DENUCLEARIZATION: A MODELS-BASED APPROACH

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Abstract

With nuclear proliferation a major threat to international security, this study examines the factors that led three countries to denuclearize by applying Scott Sagan’s three models: security, domestic politics, and norms. Rather than only observing security issues, which is the most common practice, this study also analyzes the importance of the other two models in denuclearization. The domestic politics model takes account of changes in leadership and state policies when denuclearization occurred. The norms model considers the prestige nuclear weapons bring and their role for the country, as well as the NPT and the pressure that a state faces through isolation by the international community. The study covers three cases – Argentina, Brazil, and South Africa – applying all three models in each case. Argentina and Brazil were two nations that were developing a weapon and reversed, while South Africa was a nation that developed a stockpile and rolled back. Analysis found that although a stable security environment was present for all three counties at the time of denuclearization, the change in domestic leadership for each case proved to be critical. The norms model hypothesis proved to be less significant for denuclearization and a deeper analysis should be conducted.

Introduction

Why do states denuclearize? The common view holds this question is simple: states primarily denuclearize in response to a lack of perceived security...
threats. This study seeks to analyze three cases where states denuclearized but in which security perceptions hold only partial explanatory power. A larger set of factors were evident that led nations to forgo their development. As it has been a pillar of U.S. policy since the end of the Cold War, non-proliferation under President Obama is a serious strategy (Obama 2012). Examining cases where major factors turned countries away from the bomb will be useful for policymakers to understand and recognize when applying policies to countries that are on the path to weapons development or have already developed WMDs.

The Treaty on the Non-Proliferation of Nuclear Weapons (NPT) was brought into force in 1970 to avert the spread of nuclear weapons and promote peaceful practices of nuclear technology (NPT, 2012). Yet even after forty plus years of implementation, there are still states that have not signed the treaty. Furthermore, some have even left the NPT to test nuclear weapons (New Scientist 2009). But what is even more puzzling is that some countries have even developed weapons programs and then proceeded to renege on their commitments (Sublette 2001). This paper will seek to explain not so much why states develop nuclear weapons programs but why states choose to dismantle them.

A brief examination of the literature related to this topic from various scholars will be explored. After adhering to Scott Sagan’s models approach to state proliferation, this study applies them to why states would choose to denuclearize. The research design introduces the dependent and independent variables, as well as the methodology for the case selection. Following this, the analysis section consists of the main body of this paper. Each model is applied to the three cases and examines the validity of the hypothesis. The study then concludes with how well each hypothesis was supported and what this means for current proliferation policies.

**Literature Review**

Kenneth Waltz’s adherence to the Realist school of thought has dominated proliferation debates. Under this theory, states develop nuclear weapons to have absolute power over nations with only conventional forces. To survive in an anarchic world, states develop nuclear weapons to provide deterrence (Waltz 1990). Nations can either pursue external or internal means to increase power. Having a nuclear weapon quantitatively increases a nation’s internal power and is the preferred means for states (Waltz 1981). Relying on an external power that has a nuclear weapon for security in this theory would
be a less preferred, but nonetheless also a sought after option.

However, Neo-Realism’s bias towards external threats does not explain why states acquire nuclear weapons when they have no security threat, or even why they avoid proliferating when they can (Samaddar 2005). More to the point, after researching the initial literature, it is clear that Neo-Realist thinking does not fully explain why states choose to denuclearize.

Etel Solingen expands on the domestic reasoning behind denuclearization, as well as the international relations theory lens of comparative regionalism. This line of thought advances two major assertions. First, denuclearization rests upon the important influences of domestic institutions within the state. Second, the nature of a regional context is integral for states developing coalitions for denuclearization (Solingen 2001). Grand strategies of a coalition are important to understand not just in the international context, but also in respect to regional and domestic policies. Solingen classifies states as either practicing “internationalizing” or “backlash” policies, which translate to their stance in a regional and global context on either pursuing nuclear proliferation or denuclearization. This does well to take into consideration domestic factors and regional factors as to why states denuclearize. Further examination of literature on this topic has even included use of norms by states and their roles, which is an important factor for the status of nuclear weapons.

