widespread proliferation could not be stopped. Miller writes that "The president [Eisenhower] felt that future proliferation was inevitable and that 'we were sticking our heads in the sand when we talked about continuing to keep our nuclear secrets from falling into the hands of other parties'" (43). Even at the opening meeting of the committee established by President Lyndon Johnson to re-evaluate U.S. policy toward proliferation, Chair Gilpatric "noted [that] 'The question has been raised within the Government whether nuclear proliferation may not be inevitable'" (53). Indeed, this Committee's report explicitly concluded that it was possible for the U.S. to stop proliferation, suggesting that it was resolving an open question (58). What role did changing estimates of the United States' ability to stop proliferation play in the transformation of policy?

Another possibility Miller's documentation exposes is that China's and India's tests each revealed gaps in nonproliferation policies, quite apart from the risk of domino effects. Whereas before the U.S. might have assumed that only industrialized nations could proliferate, China's test demonstrated that getting nuclear weapons was "feasible even with modest industrial resources" (58). "India's nuclear test 'brought home to official Washington [...] the link between the export of nuclear technology and facilities for peaceful purposes and the possible spread of nuclear weapons'" (83). It thus "led policymakers to conclude that the NPT on its own was insufficient" (249). It could be that U.S. policy changed, not because the U.S. now expected China's and India's proliferation to cause other states to proliferate, but because their tests revealed that the extant policy was not strong enough to stop proliferation by them *and other states like them*, even in the absence of any domino effects. In line with this interpretation, much of what the U.S. did in response to both tests is specific to closing the gaps that each revealed. The NPT extended U.S. arrangements with its allies to the whole, mostly non-industrialized world; the Nuclear Suppliers Group (NSG) restricts access to ostensibly peaceful nuclear technologies.

Chapter 4 documents "that the United States consistently opposed proliferation and took steps to prevent it" in the cases of all nine allied or non-aligned states that pursued nuclear weapons after 1964 (96). This is not a novel finding: in our article, Vaynman and I found that the U.S. opposed proliferation to *every* state after the mid-1960s, even those that never pursued weapons but were suspected of being interested in or capable of doing so. But Miller goes beyond our work by examining the

specific motives for U.S. opposition in each case. The book shows that several motives were usually present, and while these motives varied across cases, domino expectations were a constant concern.

The second section of the book focuses on the conditions under which the U.S. successfully used sanctions to stop allied or non-aligned states from pursuing nuclear weapons. Miller theorizes that two conditions must be met: the threat of sanctions must be credible, and the state being sanctioned must depend strongly on the U.S. Credibility is established either by Congressional legislation that commits the U.S. to sanction any state that takes certain steps toward nuclear weapons, or by the actual imposition of sanctions. Dependence comes from trade, economic and military aid, and troops stationed in-country. Miller employs statistical analysis to check the observable implications of this theory with respect to when sanctions will work, and case studies of France, Taiwan, Pakistan, and Iran substantiate these predictions qualitatively.

Less convincingly, the book argues that inducements are less effective than sanctions in causing a state to stop pursuing nuclear weapons. This is doubtful for theoretical reasons. Inducements are the mirror opposite of sanctions: sanctions lower the value of pursuing nuclear weapons, inducements raise the value of not pursuing them. This means that inducements should be effective under conditions that correspond to those for sanctions: if sanctions are effective when credible and severe enough, then inducements will be effective whenever they are credible and generous enough. This leads to a different interpretation of the cases that Miller takes as evidence that inducements are less effective. They did not work on France (169) or Pakistan (215) because they were not credible: both states expected to get them regardless of whether they stopped pursuing nuclear weapons. It thus remains to be seen whether inducements work under the right conditions.

In sum, *Stopping the Bomb* offers a plausible, well-documented narrative of the origins of U.S. nonproliferation policy and convincingly establishes that U.S. sanctions have been an effective instrument in this policy. It should be an excellent starting point for subsequent research on the impact of various beliefs about proliferation on U.S. policy, on the particular mechanisms that generate domino effects, and on the conditions under which inducements are effective in enforcing nonproliferation.

Review by Matthew Fuhrmann, Texas A&M University

Nicholas L. Miller's book is a welcome addition to the literature on nuclear nonproliferation. It is packed with interesting insights and analysis. If you are interested in nonproliferation policy, this is a book that you cannot afford to ignore.

The book asks two key questions about nuclear politics. One of them pertains to the causes of nuclear proliferation: Why do countries seek nuclear weapons? This question carries obvious importance for international peace and stability. It is not surprising, then, that prior studies have sought to understand how and why nuclear weapons spread. The existing literature points to factors such as a state's external threat environment, military alliances, nonproliferation treaties, foreign nuclear assistance, and the psychological predispositions of a country's leaders.[1] Miller puts the spotlight on a factor that has received relatively little scholarly attention: U.S. nonproliferation policies. He argues that the threat of U.S. sanctions can dissuade countries from pursuing nuclear arsenals. Sanctions threats can work if they are credible and if the potential proliferator is highly dependent on the United States. In that case, pursuing the bomb may be prohibitively costly.

The other question concerns the drivers of U.S. policy. Miller calls readers' attention to a puzzle. After China's first nuclear test in 1964, the United States seemed to universally pursue nonproliferation as an important foreign policy objective. In this period, Washington consistently opposed states who wanted to obtain nuclear bombs—regardless of whether the potential proliferator was an ally. Prior to the Chinese test, however, Washington handled nonproliferation on more of a case-by-case basis. U.S. officials, according to Miller, opposed proliferation in some cases but were ambivalent about it in others. What accounts for this difference?

Miller develops a theory about the sources of U.S. nonproliferation policy. He argues that nuclear tests—particularly those by China (1964) and India (1974)—caused Washington to pursue a more universal nonproliferation policy for three reasons. First, the tests caused officials to worry to a greater extent about nuclear dominos falling—that is, that one state's development of the bomb would cause others to follow. Second, the tests generated more attention to the issue of nuclear nonproliferation in government. Third, the Chinese and Indian actions provided ammunition for people inside and out of government seeking to advocate for a stronger nonproliferation policy.

There is much to like about the book. Perhaps its greatest contribution, in my view, is providing us with a richer understanding of how sanctions work as a tool of nonproliferation. It would be easy for one to conclude that sanctions do not work in this context. After all, most of the time the United States imposes sanctions they fail to roll back ongoing nuclear weapons programs. As Miller's analysis shows, once a program had started, sanctions succeeded in only three of 22 cases (135). Thus, based on this analysis, sanctions appear to work about 14 percent of the time—a pretty dismal success rate. Notable failures include sanctions against South Africa (1975-1982), Pakistan (1977-78), and North Korea (2002-present). Miller correctly points out, however, that we cannot infer much about the value of sanctions as an instrument of nonproliferation by limiting our analysis to these episodes. We must also look at the cases where the prospect of sanctions deterred a country from starting a bomb program in the first place. Once we do that, a much more sanguine picture emerges.

Miller builds on prior research to enhance our knowledge about how strategic selection influences the efficacy of nonproliferation sanctions.[2] Leaders in international politics, like people in everyday life, act strategically. This means that

[1] For an overview of some studies in this vein, see Scott D. Sagan, "The Causes of Nuclear Proliferation," *Annual Review of Political Science* 14 (2011): 225-244; and Alexander Debs and Nuno P. Monteiro, "Conflict and Cooperation on Nuclear Nonproliferation," *Annual Review of Political Science,* 20 (2017): 331-349.

[2] For research on economic sanctions that makes a similar argument about strategic selection but is not nonproliferation-specific see, for example, Daniel Drezner, "The Hidden Hand of Economic Coercion," *International Organization* 57:3 (Summer 2003): 643-659.

how they behave in the present is based, in part, on expectations about how other actors will respond to their decisions in the future. A person might refrain from speeding if two conditions are met: (1) they expect to get caught and (2) the anticipated fine would impose a financial burden on them. To assess the effectiveness of traffic laws, then, we need consider the behavior of non-speeders, not just the number of tickets that police officers write. Similarly, when world leaders think about launching a nuclear weapons program, they consider the possible penalties. Those who expect to be sanctioned—and for those sanctions to "bite"—may decide that the risks of trying to go nuclear are too great.

Countries that decide to pursue the bomb anyway are likely to be highly resolved to obtain an arsenal. They know that their behavior may result in sanctions but they have calculated that the benefits still exceed the costs. In these cases, the expectation of being sanctioned is baked into the decisionmaking process. It is not surprising, therefore, that sanctions often have little effect on a proliferator's behavior once they are instituted. The success rate should be low, and this is precisely what Miller finds.

