Dropping the Bomb: Explaining Nuclear Reversal

Brian Blankenship
The spread of nuclear weapons has been depicted as one of the most pressing issues for international and American security. In 2010, President Barack Obama declared: “For the first time, preventing nuclear proliferation and nuclear terrorism is now at the top of America’s nuclear agenda” (U.S. News Staff 2010). But this is merely the most recent manifestation of what one scholar has referred to as analysts’ “atomic obsession” (Mueller 2010). Since the first atomic test in 1945, nuclear weapons have been vilified as the harbinger of mankind’s destruction. Moreover, on a practical level, the possession of a bomb has been warned to be an “equalizer” between sovereign states, allowing the weak to challenge the powerful. This prospect has, of course, been less than well-received by Americans, and the result has been an intense amount of worried interest in the prospect of more states getting their “hands” on a nuclear capability.

John F. Kennedy predicted that by the early 1970s, as many as twenty countries might obtain nuclear weapons. However, in what has come to be seen as a triumph of multilateralism and international norms, the Nuclear Nonproliferation Treaty (NPT) was created in 1970, and since that time it has been ratified by 189 countries. Accordingly, the overwhelming majority of countries have never seriously pursued nuclear weapons, and currently only nine countries are believed to possess nuclear weapons—the five members of the United Nations Security Council (UNSC), Israel, India, Pakistan, and North Korea. A number of states have also begun serious nuclear efforts and then abandoned them. It is these latter cases of “nuclear reversal” (or “nuclear abandonment”) that this research seeks to understand.

The conventional wisdom is that states want nuclear weapons for a number of reasons—whether it is to protect themselves or to bolster their images as powerful, influential countries. In

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this study, however, I examine the conditions under which the abandonment of nuclear weapons programs is likely to occur by considering four differing perspectives on nuclear proliferation. Ultimately, I posit that certain conditions are necessary, but not necessarily sufficient, to bring about the reversal of a nuclear program. What follows is a brief review of the scholarly literature, divided into four schools of thought emphasizing, respectively: security, domestic, supply-side, and ideational (normative) factors. The literature review is then followed by an overview of my theoretical approach and finally by an application of my theory to selected cases.

**Schools of Thought: The Pursuit and Rejection of Nuclear Weapons**

*Security*

The security perspective is grounded in the realist paradigm in international relations scholarship (Waltz 1979; Mearsheimer 2001). Security considerations have most commonly been used to explain why states pursue nuclear weapons, but a number of authors have pointed to factors that are useful in explaining nuclear reversal. The first of these is the decline of pressing threats, since presumably a state should be more likely to give up its pursuit of the ultimate weapon if its security environment improves (Sagan 1996/97: 60; Paul 2000; Costanzo 1998). The second inhibiting factor is the acquisition of security guarantees from major nuclear powers such as the United States (Betts 1993: 108-109). Both of these should be likely to inhibit proliferation because states under the “nuclear umbrella” of another nuclear power will have less incentive to endure the economic costs, international outcry, and potential arms races that accompany nuclear weapons programs (Singh and Way 2004: 863; Jo and Gartzke 2007; Meyer 1984; Paul 2000). Thus, the first variant of the security perspective holds that since states want nuclear weapons to protect themselves, nuclear reversal should be most likely when they are more secure.
An additional set of factors that are conducive to nuclear reversal pertains to the possibility that the pursuit of nuclear weapons could be a security liability. Some authors stress that while nuclear weapons are universally desirable, owing to the uncertainty that comes with their existence in the anarchic “self-help” international system, the system’s great powers can coerce proliferators into not pursuing nuclear weapons. This is thought to be particularly true under a bipolar distribution of power, in which the two dominant powers can pressure the members of their alliance “blocs” to forego nuclear weapons (Frankel 1993; Mearsheimer 1990; Paul 2000: 7-9). In addition to great power coercion, which can range from threats to cut off assistance to actual threats of force, one can imagine that a threat of invasion from any state could dissuade a proliferator from continuing its program. In sum, an application of the security perspective to nuclear reversal reveals factors that can make nuclear weapons both less enticing and an actual security liability.

**Domestic Politics**

The domestic politics school of thought emphasizes the role played by key internal actors’ “parochial interests” and pressures on policymakers (Sagan 1996/97: 63; Halperin and Clapp 2006; Lavoy 1993). In this view, the influence of domestic constituencies—namely the military, participants in the nuclear program, and pro-bomb political elites or sections of the public—can be the driving force that promotes proliferation. Hence nuclear abandonment is facilitated when such constituencies are overpowered by other domestic actors. As Sagan (1996/97: 69) notes, such a reversal is most likely to occur in the wake of regime change, as the new government can more confidently retract the policies of the old one and may feel less sympathy for previously dominant pro-weapons constituencies (Costanzo 1998). Liberman (2001: 72) argues, however, the constituencies that benefit the most from an existing nuclear
program—in particular the branches of the military and other government agencies responsible for it, relevant domestic industries, and those employed thanks to the program—are likely to act as permanent advocacy groups for the program. As a result, I speculate, policymakers weighing the costs and benefits of keeping the nuclear option open will most likely have to face a clear, pressing need not to continue; a mere absence of immediate benefits would likely not be enough to result in abandonment, given the support that the program would have from its entrenched interest groups.

Another variant of the domestic politics model is centered on states’ regime types. Some authors have argued that democracies may be more likely to proliferate, as decision-makers could seek to incite or “pander” to nationalist feelings among the populace in order to diminish unrest or enhance their support (Jo and Gartzke 2007: 170; Singh and Way 2004: 864; Snyder 2000). Others, however, have noted that autocratic regimes are more able to stifle domestic opposition and pursue a weapons capability unhindered (Jo and Gartzke 2007; Sheikh 1994). I suspect there is little reason to expect that either democracies or autocracies would universally be more likely candidates for nuclear reversal; on the one hand, autocrats would be more able to overcome the opposition of entrenched pro-bomb interests, but on the other, democracies would likely be more sensitive to public anti-bomb sentiment. Thus, regime type’s impact on nuclear reversal is likely to depend heavily on the stances of domestic constituencies.

Supply-Side

The supply-side perspective focuses on states’ opportunity to develop nuclear weapons rather than their willingness to do so. Siverson and Starr (1990) define opportunity as a state’s “environmental constraints and possibilities” and willingness as its motivations. This analytical distinction has most notably been used in the study by Jo and Gartzke (2007), who classify
opportunity in the nuclear realm as consisting of supply-side factors, such as states’ economic capacity, resource availability, nuclear-relevant infrastructure, and human capital. Some have referred to the supply-side perspective as “technological determinism,” as its most extreme form holds that once a state has the capacity to begin a nuclear weapons program, it will “inevitably” (Meyer 1984: 9; Singh and Way 2004: 862). The less deterministic branch argues that latent technological and economic capabilities are essentially preconditions for serious nuclear ambitions (Gartzke and Kroenig 2009: 152). The supply-side perspective has generally been used to explain the likelihood that states will pursue nuclear weapons and the effectiveness of that pursuit rather than the likelihood of nuclear reversal. However, based on its logic one can imagine that severe economic hardship or technological setbacks in the program could lead a state to conclude that an active nuclear program is either infeasible, or not worth its cost.