Role theory, which explains compliance and non-compliance on nuclear proliferation more reliably than most other theories, must also be considered. According to this theory, states are “actors” that adhere to certain roles, much like individuals (Chafetz, Abramson, and Grillot 1996, 376–7). Nonsocial, social, and contextual frameworks are all elements that influence a state’s pursuit of nuclear weapons.

The nonsocial elements consist of population, economic strength, demographics, geography, and history. Social elements comprise the past and current experiences of a nation’s relations with other states, as well as current economic pressures, which allows for a nation to change the view of its own role. This role is considered to have the most influence on a state’s conception because it consists of a state’s social interaction. Contexts and settings also lead a state to develop a particular conceptualization of its role. This can be a regional or global setting in which a nation participates (Chafetz, Abramson, and Grillot 1996). However, the utility of role theory is limited due to its arduous collection and classifying of the fourteen categories of role type. Due to the research constraints of this study, a more simplified analytic approach will be adopted.
Scott Sagan develops a broader view on why states develop nuclear weapons, which is based upon three models: security, domestic politics, and norms (Sagan 1996). The security model adheres to the Neo-Realist model. Sagan’s second model, the domestic politics model, focuses on domestic bureaucratic interests. This can come from the nuclear energy establishment, the military, and states that have either political parties or a large public in support of a nuclear program. The final model, the norms model, focuses on whether actions taken by a state are perceived to be legitimate and suitable, rather than based off of security threats and domestic responses. Implementation of the NPT is now viewed as a legitimate norm for states to adhere to, whereas prior to the NPT, testing nuclear weapons was viewed more symbolically as inclusion in the prestigious “nuclear club.” Today, joining the NPT is viewed as a symbolic act from a responsible government.

In conclusion, what has been developed through the literature review is a much clearer understanding of the research question and variables to be tested. What leads states to denuclearize after adhering to a nuclear weapons policy is clearly multi-causal. However, this study aims to identify what the main causal factors are for denuclearization, thus presenting what would be the most conducive set of policies to promote denuclearization. Waltz’s theory addresses the security threats but does little to address the domestic conditions involved in this process. Etel Solingen provides another framework by focusing on domestic, regional, and global contexts, while also classifying states as “internationalizing” or “backlash” in nature. Chafetz, Abramson, and Grillot expand on role theory and the normative environment that changes a states reasoning for nuclear weapons. Scott Sagan’s three models (security, domestic, and norms) take into account all three frameworks, and provide a well-rounded approach to differing theories as to why states denuclearize. Although his models are applied to why states proliferate, they are still applicable to why states would choose to denuclearize.

Hypotheses

The literature explained the models that will be used for this study. The hypotheses will thus attempt to apply the three models in a practical approach to effectively verify if one can determine the causal factors for why states denuclearize. The hypotheses are as follows:

H1: A significant reduction in security threats is a necessary condition for a state to denuclearize.
H2: A shift in domestic pressure is a necessary condition for a state to denuclearize.
H3: States facing pressure from international norms is a necessary condition for a state to denuclearize.

Although these three hypotheses may all be present in each case, this paper also seeks to examine which hypothesis proves to be the most significant factor for why states denuclearize.

**Research Design: Variables and Case Selection**

*The Dependent Variable: Denuclearization*

Denuclearization is when a state dismantles its nuclear weapons program or a physical stockpile of nuclear weapons that it has accumulated. This study defines states that did not physically build nuclear weapons but did have weapons programs in place as states that denuclearized. The reason for this is the limited number of cases where states reversed course after developing a weapon. Therefore, this study will also take into account states that were in the process of development. Simply assigning denuclearization as the dependent variable for this research paper may be viewed as oversimplifying the complex relationship of nuclear policy. As scholars have noted, a linear causal relationship from measuring which independent variables will lead to the dependent variable is not a straightforward process (Palkki and Smith 2012). However, for the scope of this initial study, this model can provide a solid overall approach to the subject.