However, anticipating the future can be difficult. The possibility of miscalculation leaves the door open for sanctions to change a proliferator's behavior once they are imposed. It may be difficult to know just how much the sanctions will sting, or whether they are likely to be instituted at all.

To illustrate, let's think for a moment about the stock market. It is well known that changes in interest rates by the Federal Reserve affect stock prices. When investors widely expect that interest rates will be raised (or lowered), though, we might not see large shifts in stock prices once the Fed announces them. This is because investors anticipate the Fed's announcement and take action ahead of time. In these cases, we are more likely to observe shifts in stock prices a few days (or weeks) before interest rates actually change than we are immediately after the shift happens. However, changes in stock prices are likely to be large when investors are surprised by the Fed's announcement. A sudden an unexpected change in interest rates by the Fed may result in rather large fluctuations in stock prices.

This basic insight applies to sanctions, too. Miller identifies two scenarios in which imposed sanctions can change a proliferator's behavior (29). The first is if the proliferator calculates that sanctions are unlikely to be imposed. This could have happened in situations where states began pursuing the bomb before the United States adopted a credible sanctions policy in the 1970s. This helps us understand why U.S. nonproliferation sanctions worked against South Korea and Taiwan, despite the low success rate of imposed sanctions overall. In both of these cases, as Miller argues, the countries did not expect to be sanctioned because they launched their programs before the United States passed legislation in the 1970s that made its threat to sanction proliferators more credible. The second scenario is if the sanctions have greater costs than the proliferator expected—for example, if they anticipate U.S. sanctions only but instead get hit with broad multilateral punishment. Based on Miller's analysis, this helps explain why Iran (at least temporarily) and Iraq backed down following the imposition of sanctions.

The implications of this argument are clear and salient. The United States has played an important role in curbing the spread of nuclear weapons, according to Miller's analysis. One puzzle examined in the nonproliferation literature is why so few states have built nuclear arsenals despite the fact that many are capable of doing so.[3] There are many possible explanations. Miller provides us with a key part of the story. His book implies that the number of nuclear powers in the world today would be far greater than nine if Washington had not instituted the nonproliferation policies that it did. In particular, sanctions are an important instrument in the nonproliferation toolkit—especially when they have broad multilateral support. Although hawks may prefer to rely on military force to rollback nuclear programs, they should not forget that sanctions might be an effective alternative—and one that is likely to carry fewer risks.

[3] See, for example, Jacques Hymans, *The Psychology of Nuclear Proliferation: Identity, Emotions, and Foreign Policy* (New York: Cambridge University Press, 2006), 2-5.

In the spirit of facilitating constructive dialogue and perhaps generating ideas for future research, I would like to raise three questions that emerged as I read the book.

The first question has to do with the role of concerns about nuclear dominos in U.S. nonproliferation policy. As noted previously, the United States adopted a much stronger nonproliferation policy following the 1964 Chinese nuclear test. Miller argues that concerns about additional states obtaining nuclear arsenals in the wake of the test (among other things) caused this change in policy. To substantiate this argument, it is necessary to show a minimum of two things; first, that there were major fears among U.S. officials of nuclear dominos falling after Beijing's test. I am convinced, based on the evidence that Miller provides, that this is true. Second, that concerns about reactive proliferation were muted or at least far less pervasive prior to 1964. Here I am less convinced.

Miller characterizes the pre-1964 period as follows: "like under Eisenhower, intelligence analyses during the Kennedy administration were relatively sanguine about the likely extent of proliferation" (49). He cites some good evidence to substantiate this conclusion, including a 1957 National Intelligence Estimate (NIE) that states, "[a nuclear France or Sweden] would not necessarily spark immediate nuclear weapons production efforts in other Western European States" (44-45).

However, one can also find evidence suggesting that at least some officials were quite concerned about nuclear dominos falling prior to 1964. For example, a CIA memorandum sent to the Director of Central Intelligence on 24 May 1957 states,

"We believe that France will undertake a nuclear weapons production program within the next year or so, and that Sweden will do so around 1961 when sufficient plutonium becomes available from its reactor program. Assuming that France initiates weapons production on a unilateral basis, it is *almost certain that West Germany would follow suit* [emphasis added], despite existing agreements to forgo such production. Communist China will almost certainly seek to develop a weapons production program within the next decade, and Japan will probably do likewise. Israel might in time obtain weapons-grade material from another power, such as France, or through development of a reactor program."[4]

Along similar lines, an NIE issued on 1 July 1958 states that "If France and Germany—either separately or together—decided to produce nuclear weapons, we believe that there would be strong pressures in Belgium, Italy, and the Netherlands to join them."[5]

Of course, these are just two statements and they may not be representative of the views of U.S. officials at the time. I do not have deep enough knowledge of all the documents from this period to accurately characterize U.S. policy views. Nevertheless, these statements lead me to wonder why these concerns did not lead to a stronger U.S. nonproliferation policy prior to 1964? If concerns about reactive proliferation lead to stronger nonproliferation measures, why did this not happen before China's first nuclear test? The answer could very well be that these fears were not pervasive enough until after 1964 to trigger stiff (and costly) nonproliferation measures. In any case, this is something about which I would like to know more.

My second question relates to the effects of nuclear testing on U.S. nonproliferation policy. Testing is important for Miller's theory because it exacerbates concerns about nuclear dominos, among other things. I wonder how long the effects of a test should persist. A few months? A couple of years? Or perhaps decades?

[4] Memorandum for the Director of Central Intelligence, "Likelihood and Consequences of Nuclear Weapons Production in Fourth Countries," 24 May 1957, https://www.cia.gov/library/readingroom/docs/CIA-RDP80B01676R000600010016-0.pdf.

[5] *Development of Nuclear Capabilities by Fourth Countries: Likelihood and Consequences.* Central Intelligence Agency, NIE 100-2-58, 13-14, https://www.cia.gov/library/readingroom/docs/DOC_0001108555.pdf.

It seems as though the effects can subside quickly. The 1964 Chinese test had a big influence on U.S. policy, pushing Washington to take a stronger approach. However, as Miller documents, by 1969 the United States was relatively lax when it came to nonproliferation. During the period from 1969 to 1973, President Richard Nixon seemed pretty ambivalent about the spread of nuclear weapons (69-74). This is a bit surprising to me, given Miller's causal story (tests → worries about domino effects, higher government attention, openings for nonproliferation advocates → stronger U.S. nonproliferation policy). Shouldn't the Chinese test have continued to produce a universal nonproliferation policy under Nixon? Why didn't it, just five years after the test? For me, given that the change in policy coincided with a new leader coming to power, this suggests that the personalities or beliefs of individual presidents might influence nonproliferation policy, a possibility that Miller considers in the book but mostly in the context of political parties.[6]

Interestingly, India's 1974 nuclear test once again put nonproliferation at the top of the American agenda. This leads to a potentially fruitful explanation: perhaps an administration has to experience something for itself in order for it to result in a policy change.[7] Maybe China's nuclear test did not influence Nixon or his advisers all that much because it occurred under President Lyndon Johnson's tenure. The Indian test, by contrast, occurred on the Nixon administration's watch, which may have made it more salient.

On the other hand, a test may have a long-lasting effect on U.S. policy. Miller's theory suggests that U.S. sanctions threats were credible after 1976 (see chapter 5). This implies that, in general, Washington had a more universal nonproliferation policy post-1976, whereas it relied more on a case-by-case approach prior to that. We can trace the post-1976 policy changes, in part, to the nuclear tests by China and (especially) India. Thus, it appears that nuclear testing may have generated changes in U.S. nonproliferation policy that persist to this day. Of course, there have been fluctuations in the robustness of the U.S. nonproliferation approach over the last four decades. Washington put nonproliferation on the back burner in the Pakistani case, for instance, because it needed help from Islamabad in countering the Soviets following Moscow's invasion of Afghanistan in 1979. In general, though, the U.S. commitment to nonproliferation has arguably been quite strong. However, there were no nuclear tests by previously nonnuclear states from 1974 (when India first tested) until 1998 (when Pakistan tested and India tested again).

These contrasting accounts make me want to know more about how time influences Miller's causal story. Should we expect nuclear tests to have short-term effects in strengthening nonproliferation, or for those effects to linger for decades? The reality is that it might depend. Teasing out the factors that influence how long these effects last might be an interesting topic for future research.