_Idational_

The ideational school of thought focuses on states’ self-perceptions and the emphasis they place on nonmaterial values such as status and international respect. The first variant of this model focuses on the extent to which states perceive military power to be a source of prestige. As Prosser (2008: 8-9) notes, nuclear weapons may be sought for their own sake as a source of pride or honor. Alternatively, nuclear weapons may create a “reputation for power or resolve,” thereby enhancing a state’s influence and providing credibility to its deterrent capability (Jervis 1989: 193-214; Huth 1999). According to prestige thinking on proliferation, whether a state stands to enhance its prestige by “going nuclear” depends upon its self-image and the values it holds as important. States that see themselves as major global or regional powers and value “prodigious military capabilities” (“[military] power status”) would be more likely to see nuclear weapons as a source of prestige, and would thus be unlikely to reverse their nuclear course
Indeed, the five permanent members of the UN Security Council, generally recognized as the major powers of the post-World War II order, are also the states allowed to possess nuclear weapons under the NPT (Jo and Gartzke 2007; Sagan 1996/97). On the other hand, so-called “middle states” like the Nordic countries or Canada, which value “multilateralism” and “international compromise” and seek to establish and maintain reputations as benign actors and moral leaders, are unlikely to find nuclear weapons appealing (Prosser 2008: 10-11).

On the flip side of nuclear weapons as a source of honor for states that value military strength, some scholars argue that, for other states, violating the international nonproliferation norm—embodied in the Nuclear Non-Proliferation Treaty (NPT) of 1970—will be seen as largely detrimental to their prestige and self-image. This perspective is based on sociological theories stressing that policymakers conduct foreign policy in a social environment in which some behaviors are deemed unacceptable (Wendt 1999). In short, scholars of the normative view argue that “state behavior is determined…by deeper norms and shared beliefs about what actions are legitimate and appropriate in international relations” (Sagan 1996/97: 73-74). However, not all states are equally likely to abide by international norms; as indicated above, aspiring major powers or states facing severe threats are unlikely to see norms that would constrain their autonomy as worth accepting (Prosser 2008: 10-11).

Some scholars have found that normative concerns do have an impact on states’ likelihood to proliferate. Employing quantitative analyses, Jo and Gartzke (2007) and Prosser (2008) find that major powers and regional powers tend to pursue nuclear weapons at higher rates than other states. Moreover, the study by Prosser (2008: 10, 22) finds that the existence of the NPT correlates with fewer incidents of proliferation. Rublee (2009: 202-203), conducting
comparative case studies, similarly argues that the NPT regime has established a “systemic impetus toward nuclear nonproliferation” by “shaming” its violators.

However, many studies have questioned whether norms of behavior and longings for prestige truly influence the nuclear calculations of potential proliferators independently of more tangible considerations. As Jo and Gartzke (2007: 171) note, the issue of “whether status is the product of ideational or material forces is ambiguous,” as a state’s self-perception may merely reflect its status in the international hierarchy—that is, weaker states follow the lead of the powerful, who seek to either preserve their nuclear oligopoly or become part of it (Waltz 1990). Similarly, given the ever-possible threat of sanctions, acceptance of the NPT regime may be rooted more in states’ economic self-interest than in their desire for international acceptance.

The application of the ideational perspective to nuclear reversal has been scarce, as it is unclear why a state would suddenly seek to gain international respect for NPT adherence or cease to see nuclear weapons as a source of prestige. Prosser (2008) posits that the latter is most likely to occur when military influence in government declines, as armed forces are prone to value military power as contributing to their country’s status. Indeed, one could suppose that the rise of new state leaders in general would be the only means by which the value that states place on norm adherence or on “power status” could change and thus make nuclear reversal more likely (Costanzo 1998).

The Theory and Methodology of This Study

As may be evident, much of the theorizing regarding the decision to abandon a nuclear weapons program has emphasized the decline of state motivations to pursue nuclear weapons as a key explanatory factor—the logic being that if a state has less reason to pursue nuclear weapons, it will be more likely to abandon its program. However, there are reasons to suspect
that the absence of an immediate, compelling need for nuclear weapons will not be enough to cause nuclear reversal. The first reason is the obvious disparity between nuclear abstention and nuclear reversal cases in terms of their progress toward a weapons capability. States that start down the path to obtaining nuclear weapons can be said to have crossed a kind of “threshold”—not only psychologically, but also politically—insofar as ending their efforts would mean giving up the ultimate symbol of power and security, toward which they have already made progress and invested time and resources. Moreover, states are unlikely to abandon their programs just because their original motivation for starting their program is no longer relevant—a program, once begun, will have a momentum of its own, independent of political or strategic motivations (Evangelista 1988; Liberman 2001: 72).

The domestic politics perspective is useful here. A nuclear program has a permanent advocacy group—relevant industries and the “nuclear bureaucracy” (e.g., scientists and segments of the military-industrial complex)—whose members personally benefit from the program’s growth, autonomy, and (especially) survival (Sagan 1996/97). Indeed, policymakers would be reluctant to spend time and political capital to challenge the status quo unless they have a clear reason to do so, given bureaucracy’s tendency to resist change—especially when that change might negatively affect the vested interests (professional pride, funding) of those involved. All other things being equal, any dramatic policy innovation, not just nuclear reversal, requires greater effort than accepting the existing state of affairs (Halperin and Clapp 2006: ch. 6).

Taking into account the perpetual motivations that states have to continue a nuclear program-in-progress—the domestic incentive, along with the uncertainty that comes from their existence in an anarchic international system—this research attempts to identify the conditions under which nuclear reversal occurs. The literature on nuclear disarmament has identified
numerous factors from all schools of thought that are either conducive to or dissuasive from proliferation. However, few studies have specifically focused on the decision to abandon a weapons program as analytically distinct from the decision to never begin one, and no study has sought to systematically identify the necessary conditions for nuclear reversal and determine how these various factors interact to produce nuclear forbearance. 3 Based on the schools of thought depicted above, this study posits that two necessary conditions must be met for a state to abandon its nuclear weapons program. First, the state must not face an existential threat without a security guarantee from a major power. Second, state policymakers must not see nuclear weapons as holding significant prestige benefits. If these conditions are not met, then the state in question can be expected to continue its program.

However, in addition to these, a state must also face a significant disincentive to continuing its program. In particular, this study focuses on three facilitating conditions for nuclear reversal: the desire to gain international respect through nonproliferation, economic hardship, and security threats arising from a given state’s nuclear program. In short, this research argues that there are layers of conditionality behind nuclear abandonment: on one level, a state must not enjoy significant benefits to continuing its program, but on the other, it must also face a cost to doing so.