*The Independent Variables: Security Model, Domestic Politics Model, and Norms Model*

The security model variable takes into consideration the security environment that a state is in, whether regionally or globally. Military disputes over territory or regional wars are examined during the time period of a state’s nuclear weapons development and its subsequent reversal. For this variable to be present at the time of denuclearization, there would need to be a reduction of security threats. These include either a contextual change in the global environment that previously affected the country or an end to hostilities that previously led the country to develop a nuclear capacity. The domestic politics model variable takes account of individual leaders as well as bureaucratic organizations, specifically the nuclear establishments and military institutions. The change in the autonomy of nuclear programs under new leadership, as well as specifically examining the changes taking place
within states, are factors that will validate the presence of this model. The third model examines the norms variable of the international community and the symbolism associated with having a nuclear weapons program through a state’s status and prestige. Examining the international regime’s policies, such as the NPT, and their effectiveness at changing a state’s decision to adhere to standard and legitimate practices, is an important factor to verify in this model.

Case Selection

This study investigates two nations that had weapons programs over the past few decades and then reversed course: Argentina and Brazil. These two cases were chosen because the two countries are in the same region that both denuclearized at relatively the same time period. This controlled analysis can draw interesting comparisons. The third case examined is South Africa because this is the only case where a nation removed its stockpile of weapons after development. This paper does not attempt to furnish a history of each nation’s nuclear development, yet each model can be used for this and has been done previously in Sagan’s work.

Data was collected through examination of various secondary resources on each individual nation’s nuclear weapons development. The literature on this topic is rich enough to create an understanding of the research design and the general understanding for a states rationale in choosing to denuclearize.

Data Analysis

Argentina: Security Mode

Argentina was considered to have been developing its nuclear weapons program during the 1970s and 1980s (Reiss 1995). However, the initial development of its nuclear capabilities dates back to the early 1950s under the Statist, Nationalist leadership of General Juan D. Peron (Solingen 2001). Security developments during these decades, such as the 1978 Beagle Conflict border dispute with Chile and the 1982 Argentinean defeat in the Falkland/Malvinas War by Britain, are factors that would stand to reason for Argentinean strategists advocate develop of nuclear weapons. Argentina’s largest rival was Brazil at the time, which will be examined closer, but these two nations had not had a physical border dispute since the early nineteenth century. There was an important development that, although not related to the nuclear issue, did create a process for what led to Argentina’s nuclear reversal: the 1979 Rio
de la Plata agreement over disputed water resources on the Parana River. This agreement created the necessary conditions for confidence in both countries to develop faith in the other nation’s affairs (Bitencourt 2001).

Under President Carlos Menem in the early 1990s, Argentina’s nuclear program officially became transparent and peaceful with the Quadripartite Agreement (Argentina, Brazil, IAEA, and the Argentine Brazilian Agency of Accounting and Control of Nuclear Materials) signing in December 1991 (Reiss 1995). This signing was a development that had occurred over the previous ten years with Brazil. The security model shows that although there were some border disputes, there was no real security threat that hampered the process for nuclear reversal. This confirms the hypothesis for this case: stability through security is a necessary condition for denuclearization.

Argentina: Domestic Politics Model

As early as 1980, changes were taking place in Argentina under military rule, specifically in regards to the nuclear program. General George R. Videla reached agreement with Brazil’s General Figueiredo that laid the foundations for nuclear cooperation (Solingen 2001). Following the military’s political loss in the Falklands/Malvinas War in 1982, Raul Alfonsin became Argentina’s democratically elected president, and policies began to shift even more in 1983. Argentina faced cost overruns and problems in the nuclear program from their Atucha I and Embalse reactors (Reiss 1995). Alfonsin attempted to take control over the military’s influence in the nuclear realm. Under the previous military regimes the Argentine Atomic Energy Commission (CNEA) and the navy both had relative autonomy over the program. Thus, the success of the fiefdom programs was over exaggerated to make sure it continued its autonomy and budgetary incomes. As the repressive military regimes came and went, the stability of CNEA continued on until significant pressure was put on it to change course (Solingen 1996).