A third question has to do with the nuclear Nonproliferation Treaty (NPT). The NPT relates to both of the book's core questions. The treaty emerged, in part, out of an American desire to do something more about nuclear nonproliferation, in cooperation with the Soviet Union.[8] Once the international community created the treaty, it arguably made it more difficult for the United States to backtrack on nonproliferation. The NPT is therefore both a cause and a consequence of U.S. nonproliferation policy. In addition, membership in the treaty plays a central role in understanding why some states seek nuclear weapons but others do not.

[6] For an argument in this vein, see Rachel Whitlark, "Nuclear Beliefs: A Leader-Focused Theory of Counter-Proliferation," *Security Studies* 26:4 (2017): 545-574.

[7] The notion that people learn more from their own experiences is discussed in an international relations context in Dan Reiter, *The Crucible of Beliefs: Learning, Alliances, and World Wars* (Ithaca: Cornell University Press, 1996): 35, 71.

[8] See Andrew Coe and Jane Vaynman, "Collusion and the Nuclear Nonproliferation Regime," *Journal of Politics* 77:4 (2015): 983-997.

To his credit, Miller acknowledges the role that the NPT might play in both of these contexts. He argues, for example, that U.S. sanctions can strengthen nonproliferation norms (32-33). It is possible, I think, that the causal arrow goes in the other direction too: the presence of the NPT might make it easier to justify sanctions against a proliferator, since the treaty clarifies expectations of what states should and should not do. Broad multilateral sanctions, in particular, seem more likely to me in the post-NPT era than they do prior to the treaty's entry into force in 1970.

Miller usefully accounts for NPT ratification in his analysis of nuclear weapons pursuit (128). He finds a similar pattern with respect to dependence on the United States after 1976 with and without NPT membership in his statistical models. This increases my confidence that the threat of sanctions has an effect on states' decisions to pursue nuclear weapons that is independent of the NPT. Still, I think it would be interesting for further research to examine the ways in which the NPT might influence U.S. attempts to halt the bomb's spread through sanctions and other bilateral actions. For example, it could be the case that Miller's post-1976 dummy variable, which allows us to compare the pre- and post-1976 periods, might be soaking up effects that are attributable to the NPT. Not only does an individual state's decision to join the NPT matter (which Miller accounts for), so too does the mere establishment of the treaty in 1970, regardless of who joins it. Just as there may be a structural break in 1976 because of U.S. domestic legislation, one could argue that the rules of the game changed fundamentally after the NPT entered into force.[9] To account for this, we would want to add a post-1970 dummy variable to Miller's statistical model. This could be problematic because it would overlap substantially with Miller's post-1976 dummy variable, which is critical for testing his theory. As things stand, though, it is not clear to me how much these results are driven by U.S. domestic legislation compared to the NPT. To be clear, I am not suggesting that Miller's argument is incorrect. I am instead contending that the NPT might complement his theory in ways that we do not yet fully understand—for example, by contributing to the credibility of sanctions threats.

Let me close with a final suggestion. Miller's book focuses on U.S. policy—for reasons that make a lot of sense. As I read it, I often found myself wondering about other countries. Did the Soviets respond to nuclear tests similarly and worry about nuclear domino effects in the same way? What about the Israelis? I was pleased to see that, in the book's conclusion, Miller suggests studying whether his arguments map on to other countries (246). I would like to echo that point, as this could be a promising area for future research.

I enjoyed participating in this roundtable. Miller's book presents interesting arguments about critical issues in the realm of nuclear politics. And it contains a wealth of quantitative and qualitative evidence. Moreover, it produces clear implications that matter both for theory and policy. The book is sure to teach you something about nuclear proliferation and cause you to think about pressing issues in national and international security, even if you don't agree with everything in it.

[9] On this point, see Etel Solingen, *Nuclear Logics: Contrasting Paths in East Asia and the Middle East* (Princeton: Princeton University Press, 2007).

Review by Julia Macdonald, University of Denver

Over the last decade there has been a renaissance in the field of nuclear politics. Newly declassified documents have enabled scholars to reevaluate Cold War thinking on a range of nuclear issues, including alliance politics, nuclear strategy, and of course nuclear proliferation.[1] On the latter topic in particular, a number of recent studies have focused specifically on the importance of U.S. nonproliferation policy in explaining the relatively slow spread of nuclear weapons around the world.[2] Nicholas Miller's new book, *Stopping the Bomb: The Sources and Effectiveness of US Nonproliferation Policy*, builds upon this recent body of work to provide a comprehensive analysis of U.S. nonproliferation policy. However, whereas previous studies have tended to focus either on the origins *or* the efficacy of U.S. policies in this area, Miller's book moves the field forward in providing one of the first systematic treatments of both the evolution and effectiveness of U.S. nonproliferation efforts over time.

The author's arguments are clearly laid out in Chapter 1, before the book divides into two sections to empirically test the theories on the sources and effectiveness of U.S. policy. With regards to the sources of U.S. nonproliferation policy, Miller stresses the importance of the Chinese and Indian nuclear tests (1964 and 1974 respectively) in catalyzing changes within the United States. Specifically, he argues that the Chinese and Indian tests had an effect on U.S. nonproliferation policy by: (1) strengthening expectations of nuclear domino effects; (2) causing the U.S. government to pay greater attention to nonproliferation; and (3) providing a political opening for nonproliferation advocates in government. Of the three variables identified, the increased expectation of nuclear domino effects is crucial in explaining why the U.S. government adopted a universal rather than selective nonproliferation policy that policymakers had previously preferred. In addition to heightening expectations of nuclear dominos, the two tests had subsidiary effects in forcing the U.S. government to focus more attention on nonproliferation, and creating 'windows of opportunity' through which nonproliferation policy entrepreneurs could affect policy change. Thus while the tests are crucial to explain why policymakers shifted their preference from selective to universal nonproliferation policies, these "two bureaucratic factors . . . are necessary to explain how these preferences are translated into actual policy changes" (20).

Having theorized the sources of U.S. nonproliferation policy, Miller turns to explain the effectiveness of those efforts over time. He argues that the threat of U.S. sanctions has played a key role in limiting the proliferation of nuclear weapons globally. In particular, the passage of congressional legislation in the mid-1970s created a credible threat of cutting off military and economic support to states dependent on the United States, deterring them from initiating nuclear weapons programs, or weakening their resolve to continue programs already underway. The theory helps to explain why there has been such a slow rate of proliferation by states within the U.S. sphere of influence, and why allies who started the program before the passage of U.S. sanctions policies—for example, Taiwan—subsequently gave up their programs. The argument

[1] See, for example, Gene Gerzhoy, "Alliance Coercion and Nuclear Restrain: How the United States Thwarted West Germany's Nuclear Ambitions," *International Security* 39:4 (2015): 91-129, Alexander Lanoszka, *Atomic Assurance: The Alliance Politics of Nuclear Proliferation*, Forthcoming 2018, Austin Long and Brendan Rittenhouse Green, "Stalking the Secure Second Strike: Intelligence, Counterforce, and Nuclear Strategy," *Journal of Strategic Studies* 38:1-2 (2015): 38-73, Frank Gavin, "Strategies of Inhibition: US Grand Strategy, the Nuclear Revolution, and Nonproliferation," *International Security* 39:4 (2015): 91-129, Eliza Gheorghe, "Building Détente in Europe? East-West Trade and the Beginnings of Romania's Nuclear Project, 1964-1970," *European Review of History* 21:2 (2014): 235-253, and Mark S. Bell, "Beyond Emboldenment: How Acquiring Nuclear Weapons Can Change Foreign Policy," *International Security* 40:1 (2015): 87-119.

[2] See, for example, Gavin, "Strategies of Inhibition," Gerzhoy, "Alliance Coercion and Nuclear Restraint," Lanoszka, *Atomic Assurance*, Andrew Coe and Jane Vaynman, "Collusion and the Nuclear Nonproliferation Regime," *Journal of Politics* 77:4 (2015): 983-997, and Or Rabinowitz and Nicholas L. Miller, "Keeping Bombs in the Basement: US Nonproliferation Policy toward Israel, South Africa, and Pakistan," *International Security* 40:1 (2015): 47-86.

also makes sense of known U.S. nonproliferation policy failures—for example, Iran, Iraq, North Korea, and Libya. Since these states are less dependent on the United States, unilateral sanctions have had less of an effect.