This study treats a nuclear weapons ambition as having been “abandoned” when a given country places all of its nuclear activities under international safeguards. Levite (2002) has argued at length that many states never truly “abandon” their interest in nuclear technology (or even weapons) but rather pursue a strategy of “nuclear hedging” by developing peaceful nuclear

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3 Empirical studies that explicitly discuss nuclear abandonment include: Costanzo (1998), Paul (2000), and Prosser (2008). However, even these scholars do not sufficiently underscore nuclear reversal’s distinctiveness and the permanent incentives that states have to desire nuclear weapons. Moreover, Paul emphasizes improvements in state security as nuclear reversal’s most important explanatory factor, and Prosser posits several ideal-type “pathways to nuclear reversal” that each focus on some factors to the exclusion of others.
technology. I focus on the abandonment of states’ unsafeguarded nuclear efforts for a number of reasons, the first of which is that it is extraordinarily difficult to say which states are “nuclear hedgers,” as intent is hard to verify. Moreover, it is appropriate to focus on immediate ambitions because the NPT does not ban nuclear hedging; there is little disincentive to keeping one’s options open under safeguards (and little other countries can do to stop it), and thus nuclear hedging is analytically distinct from unsafeguarded efforts. Finally, the termination of unsafeguarded activities will likely be seen as detrimental to the interests of those involved in the program—who naturally want to enhance the program rather than shrink and constrain it, and whose independent control of the intact peaceful efforts would be reduced by international intrusions. Even if a state has a lingering interest in nuclear weapons, international safeguards diminish that state’s nuclear autonomy and make it difficult to re-launch a weapons program.

Hypotheses and Measurement

From these general propositions, I derive a number of specific hypotheses which predict the conditions under which nuclear abandonment can occur. The first (H1) is that a state must not face an overwhelming threat to its survival. Empirical studies have found that the more precarious a state’s security environment is, the more likely it is to pursue nuclear weapons (Singh and Way 2004; Paul 2000). It is difficult to imagine a state discarding a nuclear weapons program while still fearing for its survival—unless, however, it had received a security guarantee from a major nuclear power, as Taiwan and South Korea did from the United States (Jo and Gartzke 2007; Meyer 1984). Moreover, given the inconceivability of using nuclear weapons in any but the most extreme circumstances, if a state faced anything less than an overwhelming threat, then it could be better served by bolstering its conventional forces as a means of securing itself—nuclear weapons are an expensive investment for a capability that is likely to never be
In order to determine whether a given state faced an existential threat, this study focuses on state leaders’ perceptions of the threat posed by their adversaries, as well as whether the they had a security guarantee from a major power. In particular, I would expect that a state would not abandon its program if one of its adversaries had nuclear weapons or was believed to be building them. However, an overwhelming conventional military threat would also be likely to dissuade a state from disarming. I consult national policymakers’ statements in order to determine whether they feared the nuclear intentions of a rival or adversary, as well as whether they considered another state (or combination thereof) to be a threat to the “existence” or “survival” of their respective countries. There need not necessarily be overlap between the two; if a country feared an overwhelming invasion, its leaders would almost certainly express that fear, but nuclear suspicions would not always be accompanied by an expectation of war in the short-term—policymakers might simply seek to hedge against a neighbor’s potential nuclear capability. Finally, even if a state faces an overwhelming threat from an adversary, it would still fulfill the conditions of H1 if it had received a security guarantee from a major power.

Based on the conventional wisdom of the ideational school of thought, Hypothesis 2 posits that major and regional powers will be unlikely to abandon nuclear weapons programs. However, as Hymans (2006) has argued at length, one must also consider national leaders’ other values and aspirations—for instance, whether they place greater emphasis on autonomy and military might or on obtaining a position of political leadership through cooperation and diplomacy. In order to take policymakers’ values and preferences into account, this study focuses on how a given state seeks to further its regional or global importance, and as such, I argue that it

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4 For a discussion of the so-called “nuclear taboo,” see Tannenwald (2007).
5 I primarily rely upon statements found in documents retrieved from the U.S. Foreign Broadcast Information Service (FBIS).
is important to treat states’ status ambitions as primarily self-perceptions, independent of their empirical “ranking,” whether economic, military, etc. Like Prosser (2008: 9-12), I assume that states which value military might as means of bolstering their regional or global prestige will be particularly averse to nuclear reversal.

Thus, I propose two distinct ways of conceptualizing states’ status aspirations at both the regional and global levels. Regionally, I make the distinction between aspiring regional powers, which seek dominance over their neighbors and value preeminent military strength (“power status”), and aspiring regional leaders, which seek “diplomatic or political status” by promoting regional political and economic cooperation and integration (Prosser 2008: 9). One can make the same distinction at the global level—between aspiring major powers that see preeminent military strength as key to their global status (which I call “great powers”), and those that instead value non-military means as ways of bolstering their importance. \(^6\) Thus, regional powers and great powers would be expected to see significant prestige benefits to continuing an active nuclear program, and would not fulfill H2. On the other hand, aspiring regional leaders and major powers that do not see martial strength as the key to their global status would fulfill the conditions of H2—not every state seeking an exalted position in the region or world is bent on domination or on becoming a military powerhouse. \(^7\)

In order to measure states’ status aspirations, I rely upon policymaker statements to determine whether the state fulfilled two criteria: that the state’s leaders desire a position of regional status (“leadership,” “primacy,” etc.); and that they seek military might or dominance over neighbors to achieve that status (this applies equally to great powers). Since policymaker

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\(^6\) This study considers aspiring major powers to be the four countries seeking permanent UNSC membership: Brazil, Germany, India, and Japan, of which only Brazil is examined here. However, whether Brazil was a “great power” as this study defines the term will be established in its case study.

\(^7\) Nuclear weapons would hardly be a boon to modern Germany as a political and economic leader in Europe.
statements explicitly indicating a desire to achieve military primacy or global or regional dominance are likely to be rare, I rely upon policymakers’ references to achieving national “greatness”—or of fulfilling the national “destiny”—through military strength, which are likely to be more common. Additionally, states which see their claims to status as based upon their preeminent military power would be likely to exhibit certain behaviors. Regional powers would be expected to make attempts to dominate their neighbors, either through coercion (measured here via the number of militarized interstate disputes (MIDs) initiated by a given state against other states in the region), subversion, or high military expenditures (i.e., higher relative to the region than its economic size). I also posit that great powers would be expected to have military budgets that are among the highest in the world.