Alfonsin’s successor, Carlos Menem, faced economic disarray in 1989, which was even more of an incentive to shore up the nuclear program. By 1989, Argentina owed the U.S. $60 billion and another $7 billion in interest (Bitencourt 2001). Menem was seeking a more sensible approach to easing relations with the international community, specifically with the U.S. Menem also faced pressure from the military establishment, such as to maintain the ballistic missile program of Condor II. Condor II was a natural offshoot of the nuclear weapons program since the missiles would provide a means of delivery. However, defining a new role for Argentina was part of Menem’s policies, and the former prestige that weapons programs brought for the military regimes
did not coincide with the new environment taking hold in Argentina (Ibid.).

The transformation in political leadership appears to be a significant component in driving the change in Argentina’s nuclear development. Nevertheless, this case shows there was an initiation of developments under the military regime that started altering Argentina’s nuclear course prior to the change in democratic presidential leadership.

Argentina: Norms Model

Argentina signed the 1967 Treaty for the Prohibition of Nuclear Weapons in Latin America (Treaty of Tlatelolco), which created a nuclear-weapon-free zone in the region (NWFZ). Yet Argentina did not ratify the treaty until 1994 (Riess 1995). This framework set up a political environment in the Southern Cone region for Argentina to adhere to a weapons-free zone. However, Argentina viewed the treaty as ‘discriminatory’ and took an amended version of the document to be ratified.

Argentina disapproved of the treaty, viewing it as a tool of control by international actors. During this time period, Argentine diplomats would frequently repeat the phrase that the treaty was “disarming the disarmed.” After President Menem assumed leadership, Argentina’s view of its role in the international community began to change, especially following the nuclear turnaround. This model provides a cautionary approach to why states choose to denuclearize. While the NPT was viewed as a tool of control throughout the military rule of Argentina, it was later viewed as a trusted mechanism through which Argentina could assure the world it had committed to denuclearization.

Brazil: Security Model

While similar to Argentina, Brazil’s security environment at the time was even more peaceful. Brazil had no border disputes with Argentina, nor was it involved in an isolated military episode similar to the 1982 Falklands/ Malvinas war. Brazilian military rulers during the 1960s through the early 1980s were seeking to enhance their position by gaining acceptance and legitimacy, rather than threatening and causing conflicts with their major regional rival (Azambuja 2010). The Cuban Missile Crisis motivated Brazil to sign the Treaty of Tlatelco, even though the country would not ratify the treaty until 1968 and did not fully abide by it until 1994. Brazil’s push for a nuclear-weapons-free zone at the U.N. did not ultimately lead to a solution in the crisis but it did lay the groundwork for the Treaty’s implementation in 1974 (Treaty of Tlatelolco). This security model hypothesis is still upheld, but it does not produce a sufficient reason for why the nuclear program changed course at the time it did.
Brazil: Domestic Model

Brazil’s nuclear program developed significantly during the 1970s after a multibillion-dollar deal with Germany. Leaders in Brazil were seeking energy security from the 1973 oil shock, as well as seeking to stay ahead of Argentina’s nuclear program (Reiss 1995). However, dissent from Brazilian scientists over the inefficiencies of the nuclear reactors led to President Ernesto Geisel and the president of the Brazilian Association for the Progress of Science in 1980 to discuss more modest approaches to Brazil’s natural resources (Goldenberg and Feiveson 1994). The alternate “parallel program” that took place in Brazil during the 1970s and 1980s, such as the National Nuclear Energy Commission’s (CNEN) ties with the military to create a nuclear test site at Cachimbo, created an even more insecure environment for nuclear suppliers and the domestic nuclear scientists when the program was discovered (Goldenberg and Feiveson 1994). By the time Jose Sarney, the first civilian president, took power in 1985, Brazil had a peaceful nuclear program in disarray and a cover weapons program led autonomously by the military (Reiss 1995).