Stopping the Bomb is commendable on many counts. It addresses an important puzzle—namely, the slow rate of nuclear proliferation around the world despite early predictions to the contrary. In focusing on the evolution and effectiveness of U.S. nonproliferation policy specifically, Miller's book not only adds to the growing historiography of U.S. efforts, but also sheds light on variation in U.S. success over space and time. In advancing his arguments, Miller weaves together existing theories of nuclear politics, highlighting what he adds to current explanations and carefully delimiting the scope of his own claims. As Miller makes clear on the effectiveness side, he is "not suggesting that a credible threat of sanctions and dependence on the United States are the *only* factors determining states' proliferation behavior. Rather, the claim is that high dependence on the United States and a credible threat of sanctions will reduce the *likelihood* of a state pursuing nuclear weapons, all else being equal" (33). To test his theories, Miller uses a mixed methods research design, drawing on a wide array of archival material in his qualitative chapters to trace the evolution and effectiveness of U.S. nonproliferation efforts, and employing quantitative methods where appropriate. With regards to the latter, Miller's quantitative analysis of the president's daily intelligence briefs is a particularly novel and persuasive way of assessing the weight of attention on nuclear issues in the wake of the Chinese and Indian nuclear tests.

The book's two theories on the sources and effectiveness of U.S. nonproliferation policy are also attractive to scholars who appreciate multi-causal explanations for foreign policy outcomes. Miller's argument for the evolution of U.S. nonproliferation policy over time draws on realist theory, but also bureaucratic politics as well as domestic political explanations for sources of threat credibility. The second theory on the effectiveness of U.S. policy is similarly appealing in incorporating three causal pathways identified in the literature on the causes of proliferation—security, domestic, and normative. This section of the book also does a service to the field by clarifying a common misconception about the effectiveness of sanctions as a tool of coercion—namely, that they do not work.[3] Instead, Miller demonstrates that this finding is largely driven by selection effects. Since leaders rationally consider the costs of sanctions before they start down the nuclear path, states vulnerable to U.S. pressure are likely to be deterred from initiating nuclear weapons programs. As a result, sanctions that are actually implemented against ongoing nuclear weapons programs tend to be disproportionately targeted against countries with little dependence on the United States, and therefore are more likely to fail. The case of Iran from the 1980s through 2015 illustrates how ineffective unilateral U.S. sanctions can be against a regime that exists outside of the U.S. sphere of influence.

Of course no book can do everything, and given the broad scope of what Miller is trying to explain it is unsurprising that he raises more questions than can reasonably be answered in this single text alone. On the sources U.S. nonproliferation policy, for example, it is curious that shortly prior to both the Indian and Chinese tests, the U.S. National Intelligence Estimates (NIE) were relatively sanguine about the risks of nuclear proliferation and were unconcerned about the possibility of domino effects. Yet almost immediately after China's test and shortly after that of India, the NIE assessment quickly arrived at a much more pessimistic conclusion about the risks of regional proliferation. This shift accords with Miller's argument that the tests were necessary to increase policymakers' expectations of domino effects through a series of mechanisms outlined in Chapter 1. Yet it is interesting to observe that the tests were also necessary for a similar shift in expectations among the intelligence community despite the fact that it had been explicitly considering the consequences of these exact events for some time prior to their occurrence.

On the effectiveness argument, Miller's emphasis on the role of U.S. sanctions in limiting proliferation from the mid-1970s onwards is convincing and supported by a significant body of evidence. Yet it is worth noting that the legislative changes in the United States that are attributed with increasing the credibility of the sanctions threat took place alongside other

[3] See, for example, Robert Pape, "Why Economic Sanctions Do Not Work," *International Security* 22:2 (Fall 1997): 90-136 and T. Clifton Morgan and Valerie Schwebach, "Fools Suffer Gladly: The Use of Economic Sanctions in International Crises," *International Studies Quarterly* 41:1 (1997): 27-50.

international developments in the mid-1970s, including the establishment of the London Suppliers Group (later renamed the Nuclear Suppliers Group - NSG) which sought to restrict the market of materials available to nuclear aspirants. This development is not inconsistent with the book's argument—Miller does not claim that sanctions are the only explanation for state behavior, and some accounts suggest that the NSG had a limited effect on nonproliferation until the 1990s in any case.[4] But it does highlight the fact that separating out the effects of U.S. policies from other simultaneous changes in international nonproliferation policy is difficult.

Finally, the qualitative chapters on the effectiveness of U.S. policies are persuasive, and the archival evidence documenting U.S. government behavior vis-à-vis France, Taiwan, Pakistan, and Iran is impressive. Given the scope of the book and presumed difficulty in accessing primary documents, there is understandably less detailed documentation of the threat perceptions of these foreign governments. Instead, more emphasis is placed on the government's compliance (or not) with U.S. threats as an indicator of their credibility (or lack thereof). Target state behavior is not always the best indicator of assessments of threat credibility, however—a state might believe a threat to be credible and yet refuse to comply for other domestic politics reasons. In the case of Taiwan, for instance, the government may have assessed earlier U.S. threats as credible but continued along the proliferation pathway because it feared abandonment irrespective of compliance with U.S. demands,[5] and/or because the government thought it could keep progress on the nuclear program largely hidden. We now know of course that it was unable to do so, but given that states miscalculate the costs of sanctions, it is not unreasonable to think that they might also miscalculate their ability to keep a program secret for a short period of time. More detail on target state threat perceptions would help to tease out these possibilities.

As we might hope, *Stopping the Bomb* generates some fascinating questions for future research. First, given the book's focus on U.S. nonproliferation policy, an obvious question that Miller touches on in his conclusion is the extent to which other great powers—e.g. Russia and China—share U.S. interests in limiting proliferation and are motivated to act in similar ways. For instance, while China has been a reluctant enforcer of international nonproliferation norms in the past, its more recent behavior vis-à-vis North Korea suggests increased opposition to nuclear proliferation. How strong this interest is, and how it translates into policy, will be of growing interest as China's global influence expands.

Second, one of the key takeaways from the book is the importance of U.S. global economic and military ties in exerting leverage over states' nuclear ambitions. The recent wave of nationalist sentiment within the United States and a growing desire for global retrenchment under President Donald Trump thus raise questions about how successful U.S. nonproliferation efforts will be in the future. As Miller notes, a weakened U.S. commitment to allies not only reduces U.S. influence but may also incentivize their pursuit of nuclear weapons for security reasons, undermining much of the good work documented in this book. Finally, if the United States does pull back from the international stage, Miller's argument suggests that multilateral sanctions will become even more important to preventing further proliferation—whether within the current sphere of U.S. influence or beyond. In the future, therefore, we may see the burden of enforcing global nonproliferation norms increasingly shifting from the United States to the international community, introducing a new set of collective action problems that—as the Iran case has shown—can be extremely difficult to resolve.

[4] Jacques E. C. Hymans, *Achieving Nuclear Ambitions: Scientists, Politicians, and Proliferation* (New York: Cambridge University Press, 2012), 13, 15.

[5] That is, Taiwan lacked a credible assurance that military and economic support would continue if it ceased progress on its nuclear program.

Review by Jayita Sarkar, Boston University

"If China doesn't get little Rocket Man under control, we're going to start RATTLING THE POTS AND PANS."

– Donald John Trump, August 7, 2018, 10:07 AM

Nicholas Miller's *Stopping the Bomb* is an unprecedented examination of change over time in U.S. nonproliferation policy. Miller is most interested in "undifferentiated, across-the-board nonproliferation policy" (21). The book establishes two main theories: the first one concerns what generates across-the-board nonproliferation policies, and the second is about what kinds of nonproliferation policy outcomes are most effective and under what conditions. As the present and future direction of U.S. nonproliferation policy remain inconsistent and uncertain under the current U.S. administration—after all, nobody knows what 'rattling the pots and pans' would look like as policies and under what conditions those might actually be effective— Miller's book is a timely and worthwhile reminder of the importance to the United States government of preventing other countries from acquiring nuclear weapons. Using process tracing of primary sources, statistical analyses of intelligence estimates and briefings spanning over four major country cases, and an exhaustive list of shadow cases, *Stopping the Bomb* is comprehensive and a must-read for anyone interested in the role of nuclear weapons in international politics.