In order to illustrate the distinction between states that seek military strength as an end in itself and those that seek military strength in order to ensure their survival, the contrasting examples of India and Israel are useful. India has since independence been an aspiring regional power in South Asia, and as such nuclear weapons have held significant prestige benefits for it. Indian policymakers have tended to believe not only that their country “would emerge as South Asia’s truly dominant and unchallenged power”—and that any comparison with neighbor and rival Pakistan “diminishes India”—but also that India would become “a great giant” in global affairs (Cohen 2000: 22; Perkovich 2003/04: 138; Nizamani 2000: 27). As one analyst has noted, “New Delhi wants to convey to the major powers the fact that it has the military strength to act as the policeman of the region,” which it treats as “one political and strategic entity” (Matinuddin

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8 Great powers, however, might explicitly link their military might with their status ambitions; claims that the United States is the most powerful country in the world, for example, are highly common among Americans—as are fears that such status may not last. I do not, however, equate valuing military might with praising the armed forces as an institution, as virtually every country’s military is hailed as a symbol of national pride, honor, etc. Primary source documents again come primarily from FBIS.

9 Data on military expenditures, military personnel, and total population is obtained from version 4.0 of the COW National Material Capabilities Dataset (Singer 1987). MID data obtained from version 3.1 of the COW Militarized Interstate Disputes dataset (Ghosn, Palmer, and Bremer 2004).
For India, nuclear weapons were not only a universal symbol of major power status in the Atomic Age, but were also “both a mark of a nation’s greatness and an instrument of power because of their deterrent effect” (Cohen 2000: 19).

By contrast, Israel could not hope to “dominate” the Middle East since its strength was far outmatched by that of the Arab states—seen by Israelis as united in a state of “relentless hostility” toward the Jewish state—and any blatant aggression would almost certainly have stimulated a united anti-Israel coalition. As such, Israel preferred to avoid “transforming Israel into the region’s [perceived] aggressive threat” via excessive provocation (Cohen 1998: 122, 276). Israeli policymakers have always been preoccupied with a position of strength not as an end in itself—in order to achieve regional or great power status—but instead as a means to the end of ensuring their country’s security. Rather than invoking nuclear weapons and military might as sources of national “greatness,” the Israeli leadership saw them as ways of ensuring “the very existence of Israel” (Cohen 1998: 55).

In short, then, Hypotheses 1 and 2 specify the minimum conditions that should be necessary for nuclear reversal. However, as explained above, they should not be sufficient by themselves to induce abandonment, and thus this study posits that at least one of the following facilitating conditions must also be present: a desire to gain international respect through nonproliferation, supply-side adversity, or a security threat that exists because of a state’s nuclear program.

Hypothesis 3 embodies the normative paradigm. This hypothesis predicts that decision-makers will abandon their state's program when they seek international recognition for adherence to the international nonproliferation norm (H3). Policymakers’ inclination to follow the “rule” of nonproliferation imposes a cost upon the continuation of a state’s program, separate from
domestic, economic, or security concerns, because according to the normative argument, states leaders, like all individuals, want to have their conduct accepted by others (Rublee 2009; Meyer and Scott 1983; Sagan 1996/97: 74). To measure H3, I examine whether policymakers expressed a desire to improve their country’s image and reputation—in particular, claims that they want to bring their country international “respect,” “acceptance,” or “approval,” or make their country appear “responsible” or “trustworthy.” However, to fulfill H3 policymakers must also have attempted to praise the international nonproliferation effort as a means to this end, as a state that disparaged the NPT can hardly be said to have used nuclear reversal in order to gain recognition for its nonproliferation stance.

The second facilitating condition for the discontinuation of a nuclear program examined in this study is the presence of supply-side difficulties in the technological, economic or fiscal realms (H4). It is useful to think of short-term supply-side forces, such as economic hardship or technological setbacks in the program’s progress, as constraints not only upon “opportunity,” but also upon a state’s “willingness” to continue its program. Supply-side issues should be potent disincentives for the continuation of a nuclear program, as they would likely lead to a re-evaluation of the opportunity costs of maintaining the program in light of more pressing concerns; periods of decline or austerity could lead to a reallocation of national resources in favor of domestic spending, the conventional armed forces, or other foreign policy needs.

Moreover, economic woes or technological setbacks could make a state more likely to be responsive to external inducements to abandon its program. An ailing economy or a stagnant nuclear program might lead a state to seek greater economic ties and technological cooperation with the rest of the world, which could require it to rein in its nuclear ambitions, given the likelihood of international sanctions or anti-proliferation measures aimed at technology or
resource denial. Solingen (2007, 1994) has argued that the presence of domestic coalitions favoring privatization and integration is conducive to nuclear restraint. I agree, with the stipulation that it is economic hardship which is likely to prompt such a reevaluation of economic priorities.

This study relies upon a combination of economic data and accounts regarding the progress of a state’s nuclear efforts to gauge the extent to which a state suffered from supply-side problems. In order to determine whether technical concerns in the program played a role, I look at whether the program suffered from delays or resource shortages. As for economic concerns, this study examines two measures in particular: a state’s rate of GDP growth or contraction and its foreign debt, as a stagnant economy or sizeable debt load would starkly highlight the costs of a nuclear program.10

Hypothesis 5 pertains to the possibility that a state might face a security threat that exists solely because it is pursuing nuclear weapons. This hypothesis predicts that decision-makers will abandon their state's nuclear program when its continuation could be detrimental to their security, whether owing to fear of a preventive attack by a foreign power, the fear of a regional nuclear arms race, or the fear of being abandoned by a key ally (H5). I rely upon policymaker statements—both from the threatened state and from the state making the threat—to determine whether an examined country was either directly threatened with attack from an enemy or desertion by an ally, or whether its leaders feared that such a threat might eventually be made. Additionally, this study expects that the countries which are most likely to see inherent security costs in a nuclear arms race are those which have the most to lose from one: (1) states that already have a significant edge in the conventional military realm, given nuclear weapons’

10 Data on foreign debt (2011 US dollars), GDP (2011 US dollars), and percentages of real GDP and GDP per capita growth is obtained from the World Bank’s (2011) World Development Indicators.
“equalizing effect”; and (2) countries that are likely to lose a nuclear arms race with their respective rivals, as such countries would face a nuclear-armed rival without possessing their own nuclear deterrent.

The conditions in H5 have been largely underrepresented in the literature, though the potential for a preventive attack less so than the other two (Meyer 1984). However, the possibility that a proliferator could be abandoned by an ally upon which it is dependent for support would likely have a strong dissuasive effect on the program’s continuation (Betts 1993). Similarly, as discussed at length in Paul (2000), a state might fear the consequences of a nuclear security dilemma in its region and thus decide that a nuclear capability might actually worsen its security environment. This dynamic can be seen in the case of India, which had been conventionally dominant over Pakistan but, after both of them achieved nuclear capabilities, the two countries are now faced with a kind of rough parity (Arnett 1998: 32).