These factors culminated with even larger changes to Brazil’s nuclear program. The new constitution in Brazil in 1988 restricted nuclear activity to peaceful purposes only (article 21, XXIII, a) (Brazilian Constitution). Sarney’s successor, Fernando Collor, pushed the military back to more traditional roles, reacting to a regime that had from 1964-1984 been in charge of Brazil’s entire organizational structure (Bitencourt 2001).

The domestic politics model hypothesis proves significant in this case, with the new leadership of Collor reversing the military’s development of nuclear weapons. This model further demonstrated how the process of pushing through additional measures to verify denuclearization was protracted. The passage of the Quadripartite Agreement in 1991, which created a bilateral verification system with international organizations, was delayed in Brazil after Collor was forced out of office following a bribery scandal. With Itamar Franco, Brazil’s presidential successor in power, there was no true support from Congress. This postponed the passage of the agreement through the Senate until 1994 (Reiss 1995).

Brazil: Norms Model

Brazil, similar to Argentina, viewed the non-proliferation regime as highly discriminatory. Brazilians not only view their nation as a regional power but as a major power as well. Thus, Brazil would not adhere to treaties that identified it as part of the latter group of states that would not be allowed
to possess nuclear weapons. Yet, from the Brazilian Embassy Policy Papers in 1997, the government changed its view regarding the social construction of the NPT. The Brazilians, while considering the NPT imperfect, believed that it prevented the spread of nuclear weapons, and further, that “Brazil may consider its position in the light of significant and tangible steps in the field of nuclear disarmament, in accordance with article VI of the NPT” (Bitencourt 2001, 161). Brazil, which signed the NPT in 1998, does not view the five nuclear powers as permanent, and believes that considerable positive efforts will bring about these nations’ denuclearization.

This model was not a necessary condition for Brazil to denuclearize. The NPT was perceived as the last vestige of international control over developing nations. Although the view of nuclear weapons changed during the final decades in the twentieth century, the leadership of Sarney and Collor focused more on regional agreements than on the global initiatives being implemented by the international community.

**South Africa: Security Model**

South Africa’s security environment improved markedly during its denuclearization in the early 1990s. Under the rule of Prime Minister John Vorster in the 1970s, South Africa was acquiring the capabilities to produce nuclear weapons. These capabilities underwent development as Portugal’s holdings in Angola and Mozambique fell in 1974, followed by the breakdown of the 1975 Alvor Accords in Angola, which brought with it Soviet aid and a Cuban intervention against South African-backed rebels. Isolated from the West and facing a U.N. arms embargo after the discovery of the Kalahari test site in 1977, the South African government deemed there was “no alternative but to develop a nuclear deterrent” (Liberman 2001). By 1990, six nuclear weapons devices had been created.

When F.W. de Klerk assumed power in 1989, the main security threats had receded. 1988 saw a cease-fire and a tripartite agreement between Angola, Cuba, and South Africa, and the threatening Soviet influence in the region was clearly receding. The resolution of these former external threats led many South African officials to view the nuclear deterrent as superfluous (Reiss 1995). This does confirm the security model’s hypothesis, yet analyzing the other models will lead to a more complete understanding of why South Africa would entirely dismantle its nuclear deterrent capabilities.
South Africa: Domestic Model

Within de Klerk’s first month in office he ordered a high-level report from the AEC (Atomic Energy Corporation), Armaments Corporations (Armscor), and the SADF (South African Defense Forces) on dismantling the nuclear devices (Reiss 1995). De Klerk had a clear anti-nuclear penchant, evident in his decisions to limit the military’s advice and role in nuclear policymaking compared to the previous administrations (Liberman 2001). An important development occurring in South Africa at the time was the change in its apartheid policies. The profound political transition brought the de Klerk administration to worry about “nuclear inheritance” by a radical political faction (Pabian 1995, 10). This led to the unusual activities of destroying all the decisions, design documents, and plans before publicly announcing in 1993 that South Africa would dismantle its nuclear weapons (Sagan 1996). These changes in nuclear policy under F.W. de Klerk were part of a broader set of plans to integrate South Africa with regional partners and the rest of the world.