The main point of the book is that U.S. nonproliferation efforts were triggered by nuclear weapons tests by new nuclear-armed countries, namely, China in October 1964 and India in May 1974. According to Miller, this is because U.S. policymakers feared that those two nuclear tests would lead to nuclear dominoes in the region and worldwide. As a result, the Lap Nor test by Beijing and the 'Smiling Buddha' nuclear explosion by New Delhi resulted in greater government attention to nonproliferation in the United States, on the one hand, and generated the opportunity for nonproliferation advocates to influence policy outcomes, on the other. Miller thus goes on to argue that U.S. nonproliferation efforts have been stronger during 1964-1968 (as evinced in the Gilpatric Committee Report and in the multilateral negotiations leading to Nuclear Nonproliferation Treaty) and during the years 1974 to 1980 (as was manifest in the Congressional sanctions legislations and the creation of the Nuclear Suppliers Group). In terms of the effectiveness of U.S. nonproliferation policy, Miller's position is that sanctions are effective so long as the target state or the country of concern is dependent on the United States, and especially when the country underestimates the impact of those sanctions. Sanctions are ineffective toward insulated countries because when countries are not dependent on the United States, sanctions lose their power to hurt. On this account, Miller's work is reminiscent of Etel Solingen's argument that a country's level of integration into the international economy has a decisive impact on its decision to acquire nuclear weapons.[1] Miller, however, correctly underlines that his argument, while in agreement with that of Solingen, pushes further ahead (15-16) by demonstrating under what conditions sanctions would effectively prevent proliferation and when they would be less than successful.

Stopping the Bomb is the first systematic study of U.S. nonproliferation policy from 1945 until 1980 that has attempted to account for change and evolution in the policy and assess its effectiveness. Three of its attributes stand out as exemplary to this reviewer. First, it is a rationalist account that incorporates the role of domestic politics, bureaucratic drivers, and norms while highlighting, but not overdetermining, the influence of national and international security concerns. As a result, the book is able to skillfully integrate the normative with the material factors when examining the causal mechanisms of nuclear dominoes (22), as well as the impact of nonproliferation sanctions. Second, *Stopping the Bomb* foregrounds past U.S. bureaucratic institutions like the Joint Committee on Atomic Energy of the Congress and the independent Arms Control and Disarmament Agency, which remain largely ignored in the scholarship on nuclear proliferation and nonproliferation in both international relations and U.S. diplomatic and political history. Third, and finally, the book underscores the

[1] Etel Solingen, *Nuclear Logics: Contrasting Paths in East Asia and the Middle East* (Princeton: Princeton University Press, 2007).

effectiveness of fear; policymakers' fear of nuclear dominoes drives a proactive across-the-board nonproliferation policy, and the fear of sanctions prevents non-insulated proliferating countries from beginning their nuclear weapons programs. Rarely has the impact of emotions been measured and interpreted to infer the domestic underpinnings of U.S. nonproliferation policy and proliferation-related decisions of other countries. Wittingly or not, *Stopping the Bomb* almost bridges the gap between constructivism and neoclassical realism in the literature on the politics of nuclear weapons, which in and of itself is no small feat. It is without question a deep empirical study with sophisticated theoretical insights on one of the long-standing foreign policy commitments of the United States government since the end of the Second World War.

Notwithstanding its strengths, the book raises a series of significant questions that it either does not directly answer or whose significance it underplays. First, Miller is almost entirely concerned with nonproliferation on the 'demand side.' In other words, the countries of concern to U.S. nonproliferation policies in *Stopping the Bomb* are those that acquire or plan to acquire nuclear weapons, and not countries that provide technologies, materials, equipment, and know-how to actual and/or potential proliferators (the so-called 'supply side'). Despite the book's study of the period 1974-1980 and its references to the Nuclear Suppliers Group, supply-side nonproliferation policy is only tangentially examined, and then, interpreted as evidence for across-the-board nonproliferation policy. In other words, the U.S. government's tensions with allies like France and West Germany over their nuclear exports to Pakistan, South Korea, Brazil and others are used as evidence for across-the-board U.S. nonproliferation policy.

When one incorporates the supply-side, however, U.S. nonproliferation policy from 1974 to 1980 looks far less effective than what *Stopping the Bomb* claims it to be. More importantly, there seems to be consensus within the scholarship on supply-side nonproliferation efforts, both from that time period as well as those published more recently, that the United States government found it extremely arduous to control global nuclear trade in the 1970s and 1980s. This had negative consequences for the effectiveness of U.S. nonproliferation policy on the supply side. The implementation of the Nuclear Suppliers Group's guidelines and the Zangger Committee's trigger list had insurmountable challenges because of the dual-use character of nuclear technologies, and the overwhelming intent of supplier governments and their firms in favor of exporting these technologies, equipment, materials, and know-how to whoever wanted to buy them.[2] If the supply-side U.S. nonproliferation policy proved to be so challenging during 1974 to 1980 and thereafter (note that nonproliferation sanctions targeted both exporters and importers), can it be concluded that U.S. nonproliferation policy was effective during that time period?

Second, the book plays down exceptions and exemptions made by U.S. policymakers to actual and potential proliferators during the period from1964 to1968 and from 1974 to 1980. When one accounts for these exceptions and exemptions, then U.S. nonproliferation policy during 1964 to 1968 and 1974 to1980 gives the impression of being more selective and on a case-by-case basis than across-the-board. This is not to say that the impact on U.S. policymakers of China's first nuclear test and India's first nuclear explosion was inconsequential, but rather the question to ponder is the following: when across-the-board nonproliferation policy is more at the level of *intent and aspiration* for U.S. policymakers than *actual practice*, then how is that policy effective? Examples include the Johnson administration's 1966 decision to do nothing about India's nuclear weapons ambitions (National Security Action Memoranda 351 and 355), presidential waivers during the Carter administration to ensure fuel shipments to India after the 1978 Nuclear Nonproliferation Act, benign neglect of Pakistan's nuclear weapons program during Soviet occupation of Afghanistan, ignoring the proliferation potential of Iraq's Osirak reactor during the Iran-Iraq war, and deliberate public silence in the wake of the alleged nuclear weapon test in 1979 in the

[2] For scholarship from that era see: Michael Brenner, *Nuclear Power and Non-proliferation: The Remaking of U.S. Policy* (Cambridge and New York: Cambridge University Press, 1981), and Rodney Jones, Cesare Merlini, Joseph F. Pilat and William C. Potter. *The Nuclear Suppliers and Nonproliferation: International Policy Choices* (Lanham: Lexington Books, 1984). For more recent scholarship see William Burr, "A Scheme of 'Control': The United States and the Origins of the Nuclear Suppliers' Group, 1974–1976," *The International History Review* 36:2 (2014): 252-276, Isabelle Antsey, "Negotiating Nuclear Control: The Zangger Committee and the Nuclear Suppliers' Group in the 1970s," *International History Review* 40:5 (2018): 975-995, William G. Gray, "Commercial Liberties and Nuclear Anxieties: The US-German Feud over Brazil, 1975–7," *International History Review* 34:3 (2012): 449-474, and Jayita Sarkar, "U.S. Policy to Curb West European Nuclear Exports, 1974-1978," *Journal of Cold War Studies* 21:2 (Spring 2019): 110-149.

Indian Ocean by South Africa with Israeli assistance (the so-called Vela incident of 1979) to name a few. It is not that *Stopping the Bomb* refuses to acknowledge the existence of these exceptions and exemptions but it considers those to have little bearing on its conclusions.

For instance, on page 93, Miller accepts that the Soviet invasion of Afghanistan led first the Carter and then the Reagan administrations to not merely ignore Pakistan's nuclear weapons ambitions but also provide military aid to Islamabad at the same time. Yet he infers that because those policies were necessary to win the proxy war against the Soviet Union, those did not indicate a lack of commitment to nonproliferation. If the operational aspect of U.S. nonproliferation policy is always contingent upon U.S. geopolitical interests, then the nonproliferation policy in *action* will tend to be selective and case-by-case, as most of the historical record reveals. This makes the reader return to the previous question: can we measure the effectiveness of across-the-board U.S. nonproliferation policy from *intent* even when there was inadequate *action*?

Finally, like most security studies scholarship of its time, *Stopping the Bomb* assumes U.S. global preeminence in the 'Free World' throughout the Cold War as constant, and therefore presupposes allies' dependence on the United States as unchanging. This obfuscates the arguments that the book makes for the period 1974 to 1980. The 1970s did not depict a phase of U.S. global predominance but rather of decline marked by the end of the Bretton Woods system, the 1973 oil price shock, and transatlantic cooperation and conflict on economic factors.[3] Thus, the power of the U.S. government to hurt U.S. allies through nonproliferation sanctions was already quite limited during this period. The United States depended upon its West European allies and Japan for policy coordination in order to manage the international economic system at a time of deep turmoil (think of the G-6 summit in 1975 and G-7 with the inclusion of Canada from 1976 onward). Issue linkages made it harder for U.S. policymakers to put pressure on the allies to attain U.S. nonproliferation goals. Nonproliferation sanctions legislations helped pacify critics in the U.S. Congress by providing an outlet to their fears and anxieties about proliferation cascades or nuclear dominoes but in reality did little. It makes sense therefore that the book argues that sanctions are effective as threats but not when they are actually implemented. What this argument fails to point out is that the economic decline of the United States beginning in the 1970s reduced the chances that nonproliferation sanctions would hurt U.S. allies in Europe and Japan; many supplier countries felt disgruntled and alienated but not necessarily negatively affected by sanctions (91). Given these aforementioned concerns, in *Stopping the Bomb* the theory on sources of nonproliferation seems to be more robust than the theory on effectiveness, especially that concerning the later time period.