Research Design and Case Selection

I use comparative case studies to test the hypotheses enumerated above. I chose the countries which had the longest-running unsafeguarded programs and interest in nuclear weapons after the NPT: Argentina, Brazil, Libya, South Korea, and South Africa. In order to provide variation on the dependent variable (the continuation or termination of unsafeguarded nuclear activities), I also briefly consider why each case did not abandon its program at an earlier point, with particular focus on why South Africa actually built nuclear weapons before later

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12 Taiwan and Iraq are excluded because of their similarities to the South Korean and Libyan cases, respectively. Indeed, Iraq was subject to even greater international scrutiny and coercion (crippling sanctions, threats and use of force) than Libya and thus its reversal seems more obvious and less voluntary (Fuhrman and Kreps 2010). The post-Soviet states (Ukraine, Belarus, Kazakhstan) are excluded because they did not pursue or build the weapons they inherited as independent states, and thus would not have faced the same opposition from a nuclear bureaucracy as countries that had a substantial domestic program. Moreover, they do not appear to have had access to the launch codes for their weapons (Levite 2002: 62).
giving them up.

Case Studies

Argentina and Brazil

Argentina’s nuclear achievements consistently outstripped those of its rival Brazil, largely because its program started first, in the 1950s. The Argentines considered nuclear technology to be an important symbol of their country’s technological prowess and a means of achieving energy independence. Their obsession with nuclear autonomy, as well as their interest in nuclear weapons, intensified during the 1970s, particularly after the military’s seizure of power in 1976. By 1978, construction had begun on both a reprocessing facility capable of producing plutonium for up to two weapons annually and a secret uranium enrichment plant (Adler 1987; Cirincione et al. 2005: 384-385; Reiss 1995: 46-47).

Brazil, on the other hand, only seriously began seeking a nuclear energy capacity in the 1970s. Its motivation for doing so somewhat paralleled that of Argentina, as the Brazilian government saw nuclear energy as an escape from Brazil’s dependence on foreign oil and as essential to sustained economic growth (Brazil 1977: 7-12; CIA 1975a: 2). A 1975 deal with West Germany brought this goal closer, as Brazil was to be provided with a uranium enrichment facility, a plutonium reprocessing plant, and two nuclear power reactors. That same year saw the beginning of Brazil’s secret “parallel program,” in which each branch of the military pursued uranium enrichment in order to keep Brazil’s progress toward nuclear weapons competitive with Argentina’s (Reiss 1995: 48-49, 51; Paul 2000: 108; Cirincione et al. 2005: 396).

But the return of democratic rule in Argentina (1983) and Brazil (1985) subjected their nuclear programs to steady deceleration and curtailed their militaries’ nascent weapons programs. Argentine President Raul Alfonsin installed a civilian to head the National Atomic
Energy Commission (CNEA), cut the nuclear program’s budget, and asserted that Argentina would not pursue nuclear weapons—although he did not forswear uranium enrichment (which had, until late 1983, remained secret), and plutonium reprocessing continued. However, over the course of the decade, spurred by its improving relations with Brazil, Argentina would move toward nuclear abandonment (Reiss 1995: 47-48; Cirincione et al. 2005: 385).

Similarly, technological setbacks and a lagging economy limited the progress of the Brazilian program and ultimately set the stage for its end (Paul 2000: 108-109). The dysfunctional state of the Brazilian program reassured the Argentines that it could not produce a nuclear weapon; even Brazil’s 1987 announcement that it had enriched uranium did not impede nuclear rapprochement, as the Brazilians had notified the Argentines of this development beforehand (FBIS 1987a). The culmination of Brazil’s steady march toward nuclear abandonment was the coming to power of Fernando Collor de Mello in 1990, who brought an end to Brazil’s parallel program and, with his Argentine counterpart Carlos Menem (elected in 1989), forged agreements to renounce peaceful nuclear explosions, set up a system of bilateral nuclear inspections, and even accept IAEA safeguards in 1990-91, effectively ending their ambiguous nuclear weapons postures (Reiss 1995: 51-59; FBIS 1990j).

Adding to and solidifying the de-militarization of their programs was their diplomatic rapprochement, as the diplomatic and nuclear agreements pursued by the two countries in the 1980s built upon ones that had been made in the recent past. In 1979, Argentina and Brazil came to an agreement on the most gnawing issue of concern in their relationship—a territorial dispute over the status of the Rio de la Plata basin. With this agreement, they commenced a decade of diplomatic warming, including increasing cooperation and transparency in the nuclear realm. In 1980 Brazilian President Joao Figueiredo visited Buenos Aires, and the two countries secured an

Although both Argentina and Brazil continued to enrich uranium, their diplomatic thaw was accelerated by the coming of civilian rule in both countries. A series of trust-enhancing measures—such as reciprocal visits to some nuclear facilities (which turned into formalized inspections)—set the stage for the formal end to their nuclear competition, as well as the suspension of Argentina’s ballistic missile program, in 1990. With nuclear ambiguity behind them, both countries ratified the Treaty of Tlatelolco, establishing a Latin American nuclear-free zone, in 1994. The two holdouts finally acceded to the NPT as well—Argentina in 1995, and Brazil in 1998 (Reiss 1995: 55-66).

**Argentina**

**Hypothesis 1**

Argentina’s most important security motivation for pursuing a nuclear program had been its fear of Brazil, built upon over a century of competition for influence in South America, but also exacerbated by Brazil’s growing conventional strength and the possibility that it could obtain nuclear weapons (Paul 2000: 106, 111). By 1980, Brazil’s population and GDP were roughly four times its own, with one prominent Argentine analyst arguing that “a disequilibrium in Brazil’s favor…may become the main threat to our national security” (CIA 1974: 34; Selcher 1985: 26-28; Waisman 1975: 287-288). Nevertheless, beginning in the late 1970s and continuing into the 1980s, Argentine perceptions of Brazilian intentions radically changed, and by the late 1980s, Brazil was no longer perceived as a security threat to Argentina.

The diplomatic thaw that commenced in 1979 had its roots in an evolution of Argentine attitudes, based on observations of changing Brazilian conduct throughout the period. The end to Brazil’s “special relationship” with the United States was one such milestone; Brazil grew less
dependent upon its American economic ties, and the two countries ended their longstanding military partnership. The result was a less anxious Argentina, for which American-Brazilian collaboration had always been a source of alarm (Hilton 1985: 50-51). Similarly, Brazil’s support during the Argentine conflict with Britain over the Falklands Islands reassured Argentina and helped reinforce the diplomatic thaw taking shape (Selcher 1985: 29-31).