Domestic actors that were previously involved in nuclear development left their positions, which made it considerably easier for de Klerk to gain momentum for the policy shift. During the 1960s, Wally Grant and A.J.A “Ampie” Roux from the AEC were instrumental in convincing the South African government to develop nuclear enrichment and then nuclear weapons. Other influential actors, such as the former Prime Minister P.W. Botha, left or lost influence, thus creating a vacuum of support for South Africa’s haphazard nuclear policy (Riess 1995, 20).

Examining the costs of the nuclear program, South Africa was able to develop its nuclear capability relatively cheaply. The weapons cost an estimated $300 to $600 million dollars, which was close to 1-2% of the defense budget (Ibid.). Yet Finance Minister Barend du Plessis questioned the economic costs of the nuclear enrichment program and worked during 1989 to break the isolation imposed on South Africa by supporting its economic orientation under de Klerk. These policies including reducing import tariffs and quotas, privatizing the steel industry, and opening up foreign exchange controls (Liberman 2001).

The domestic politics model shows that the change in leadership under de Klerk brought about a major transformation in Pretoria’s nuclear stance. Although there was a reduction in security threats, it took a strategic change in the domestic environment for South Africa to alter its policies. Not only were the weapons unnecessary, but they were becoming a liability. De Klerk stated in March 1993 that, “a nuclear deterrent had become not only superfluous, but in fact an obstacle to development of South Africa’s international relations”
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(Reiss 1995). This examination of the normative environment surrounding South Africa’s denuclearization sheds new light on what factors influenced de Klerk’s reasoning.

**South Africa: Norms Model**

During the 1970s, many South African officials viewed a nuclear deterrent as a symbol of strength. Brigadier Bossie Huysser had “grandiose ideas about the ‘status’ that nuclear weapons would bestow on South Africa” according to Dr. Andre Buys, a former South African nuclear official (Liberman 2001, 70). The NPT was viewed as discriminatory and hypocritical, since the 1974 nuclear test in India brought with it little public outrage compared to the diplomatic censure following the discovery of the 1977 Kalahari test site (Reiss 1995). However, pressure from the NPT regime after the discovery of the test site was enough to make the cost of testing further bombs too high for Pretoria. While this would not necessarily mean that the normative status of testing changed South Africa’s stance, the weight of force backed by the international community did alter the country’s nuclear development. Many South African officials would view the nuclear embargoes from the international community as an extension of the anti-apartheid campaigns. Thus, the non-negotiable stance of officials on apartheid in the 1980s did not allow for the sanctions to develop their full potential on changing Pretoria’s view on nuclear development (Ibid.).

De Klerk answered very differently to the condemnation from the international community than was analyzed in the previous models. He saw ascension to the NPT as a way to gain more credibility and draw support in the West for his domestic plans (Ibid.). However, this simply makes out the NPT as a tool to gain support for changes that had already been planned, not the main causal factor for reversing policies. Although the norms model had a constant presence on South African leaders, it did not shape the government’s reasoning enough to significantly change its policies until conditions in other arenas changed first.

**Conclusion**

In each of the three case nations, the hypotheses were examined to explain why each nation chose to denuclearize. An improved security environment proved to be a necessary factor for South Africa to denuclearize. In regards to Argentina and Brazil, these two nations were in an environment where each perceived each other more as rivals and competitors, rather than as
enemies. The choice to denuclearize by these two nations did not immediately stem from a reduction in security threats. However, an important finding between Argentina and Brazil was that the agreement over the Rio de la Plata dispute in 1979 was a necessary settlement before nuclear disarmament began in earnest. This bears similar resemblance to Pakistan and India’s ongoing dispute over Kashmir. Effective confidence-building measures need to be developed outside the nuclear dialogue. However, with the recent Mumbai attacks in 2008, rising fears of militant groups undoubtedly make any such measures very difficult (Ganguly and Kapur 2010).