Moreover, the Cold War context in which the nonproliferation policies were conceived and implemented, partially or fully, needs to be accounted for. For instance, was the fear that nuclear dominoes generated in U.S. policymakers completely unrelated from the fear of Communist dominoes in the Cold War? Is there a North-South dimension present in the fact that only the Chinese and the Indian nuclear tests triggered such acute fears of nuclear dominoes in U.S. policymakers in ways which the British and the French nuclear tests, and Israel's nuclear weapons capability never did? What about the role of domestic and international political context in which defense intellectuals like Albert and Roberta Wohlstetter popularized the fear of nuclear dominoes?[4]

To conclude, the aforementioned points do not diminish the significance of Miller's contribution to international relations scholarship on the politics of nuclear weapons. In fact, *Stopping the Bomb* effectively accomplishes the excruciatingly difficult task of drawing theoretical insights from a complex and fraught past of U.S. foreign policy after 1945. Miller's work is

[3] See, for instance, Daniel J. Sargent, *A Superpower Transformed: The Remaking of American Foreign Relations in the 1970s* (Oxford: Oxford University Press, 2015), and Leopoldo Nuti, "The Making of the Nuclear Order and the Historiography on the 1970s," *International History Review* 40:5 (2018): 964-975.

[4] See Albert Wohlstetter, "Nuclear Sharing: NATO and the N+1 country," *Foreign Affairs* 39 (April 1961): 355-387; on the intellectual history of the Wohlstetters see Ron Robin, *The Cold World They Made: The Strategic Legacy of Roberta and Albert Wohlstetter* (Cambridge: Harvard University Press, 2016).

representative of the cutting-edge security studies literature that combines a thorough examination of digitized primary sources which are meticulously analyzed using qualitative and quantitative methods. As more declassified documents from national and international repositories become available on online databases, there will be an explosion of primary sources-based mixed methods research in political science. Miller's *Stopping the Bomb* will remain instructive to those that come afterwards on how this can be done right.

Response by Nicholas L. Miller, Dartmouth College

Let me begin by thanking H-Diplo/ISSF for hosting this roundtable and expressing my gratitude to Andrew Coe, Matt Fuhrmann, Julia Macdonald, and Jayita Sarkar for their thoughtful and constructive reviews, and to Elizabeth Saunders for writing the introduction. I was humbled by positive things that each of reviewers had to say about my book and found many of the questions and criticisms they raise to be shrewd and thought provoking. Before I dive into my responses, I would like to say a few words about what I hoped to accomplish with this book.

My main goal with *Stopping the Bomb* was to provide the first book-length, social scientific look at the evolution and effectiveness of U.S. nonproliferation policy. When I began working on this project as a dissertation, the prevailing literature in political science mostly focused on nuclear proliferation and nonproliferation at a more general or abstract level, offering theories intended to apply to the behavior of all state actors, often across the entire nuclear age.[28] Much of this literature also tended to downplay or devote little attention to the role of the United States in limiting the spread of nuclear weapons, and/or assume U.S. nonproliferation policies have been constant over time.

In the last few years, this has definitively changed, as historians and political scientists (including some of the reviewers in this roundtable) have produced a wealth of studies digging into the specifics of U.S. nonproliferation policy from a variety of different angles and in a variety of different time periods.[29] My hope is that my book will be considered as one important part of this this broader reinvestigation of the role of United States in limiting the spread of nuclear weapons, a topic I believe will be of enduring policy relevance.

I attempted to do a lot in this book—offering theories both of the sources and effectiveness of U.S. nonproliferation policy, analyzing 35 years of U.S policy change, quantitatively analyzing the impact of U.S. nonproliferation sanctions policy, delving deeply into four cases of U.S. nonproliferation diplomacy, and throwing in a variety of shadow cases for good measure. My aim was to maximize triangulation in testing my arguments, and also to ensure that the book would provide value to different sorts of readers: those interested in theories of proliferation and nonproliferation, those interested in particular historical cases of proliferation, those interested in the history of U.S. policy, or policymakers working in this area. Even if certain readers are not fully convinced by all of the book's arguments, they hopefully will find the historical evidence I provide to be a useful reference for their own research or thinking on the topic.

[28] For example, see Jacques Hymans, *The Psychology of Nuclear Proliferation: Identity, Emotions, and Foreign Policy* (New York: Cambridge University Press, 2006); Etel Solingen, *Nuclear Logics: Contrasting Paths in East Asia and the Middle East* (Princeton: Princeton University Press, 2007); Matthew Kroenig, *Exporting the Bomb: Technology Transfer and the Spread of Nuclear Weapons* (Ithaca: Cornell University Press, 2010); and Matthew Fuhrmann, *Atomic Assistance: How 'Atoms for Peace' Programs Cause Nuclear Insecurity* (Ithaca: Cornell University Press, 2012).

[29] See, for instance, Or Rabinowitz, *Bargaining on Nuclear Tests: Washington and its Cold War Deals* (Oxford: Oxford University Press, 2014); Matthew Kroenig, "Force or Friendship: Explaining Great Power Nonproliferation Policy," *Security Studies* 23:1 (2014): 1-32; William Burr, "A Scheme of 'Control': The United States and the Origins of the Nuclear Suppliers Group, 1974-1976," *International History Review* 36:2 (2014): 252-276; Andrew Coe and Jane Vaynman, "Collusion and the Nuclear Nonproliferation Regime," *Journal of Politics* 77:4 (2015): 983-997; Gene Gerzhoy, "Alliance Coercion and Nuclear Restraint: How the United States Thwarted West Germany's Nuclear Ambitions," *International Security* 39:4 (2015) 91-129; Francis Gavin, "Strategies of Inhibition: U.S. Grand Strategy, the Nuclear Revolution, and Nonproliferation," *International Security* 40:1 (2015): 9-46; James Cameron and Rabinowitz, "Eight Years Lost: Nixon, Ford, Kissinger, and the Non-Proliferation Regime," *Journal of Strategic Studies* 40:6 (2017): 839-866; Alexander Lanoszka, *Atomic Assurance: The Alliance Politics of Nuclear Proliferation* (Ithaca: Cornell University Press, 2018); Eliza Gheorghe, "Proliferation and the Logic of the Nuclear Market," *International Security* 43:4 (2019): 88-127; Rabia Akhtar, *The Blind Eye: U.S. Non-Proliferation Policy Towards Pakistan from Ford to Clinton* (Lahore: University of Lahore Press, 2018); and Jayita Sarkar, "U.S. Policy to Curb West European Nuclear Exports, 1974-1978," *Journal of Cold War Studies* 21:2 (2019): 110-149.

Partly because the book is so broad in scope, it naturally raises a lot of questions and potential concerns, which the reviewers aptly highlighted. In responding to the reviews, I will start with issues raised vis-à-vis the first part of the book, on the sources of U.S. nonproliferation policy, then turn to critiques of the of the second part of the book, on the effectiveness of U.S. policy.

Sources of U.S. Policy

Fuhrmann raises several cogent questions about the book's argument and evidence on the sources of U.S. policy. For example, he asks how long the effects of tests by new nuclear states on U.S. policy should last, rightly pointing out that the advances in nonproliferation policy between 1964 and 1968 were quickly followed by what I call the "nonproliferation lull" under the Nixon administration. Fuhrmann asks whether this suggests that leaders play an important, independent role in shaping U.S. policy and raises the possibility that leaders such as President Richard Nixon may need to experience a nuclear test themselves in order to pursue a strong U.S. nonproliferation policy.

These are insightful observations. In the book's theory chapter, I do briefly mention that there is certainly variation in individuals' baseline beliefs about domino effects and nonproliferation policy (23-24). Consistent with Fuhrmann's idea that some leaders may need to experience nuclear tests for themselves, I note that tests will "cause policymakers to revise their views of the likelihood of nuclear domino effects," thereby translating into support for a stronger nonproliferation policy (24). This seems to be the story with Nixon, as the 1974 Indian test led him to pursue a more active nonproliferation policy in the few months before he resigned and was succeeded by Gerald Ford.