But what was perhaps most important in convincing the Argentines that a nuclear program was unnecessary was the reassurance that came from inspections of Brazil’s nuclear facilities and from the realization that the Brazilian program was nowhere near capable of producing a weapon. In the wake of Brazil’s West German deal, Argentine officials had hinted that the country could build nuclear weapons if it felt imperiled by a nuclear threat—a warning which could hardly have referred to any country but Brazil (FBIS 1978d). However, beginning in 1986, Argentine officials visited Brazilian nuclear facilities, including some involved in uranium enrichment. Such visits assuaged Argentine fears even after Brazil’s “parallel program” was revealed in the late 1980s. Indeed, after the 1985 creation of a joint working group on nuclear matters, President Alfonsin claimed that relations with Brazil had reached a “historic” high and a “new phase” of friendship (FBIS 1985j: D2; FBIS 1986d: B1). By 1988, after Argentine representatives had inspected most Brazilian nuclear facilities, Alfonsin went so far as to say that any latent “suspicion” or “arms race” between the two had been eliminated (FBIS 1988c: 35). This reassurance reached its peak in 1990; both countries signed a Joint Declaration on Common Nuclear Policy, formalizing their bilateral inspection system and accepting IAEA safeguards on all of their facilities (Reiss 1995: 55-57, 59).

Other than Brazil, the only sustained threats that Argentina faced were its rivalry with Chile and its conflict with the United Kingdom over the Falklands Islands. However, it is unclear
just how much the Argentines feared either of these countries. Even though their rivalry with Chile was far more hostile than that with Brazil, Argentine policymakers never referred to Chile as posing a dire threat to Argentine security; indeed, the Argentine foreign minister argued in 1981 that Chile was not and should not be seen as “a threat to our existence” (FBIS 1981c: B2).13 In any case, a 1984 agreement ended a longstanding dispute over territory in the Beagle Channel, and the two countries’ relations significantly improved, culminating in the 1989 Treaty of Friendship. Whereas Argentine officials before had criticized Chile’s desire for “Atlantic expansion”—and had prepared for a Chilean attack in 1978—by the late 1980s policymakers were referring to relations with Chile as “cordial” and in “a stage of rapprochement” (FBIS 1978c; FBIS 1981a: B1; FBIS 1986b: B2-B3; FBIS 1989a). Indeed, in 1988 the Argentine intelligence chief argued that a Chilean military build-up was viewed as “usual,” adding that “they are not on the border waiting to invade us” (FBIS 1988b: 29). The combination of reconciliation with Brazil and Chile led to the decline of Argentine feelings of “encirclement”—even among the military, which because of the perception of “diminished reciprocal security threats” actually shifted away from preparations for a potential future conflict (Parish 2006: 143, 157-163; Selcher 1985: 30; Barletta 1999: 22).

With regards to the United Kingdom, the Falklands embarrassment did temporarily heighten the military government’s interest in nuclear weapons (Paul 2000: 105). Similarly, President Alfonsin and his foreign minister argued that the British “fortress” in the Falklands Islands was “a serious threat to the Republic of Argentina” and to “the region’s security” (FBIS 1983f: B34; FBIS 1985d: B3). Even as late as 1988, the Argentine intelligence chief noted that “precautionary measures have been adopted in case the British violate Argentine waters and

13 This is understandable; Argentina’s population was triple, its military spending double, and its military personnel one-and-a-half times Chile’s between 1971 and 1984 (Singer 1987).
jeopardize national security” (FBIS 1988b: 29). However, the status of the islands was a rhetoric-laden issue, and it is unclear whether Argentine leaders ever actually feared that the country’s mainland territorial integrity was in danger. Indeed, it was Argentina that had started the war, and policymakers by-and-large focused on “the sovereignty issue” and on fishing rights around the islands. The Anglo-Argentine conflict to a large extent produced not fear but legal disputes and prideful grandstanding over the small island chain (FBIS 1985j: B1; FBIS 1989g; Dodds 1998). In any case, by 1989 relations were improving; bellicose rhetoric had subsided, and policymakers in both countries expressed their desire to lift unilateral economic sanctions on the other. In 1990 the Argentine Foreign Minister claimed that bilateral relations in general were moving smoothly thanks to the restoration of economic ties and a formal cessation of hostilities (Evans 1991; FBIS 1990a; FBIS 1990n).

Hypothesis 2

For most of its history, Argentina had aspired to the status of a regional power based on its position as the most powerful Spanish-speaking country in South America. However, Brazil’s economic and political ascent threatened this Argentine self-perception, as it represented a challenge to what Argentine leaders saw as their “destined, clear primacy.” As a result, leaders turned to nuclear technology as a way of bolstering their claims to regional power status (Selcher 1985: 26-28; Milenky 1982: 27-29).

While the potential military application of the program was secondary to the development of nuclear energy, nuclear weapons also fit with Argentina’s status ambitions—until Alfonsin’s rule, it was an archetypal regional power (Costanzo 1998: 139-140). Argentine policymakers saw themselves as the inheritors of a “brilliant past”—and their country as destined for a “place in the history of the universe”—and they had traditionally emphasized accruing regional influence.
through military and economic preeminence, with conduct to match it (Gamba-Stonehouse 1991: 233; FBIS 1974c: B4-B5; FBIS 1977c: B4). Rather than seeking regional unity, Argentina had (as noted above) favored economic and military self-sufficiency, and sought to dominate Latin America and maintain political influence with its neighbors so that they could act as “a buffer against Brazil” (Paul 2000: 104; Selcher 1985: 28). President Hector Campora, expressing his agreement with former President Juan Perón, argued in 1973 for a foreign policy philosophy which put “Argentina first then the continent” and thus was inconsistent with agreeing to “disarmament” at the behest of foreigners. In this view, common among policymakers and military officials, the goal of Argentine foreign policy (and of the armed forces) was to establish “a powerful Argentina” that could bring its government and its people “closer to the greatness of the fatherland” (FBIS 1973: B6). Indeed, Perón’s wife Isabel, who served as President in the mid-1970s, claimed that Argentina would “become a [military] power and will occupy the place that it deserves by virtue of its historical destiny of greatness” (FBIS 1975a: B1).

Correspondingly, in the 1970s and into the 1980s, Argentina often had the highest military expenditures in Latin America.\(^\text{14}\) Argentina’s overall military spending exceeded that of Brazil between 1971 and 1985, with its share Latin American defense expenditures far outstripping its share of regional GDP.\(^\text{15}\) Moreover, between 1971 and 1985, Argentina instigated an average of 0.6 MIDs per year with various other Latin American states. However, this changed with the coming of civilians to power and their new emphasis on regional political and economic integration. From 1986 to 1990, Argentina initiated no MIDs in Latin America, and its military expenditures made up only 10.2% of Latin America’s despite its regional

\(^{14}\) In measuring regional military spending and regional GDP, I include all countries in mainland Central and South America, plus Mexico and Cuba. Other Caribbean states are excluded due to data availability and size disparity. 
\(^{15}\) Throughout the entire fifteen-year period, Argentina’s military spending was 21.5% of the region’s, despite the fact that its contribution to regional GDP was only 13.1%.
economic share of 14%. These numbers are consistent with Argentina’s shift away from regional power ambitions; by the late 1980s, the Argentine emphasis on military strength had given way to a new emphasis on regional diplomatic leadership.