The domestic politics proved to be a significant factor in all three cases. Argentina’s Alfonsin, and then Menem, significantly altered the nation’s nuclear position. As these same developments were emerging, Brazil’s Sarney, and then Collor, followed a similar path. Even South Africa’s leadership under de Klerk proved to be extremely influential. Consideration of this model should be necessary for U.S. non-proliferation policy, which only possesses a modest ability to alter a state’s nuclear status. Each of the three countries did not just confine change to the nuclear realm but also adopted changes in larger economic and international integration programs that were taking place. One needs to be careful not make the assumption that because the states’ became democracies, they chose to denuclearize. As was seen between Argentina and Brazil, these two countries’ military leaders initiated the first nuclear discussion between the two nations in 1980.

The significance of the norms model in these three cases is less clear. Throughout the military rule in Argentina and tenure of nationalist leaders in South Africa, each nation unsurprisingly viewed the NPT as discriminatory and hypocritical. However, the international condemnation through isolation of nuclear technology and weapons equipment was effective at slowing down and incentivizing the decision to forgo nuclear weapons. As more internationalizing governments came to power, the leadership was much more responsive to the condemnation, thus increasing the effectiveness of the normative environment. An important implication for this model shows that bilateral or regional nuclear negotiations may be more realistic for nations, as was the case for Argentina and Brazil, to abide by before adhering to international agreements. With the end of the Cold War, the symbolism attached to nuclear weapons has slowly started to recede, as well as their usefulness in solving critical issues. Thus, this model’s relevance and importance will continue to increase only if the NPT regime is able to eventually fulfill its main pillar in Article VI, calling for the disarmament of nuclear-armed states, or else successfully create an
alternative that satisfies demands for non-proliferation (Sagan 1996).

It is pertinent to draw a comparison between the norms model and the domestic politics model. They are more closely related to one another than this paper has taken into account. For example, international treaties are not all signed at the same time and there must be enough domestic support or support from the leadership to sign and ratify the policies. Therefore, it may be less useful to examine the normative environment separate from the leadership of the targeted countries.

This study also does not fully assess the role of sanctions and positive inducements from sender states designed to apply pressure on targeted countries. Iran and North Korea are two present-day cases that fall into this realm. If policymakers are to keep modest expectations for the influence international actors have on outlier states, as this paper’s thesis has developed, those involved in creating the right environmental conditions for nuclear proliferators to shift their calculus may become disenchanted by a lack of results. As the previous three cases proved, and as present-day cases hold true, the parallel nuclear programs of inward looking regimes have become more a symbol of nationalism than a program following a rational cost-benefit analysis.

Application of these models to a larger set of cases would help to further refine the role of each particular model in determining the choice to denuclearize. This future research should include an in-depth analysis on Pakistan and India’s environment security environment, and adapt the successful methods of denuclearization from the Argentina and Brazil cases.

Finally, the future role of the NPT regime is key in discussing lasting and effective policy on denuclearization. The power to delegate rules to the international community is shifting from the “nuclear five” to a greater number of rising powers. If the current nuclear powers not only accommodate these rising powers, but also find ways to answer or significantly respond to calls for all states to adhere to Article VI of the NPT, the treaty and its additional protocols can continue to lead future efforts on non-proliferation. If this process does not lead to perceived equity between current and rising major powers, then what occurred in the 2010 ruling of UNSC resolution 1929—with the two votes against the resolution coming from Brazil and Turkey on the latest international Iran sanctions—will likely lead to further reservation by the leaders of these and other rising nations in supporting punishment for NPT violators.
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