As to the question of how long we should generally expect the effects of nuclear tests on U.S. policy to endure, the theory is agnostic on this. In practice though, it's worth noting that the policy changes instituted after both the Chinese and Indian tests had lasting effects. For example, the Nixon administration ratified the Non-Proliferation Treaty (NPT) despite the president's initial disinterest in nonproliferation and that the treaty continues to form the legal foundation for the nonproliferation regime today. Similarly, the Nuclear Suppliers Group (NSG) and sanctions policies passed by Congress in the wake of India's 1974 test persist to this day and continue to constrain administrations.

Fuhrmann also questions whether concerns about nuclear domino effects were really that much higher after the 1964 Chinese test compared to before 1964, citing a couple of documents prior to 1964 showing policymaker concerns about nuclear dominos.

He is certainly correct that worries about nuclear dominoes or tipping points existed before 1964; indeed, I cite several examples of this in my book (44-45; 49; 51). The pertinent question is whether these concerns were significantly stronger or more prevalent after 1964, as my theory would predict.

In an ideal world, I would have collected the universe of all U.S. intelligence assessments on proliferation before and after 1964 and used some form of text analysis to quantitatively examine the changing prevalence of domino concerns. Unfortunately this is impractical, in part because of incomplete or nonrandom declassification of intelligence assessments from across the U.S. government. As an alternative, I attempted a qualitative assessment based on available assessments, with special emphasis on National Intelligence Estimates (NIEs) on proliferation, which follow a similar format over time and represent the highest level assessments of the government. Consider the difference between the 1963 NIE on proliferation and the 1964 NIE quickly following the Chinese test. In the 1963 NIE, analysts judged that if China detonated a nuclear device, "India probably would not embark on a nuclear weapons program on the basis of a Chinese detonation of a nuclear device" (49). The following year, by contrast, the NIE assessed that "the chances are better than even" that India would seek nuclear weapons in response to China (52). These domino concerns were echoed in the deliberations of the Gilpatric Committee as well as its final report, which emphasized the dangers of a nuclear tipping point triggered by the Chinese test (52-59). Overall, my analysis suggests that domino concerns were indeed more prevalent post-1964, though I think Fuhrmann is right to question the precise magnitude of this difference.

In her review, Macdonald raises a related issue, asking why it is that the U.S. intelligence community could not anticipate Chinese and Indian tests and foresee nuclear domino effects more clearly in advance. Intelligence officials did in fact see the Chinese and Indian tests coming, and I provide a few examples of them anticipating domino effects in advance (49, 51). As to why these concerns became stronger after the tests actually occurred, I think there are a few possibilities: the intelligence community itself may have sharpened its focus on these issues after the tests, leading to revised estimates. Perhaps more importantly, they likely picked up on initial indications that domino effects were imminent—for example, debates in India about acquiring nuclear weapons shortly following the Chinese test or Pakistan's pronouncements following India's test. Some of these developments were picked up in the President's Daily Briefs, which I quantitatively analyzed in Chapters 2 and 3.

In interrogating why exactly nuclear tests and concerns about domino effects mattered so much, Sarkar suggests that my book may not have given enough attention to the Cold War historical context, noting the parallels between fears about nuclear dominoes and fears about Communist dominoes and asking whether the U.S. responded so forcefully to Chinese and Indian tests because these were countries from the Global South.

Sarkar is probably right that I could have done more to establish the importance of the Cold War context in which U.S. policy decisions were made. That said, I did address the relationship between concerns about Communist and nuclear dominoes in the online appendix, although it is easy to see how that could be missed since it is only mentioned in a footnote (265). Drawing on declassified documents, I assessed views on the two types of domino effects among top decisionmakers who were involved in discussions both about U.S. nonproliferation policy and about U.S. involvement in Vietnam in 1964-1965. I find that there is a moderate association between the two—i.e. individuals who believed nuclear domino effects were strong tended to believe the same about Communist dominoes, and vice versa. Future research could examine why and how exactly these beliefs are related to one another.

With respect to the Global South issue, Sarkar's argument is certainly on its face plausible. As she notes, Chinese and Indian tests spurred strong U.S. policy responses whereas earlier British and French tests did not, and neither did Israel's secret acquisition of nuclear weapons. I would argue that we should not expect Israel's nuclear capability to generate as strong a response precisely because they did not test. As I explain in the theory chapter, secret acquisition of nuclear weapons is less likely to trigger domino effects since it "creates uncertainty about both capability and intent and allows the nuclear issue to remain under the radar politically" (23). As for Britain and France (and the Soviet Union), this is trickier. My argument here is twofold: as highly industrialized, powerful countries, their nuclear tests were unlikely to "make proliferation appear feasible to the vast majority of weaker, poorer states" (23), thus lessening concerns about domino effects. Moreover, Britain's and France's overriding adversary (the USSR) had already acquired nuclear weapons when they first tested, whereas China and India both had multiple regional adversaries that were non-nuclear when they first tested, spurring greater fears of domino effects.

It is nonetheless possible that Sarkar is right and that the cultural identity of China and India played a role as well, although I did not find many indications of this kind of thinking in the documents. Moreover, it is worth noting that the United States also responded quite strongly to nuclear aspirations of certain countries from the 'North,' i.e. West Germany and Israel (the latter before it acquired nuclear weapons)

Coe devotes much of his review to critiquing how my argument and evidence on the sources of U.S. policy interfaces with his excellent 2015 article with Jane Vaynman. While litigating each of these points would not enhance this roundtable, I encourage those who are interested in this rather granular argument to read both Coe's and Vaynman's article and my book and come to their own conclusions.

That said, I do feel it is important to respond to a few points. Coe argues that I misinterpret his article when I suggest that it "cannot explain why the United States ultimately adopted an undifferentiated, across-the-board nonproliferation policy" (21). He further contends that I wrongly criticize his work for focusing on the importance of France's acquisition of nuclear weapons in leading to U.S. support for the NPT.

Coe and Vaynman do indeed purport to explain why the U.S. established the NPT, a treaty which helped institute an across-the-board U.S. nonproliferation policy. Yet as I note (12-13), the problem is that the evidence does not support their theory. As my book demonstrates, U.S. concerns about France's nuclear acquisition and its increased autonomy from Washington did not lead to the conclusion of the NPT; China's test did. After France's test, there were a few advances in U.S. nonproliferation policy, as Coe notes, such as the Limited Test Ban Treaty, installing permissive action links on U.S. nuclear weapons in Europe, and reconceptualizing the Multilateral Force (MLF) to provide greater for greater U.S. control over a future NATO nuclear force. But there is little evidence these policy shifts were caused by France's entry into the nuclear club; rather, they largely reflected President John Kennedy's personal beliefs about proliferation and concerns about future West German and Chinese nuclear capabilities. Moreover, the Kennedy and Johnson administrations still refused to fully give up plans for the MLF, which was the crucial roadblock in the way of agreement with the Soviets on the NPT. While initially opposing the French nuclear arsenal, Kennedy eventually offered to provide missiles for France's nuclear weapons program in exchange for their joining the MLF (48-49). Coe and Vaynman's article provides no evidence to support the claim that France's acquisition was crucial. Actually, it acknowledges that "high-level deliberations after China's nuclear test led to the United States dropping its support for the MLF in favor of establishing a nonproliferation regime."[30]

While my emphasis on China over France draws Coe's criticism since it differs widely from his from his research, elsewhere in his review Coe faults my book for being too similar to it. Coe suggests that my finding in Chapter 4 that the U.S. opposed all proliferation by allied and unaligned states after 1964 is "not novel," since he found similar consistency in his 2015 article with Vaynman.

I confess to feeling that the originality critique is a bit unfair, since this chapter is based on a dissertation chapter that was first conceived in 2013 and draws on articles that were published either before or contemporaneously with Coe and Vaynman's 2015 article.[31] Furthermore, as Coe himself allows, this is only one of three observable implications of the theory that are tested in the chapter. It is not uncommon for multiple theories to share observable implications; in these situations, we must also assess implications that are unique to our particular theory, which I do.