Alfonsin and Menem rejected the notion that the strength of the armed forces was symbolic of national greatness; instead, Alfonsin argued, the military’s proper duty was to defend the nation, “national greatness” would come through building democracy and promoting prosperity rather than military might, and all countries were “equal” and obliged to abide by “the golden rule” (FBIS 1983f: B34, B39; FBIS 1986c; FBIS 1988f). When Menem came to power, he (more than Alfonsin) explicitly sought to publicly reconcile with the military, calling for an end to the past “division” between civilians and military officials. However, even though he praised the institution of the armed forces as “glorious,” he never equated military might with the greatness of Argentina. He referred to the armed forces as “the strong guardians of our constitutional order” that had “finally inserted themselves in the Argentine and world democratic institutions,” and he focused on the strength of the military as key to “national defense” rather than national greatness. He also stressed that the purpose of the military was to “preserve peace” and promote the causes of “order, justice, and coexistence” rather than military might for its own sake (FBIS 1990d: 43-45; FBIS 1990h: 40-42).

The civilian governments that were in power after 1983 saw Argentina’s future as one of cooperation rather than dominance; Argentina would have a special position in Latin America not through preeminent strength, but through the promotion of regional cooperation and economic integration (FBIS 1983e; Redick et al. 1995: 111-113). This “cooperative, integrationist” view held by the new civilian governments was in direct opposition to the “conflict-oriented” view of many in the Argentine military, and Alfonsin and Menem rejected
the “balance-of-power” thinking that had animated Argentina’s ambition for regional power status (Selcher 1985: 30; Reiss 1995: 60n72). In this new way of thinking, Argentina would enhance its prestige not by aggressively defending its nuclear autonomy and aspiring to military supremacy, but by projecting diplomatic leadership and working (with Brazil) toward “regional political…and economic integration as a means to strengthen [Latin American] negotiating capabilities vis-à-vis extra-regional actors” (Gamba-Stonehouse 1991: 237). Thus, calls for regional cooperation replaced exhortations to achieve national greatness through the strength of the armed forces.

The realities of Argentina’s geopolitical situation almost certainly played a role in the decline of its ambition to be the predominant Latin American state. As one historian noted at the time, Argentina was increasingly forced to reach “the conclusion dictated by statistics”: that it could not “hope to surpass economically, and hence politically [and militarily],” its ascendant neighbor (Hilton 1985: 51). A nuclear capability can redress security balances, but it cannot create the resources and influence necessary to bestow political primacy. Thus, given the new direction of Argentine foreign policy, the acquisition of nuclear weapons would have brought no significant prestige gains. The move toward nuclear abandonment only commenced with the advent of civilian rule; without the shift in status aspirations that occurred in the 1980s, nuclear abandonment would have been impossible (Reiss 1995: 54-55).

Hypothesis 3

Even though Argentina only ratified the NPT in 1995—five years after nuclear abandonment—the evidence suggests that Menem always intended to join the treaty. His early statements opposing the NPT and Tlatelolco Treaty, on the grounds that signing them would take away from Argentina’s nuclear autonomy, quickly changed in late 1990, when he announced that
the country would ratify the Tlatelolco Treaty (FBIS 1989j; FBIS 1989c; FBIS 1990k). Menem, with the support of some in the Foreign Ministry and Economic Ministry, favored opening up the Argentine program to inspection and joining the NPT, and he eventually overcame domestic opposition (particularly from the military) to doing so (Redick et al. 1995: 107-109; Reiss 1995: 60n72; Paul 2000: 101n10). The presence of domestic opposition is the most likely cause of the gap between Argentina’s acceptance of IAEA safeguards and its accession to the NPT—it took the Chamber of Deputies three years to ratify Tlatelolco, and almost immediately afterwards Menem Administration officials began expressing a desire to then accede to the NPT (FBIS 1993d; FBIS 1993e).

Menem’s foreign minister argued that Argentina favored the NPT because adhering to it “would earn our country international confidence” and add to “the high standing we have built for ourselves concerning nonproliferation,” with Menem himself claiming that NPT ratification would allow the country to “receive credit as a trustworthy country in the world” (FBIS 1994a: 18-19; FBIS 1994b: 34). Joining the NPT fit well with Menem’s broader goal of improving relations with the West and achieving “intimate relations” with the United States—a goal for which he was criticized by Alfonsin (Reiss 1995: 60; FBIS 1990f). Thus, Menem sought to use nonproliferation as a means to improve Argentina’s reputation.

**Hypothesis 4**

Technologically, Argentina’s nuclear program faced a number of hurdles that severely limited its nuclear progress. Although Argentina had no shortage of uranium, its program was beset by setbacks which included the departure of many nuclear scientists due to poor working conditions and low pay, as well as maintenance issues at its reactors (CIA 1974: 33). Moreover, in response to Argentina’s sizeable debt load ($62 billion by 1990, or about forty-five percent of
GDP), when President Alfonsin came into office in 1983 he cut the overall budget of the program by thirty percent. This caused delays in the construction of new nuclear plants and in the country’s program to enrich uranium (FBIS 1989e; FBIS 1985b). As a result, the Argentine plan to make the program self-sufficient by 1997 was delayed, and Argentina remained far from capable of producing weapons-grade uranium (CIA 1984; FBIS 1984c; Reiss 1995: 55-56; Adler 1987: 284). As such, the Argentine program was heavily reliant on the importation of nuclear technology from countries such as West Germany and Canada, which were wary of Argentina’s potential weapons ambitions (CIA 1982). Moreover, the delays afflicting the nuclear program were powerful because, as Menem argued, the nuclear industry was to be “the essential and driving force of our economic transformation” by catalyzing other industries (FBIS 1991d: 91; Doyle 2008: 320; Reiss 1995: 60).

Western countries, led by the United States, exploited Argentina’s domestic vulnerabilities by refusing to export “dual-use” technology, ranging from supercomputers to already-enriched uranium for medical and energy purposes, which the Argentines saw as crucial to their prosperity (Reiss 1995: 53, 60; Doyle 2008: 320, 322; FBIS 1985c). Policymakers in the Alfonsin and Menem governments saw dispelling foreign suspicions over Argentina’s nuclear program as necessary to breaking this technology-denial strategy. However, technological sanctions had a powerful psychological effect as well: they symbolized the economic isolation that Alfonsin and Menem saw as impeding their country’s growth.