Effectiveness of U.S. Policy

Turning to the effectiveness of U.S. nonproliferation policy, Fuhrmann raises the important question of what role the NPT plays—in particular, whether it is necessary in order to make sanctions effective. I do not dismiss the possible importance of norms associated with the NPT, as my theory includes a normative mechanism through which sanctions can have an impact (32-33). As Fuhrmann mentions, I also estimate a model that includes both NPT ratification and dependence on the United States and find that both significantly reduce the odds of countries pursuing nuclear weapons.

That said, I think it is difficult to fully pin down the effect of the NPT in a convincing fashion. Part of the problem is that the era of strong U.S. sanctions policies (post-1976) began after the NPT already was in force. In other words, we do not have a large sample of U.S. sanctions pre-NPT whose effectiveness we can compare to post-NPT sanctions, or a long period of time in between the entry of force in the NPT in 1970 and the institution of sanctions policies in the late 1970s.

What limited evidence we do have between 1970 and 1976 suggests that the existence of the NPT on its own was insufficient for effectively deterring proliferation. For one thing, the majority of countries of proliferation concern, i.e. West Germany, Argentina, Brazil, South Korea, South Africa, and Japan, failed to ratify the treaty initially. Furthermore, 1970 to

[30] Coe and Vaynman, "Collusion and the Nuclear Nonproliferation Regime, 989.

[31] Nicholas L. Miller, "Nuclear Dominoes: A Self-Defeating Prophecy?" *Security Studies* 23:1 (2014): 33-73; Miller, "The Secret Success of Nonproliferation Sanctions," *International Organization* 68:4 (2014): 913-944; and Rabinowitz and Miller, "Keeping the Bombs in the Basement: U.S. Nonproliferation Policy toward Israel, South Africa, and Pakistan," *International Security* 40:1 (2015): 41-86.

1976 saw Libya, Pakistan, South Korea, and South Africa initiate nuclear weapons programs. Indeed, as I discuss in Chapter 3, the establishment of U.S. sanctions policies was partly premised on the idea that the NPT was insufficient on its own, particularly with concerns about imminent domino effects after the Indian test.

Finally, to the extent that the NPT became a more powerful normative inhibitor over time, as more countries ratified the treaty, at least some of this should attributed to U.S. policy, since the United States was instrumental in creating the treaty and pressing countries to ratify it.

Macdonald raises an equally compelling point, asking whether the book presents enough evidence on the decision-making of the countries subject to U.S. sanctions or sanctions threats. As she notes, I tend to rely on the behavior of target states to judge the effectiveness of U.S. sanctions. While this behavior may be consistent with the book's theoretical predictions, it is possible that states may comply (or not) for reasons unrelated to perceiving the threat of U.S. sanctions as credible and powerful. For example, domestic politics or simply a belief that they could hide their program may drive decision-making.

I fully agree that the book could have been improved with more primary source evidence on the internal decision-making of proliferators facing U.S. sanctions. Part of the difficulty lies in the lack of declassified documents and language limitations. I tried to get around this problem by leaning on credible secondary sources, but this is of course an imperfect solution. Future research could certainly dig deeper into primary sources on how U.S. nonproliferation policies are perceived by countries experiencing U.S. pressure.

Both Macdonald and Sarkar suggest I could have done more to examine the supply-side of nonproliferation policy. Macdonald asks whether the NSG (rather than, or in addition to, U.S. sanctions policies) was important in deterring proliferation. Sarkar, meanwhile, suggests that greater focus on the supply-side would have revealed the weaknesses and ineffectiveness of U.S. policy, as the U.S. struggled to control the nuclear exports of its obstreperous European allies in the 1970s.

I do discuss supply-side issues at length in Chapter 3, but Macdonald and Sarkar are correct that I focus on the demand side in terms of explaining the effectiveness of U.S. policy. I am admittedly dubious that supply-side policies, such as export controls and safeguards, are effective in the absence of associated enforcement policies like sanctions. Indeed, there is a growing body of research that questions the efficacy of supply-side nonproliferation controls.[32] Moreover, even if they do play a significant role, it is not clear how they would explain the pattern of proliferation we observe: namely, the fact that no country firmly aligned with the United States has initiated a nuclear weapons program since the late 70s, whereas a number of other countries have done so. Why would supply-side controls only matter for U.S.-aligned states, especially considering that the Soviet Union/Russia was a member of the NSG, as were Japan and all the other major European suppliers? I would contend that the threat of U.S. sanctions starting in the late 1970s explains this pattern more persuasively than the founding of the NSG.

I disagree with Sarkar that looking at the supply-side demonstrates the ineffectiveness of U.S. nonproliferation policy. While she is certainly correct that the 1970s saw many European countries defying U.S. policy by entering deals to export sensitive nuclear technology, I would argue that the United States ultimately got a handle on this problem as its nonproliferation policy became more established. Prior to 1980, European allies of the United States exported enrichment or reprocessing technology to Israel, Japan, Pakistan, Taiwan, Iraq, Brazil, and Egypt. After 1980, there are no clear state-sponsored cases of

[32] For example, see R. Scott Kemp, "The Nonproliferation Emperor Has no Clothes: The Gas Centrifuge, Supply-Side Controls, and the Future of Nuclear Proliferation," *International Security* 38:4 (2014): 39-78; and Nicholas Miller and Vipin Narang, "North Korea Defied the Theoretical Odds: What Can We Learn from its Successful Nuclearization?" *Texas National Security Review* 1:2 (2018): 58-75.

such transfers from Europe.[33] The United States also intervened to stop or limit several dangerous enrichment and reprocessing transfers, for example to South Korea and Taiwan. This suggests that U.S. policy and the establishment of the NSG ultimately has had some success, even if it took a few years to kick in.

Beyond the supply-side issue, Sarkar expresses doubt about the effectiveness of U.S. policy because of several exceptions or inconsistences in U.S. nonproliferation efforts. Many of these are discussed in the book—for example, the waiving of sanctions on Pakistan and India. She further argues that the U.S. was unable to credibly exert pressure on its allies starting in the 1970s because the United States itself was declining and therefore depended more on their support. Ultimately, Sarkar contends, "Nonproliferation sanctions legislations helped pacify critics in the U.S. Congress by providing an outlet to their fears and anxieties about proliferation cascades or nuclear dominoes but in reality did little."

Sarkar is certainly correct that the United States has not enforced nonproliferation with equal vigor in all cases, even after the NPT and institution of sanctions policies. I would still argue, though, that there was a very meaningful shift in U.S. policy over time. Before 1964, Washington rarely threatened or used sanctions against proliferators; considered helping the French acquire nuclear weapons (as discussed in Chapter 6); gave European allies significant control over U.S. nuclear weapons, offered nuclear aid to Britain and France after they acquired the bomb; and strongly considered supporting an independent NATO nuclear force. After 1964, the United States threatened and used sanctions much more frequently—including against allies—,has at least rhetorically opposed proliferation across the board, and has not helped allies that acquire nuclear weapons develop their arsenal.

I would also dispute the claim that the decline in relative U.S. power in the late 1970s made it difficult or impossible for the U.S. to exert successful leverage on its allies. The book provides ample evidence of the U.S. in fact doing so—for example, derailing South Korea and Taiwan's nuclear programs and steering France and West Germany toward more responsible nuclear export policies. It is true that the United States was not omnipotent and failed to convince its allies to end their civilian reprocessing programs, for example, but it still had a lot of success on the nonproliferation front. Sarkar's broader claim, that nonproliferation sanctions "did little," is inconsistent with the extensive qualitative and quantitative evidence I provide in Chapters 5, 7, and 9.

Finally, Coe argues that my book's suggestion that positive inducements are less effective than sanctions is unsatisfying, since they are the mirror image of sanctions and therefore should be effective under the same conditions, i.e. when they are credible and valuable enough.

But this is an incorrect reading of my argument. I make no sweeping claim that inducements are less effective than sanctions; in fact, I explicitly acknowledge that they may be a useful tool (34). As I put it on page 33, I am not arguing that "a credible threat of sanctions and dependence on the United States are the *only* factors determining states' proliferation behavior," simply that they are important ones. Indeed, in the case study chapters, I acknowledge that inducements were important in the Iran case (242) and might have been effective in the Pakistan case had more valuable carrots been put on the table, such as a stronger formal alliance (215-216).

The question of how exactly inducements interact with sanctions, like many of the other issues raised by the reviewers, point toward important future research questions on U.S. nonproliferation policy and international nonproliferation efforts more broadly. My hope is that my book can serve as a useful jumping off point for such inquiry.

[33] See Matthew Kroenig, *Exporting the Bomb: Technology Transfer and the Spread of Nuclear Weapons* (Ithaca: Cornell University Press, 2010).