As part of a recession that struck Latin America, Argentina’s economy shrunk by an annual average of 1.4% between 1981 and 1990, and it was afflicted by ever-higher debt levels (Reiss 1995: 67; Gamba-Stonehouse 1991: 250; CIA 1982: 7). Spurred by the ailing economy, and encouraged by business and banking lobbies, Alfonsin and Menem were particularly
interested in attracting foreign investment and importing foreign technology as key means of sparking an economic revival (Solingen 1994: 161; Doyle 2008: 320, 322-323). Foreign Minister Domingo Cavallo claimed in 1990 that the country’s “main argument” in trying to attract foreign investors was that Argentina had abandoned its “old foreign policies”—as part of which it was “always defiant about and dissatisfied with the ground rules of the world”—and that Argentina was instead “behaving like a country that observes these rules” (FBIS 1991a: 13-14).

What is more, as one Argentine analyst noted, Argentina was largely at the mercy of its creditor states, who considered declaring it “officially bankrupt.” As such, if Argentina were believed to have the intention to make a nuclear weapon, then the foreign response was likely to be harsh—“the Argentine ‘bomb’ would fall as a real bomb for the IMF and representatives of Argentina’s creditor banks” (FBIS 1983e: B4). Thus, Western sanctions not only stymied Argentina’s nuclear progress; they also more directly harmed Argentina’s economy by depriving it of “dual-use” technology that could have been used for civilian purposes and by creating an environment in which foreign investors and creditors were wary of Argentine intentions (Stanley 1992: 207). Indeed, between 1991 and 2000 the Argentine economy grew by almost five percent annually, buoyed by an end to Western sanctions and rates of foreign investment that were almost eleven times higher than between 1981 and 1990.16

Argentina’s economic woes also incentivized nuclear abandonment because they led Alfonsin and Menem to promote Latin American economic integration. The two leaders saw ending nuclear tensions—and tensions with Brazil more generally—as conducive to expanding regional trade. The culmination of these efforts was the Mercosur continental free-trade agreement (Paul 2000: 111-112; Reiss 1995: 57-58; Barletta 1999: 23; FBIS 1985h; FBIS

16 Data on foreign direct investment is in 2010 US dollars and obtained from the United Nations Conference on Trade and Development (2010).
1990g). Moreover, both countries’ leaders came to realize that they could turn to the other country as a partner in the nuclear energy realm in order to circumvent Western sanctions, and thus reap the benefits of cooperation (Doyle 2008: 320; Reiss 1995: 53). Brazilian President Jose Sarney claimed in 1988 that rather than seeking an arms race, both countries’ “only wish is to jointly cooperate for the development of advanced technology” (FBIS 1988g: 31). Finally, another factor that weighed heavily in the abandonment decision was the Argentines’ realization that a rivalry with Brazil was economically unsustainable; it would have exacerbated Argentina’s economic woes by using up the “scarce resources” needed for domestic concerns (FBIS 1983e: B3; Reiss 1995: 52; Redick et al. 1995: 115-117).

Hypothesis 5

Argentina’s nuclear reversal was not the result of a realization that a nuclear rivalry posed a danger or threatened to worsen its position vis-à-vis Brazil. Just the opposite—nuclear weapons would have served as an equalizer for the two. There is no solid evidence to suggest that the Argentines were somehow frightened into abandonment by the specter of a Brazilian nuclear capability, as the Argentine program was designed to “hedge” against the possibility of a Brazilian bomb, and Argentina would certainly have achieved a nuclear capability first (Reiss 1995: 46; Gamba-Stonehouse 1991: 246-247; Adler 1987: 280-326). Argentine analysts discussed the economic costs of a “destabilized” Latin America if Argentina and Brazil built bombs, but they did not point to a nuclear arms race as an impending threat to Argentina’s security (FBIS 1983e: B3).

As Gamba-Stonehouse (1991: 248) has pointed out, in the views of Argentine leaders, “The genuine need to seek co-operation mechanisms with Brazil in the economic field and to break Argentina’s isolation in the sub-region necessarily could not exclude co-operation in the
nuclear field.” In other words, it was economic concerns that drove the rapprochement with Brazil—the nuclear issue was simply in the way. Moreover, it is significant that when the Argentines realized during the late 1980s that the Brazilian program was essentially defunct, that knowledge did not embolden the Argentines to push forward with their program, as Hypothesis 5 would expect. On the contrary, it helped fulfill H1 by reassuring the Argentines that the Brazilian program posed little threat. Indeed, because Argentina had the lead in terms of its nuclear program, it was able to “set the pace” of the nuclear rapprochement from a position of strength (Gamba-Stonehouse 1991: 247).

Thus, rather than being a response to fear of attack or of an arms race, as predicted in H5, Argentine nuclear abandonment was motivated by the realization that any sustained, hostile rivalry with Brazil promised to be futile and costly (Hilton 1985: 51; Guglialmelli 1976: 165). For Argentina, concerns over Brazil’s nuclear weapons per se were less important than its desire to improve relations with Brazil. That is not to say that without trust in Brazil, Argentina would have ended its own program; mutual faith was essential. However, nuclear reversal was a means to the end of fostering friendship with its rising neighbor, not a strategy for enhancing Argentine security.

**Brazil**

**Hypothesis 1**

Throughout their bilateral history, Brazil had traditionally perceived the Argentine ambition for leadership and dominance in Spanish-speaking Latin America, particularly under Argentine President Juan Perón, as being designed to “isolate” it and thus ensure Argentina’s regional hegemony (Hilton 1985: 28-35). Brazilian officials were also alarmed by Argentina’s nuclear lead and the mystery surrounding the Argentine program (Grabendorff 1987: 348-349;
Rosenbaum 1975: 261; FBIS 1979). But with the end of their territorial dispute in the Rio de la Plata basin, along with Perón’s 1974 death, Brazilian perceptions of an Argentine threat were greatly diminished (Costanzo 1998: 147). In previous decades, Brazilian officials had routinely referred to Argentina’s ambition for territorial expansion and “hegemony” in the region at Brazil’s expense, but by the 1980s these fears subsided. In 1980, Brazilian President Figueirado even claimed that the two countries were like a married couple “thinking about how many children they are going to have,” and as the decade unfolded, Brazilian policymakers supported Argentina in the Falklands conflict and increasingly described their relationship with Argentina as one of “mutual trust,” and their Argentine counterparts as “partners” with whom they had settled their differences (Hilton 1985: 32-34, 49-51; Selcher 1985: 26-28; Myers 1984: 881; FBIS 1982: D1-D3; FBIS 1988a: 22-23).

The only sticking point was the Argentine nuclear program; one Brazilian journal argued: “nothing could be more harmful…than an arms and nuclear race between Brazil and Argentina” (Rosenbaum 1975: 261; FBIS 1977f: D10). But as diplomatic and nuclear rapprochement proceeded, buttressed by visits to Argentine nuclear facilities, Brazil grew increasingly comfortable with Argentina’s intentions and capabilities, until finally the two countries institutionalized their mutual nuclear inspections in 1990-91 (Reiss 1995: 55-57). Indeed, President Sarney asserted in 1988 that their “nuclear cooperation agreements…have refuted any speculation of a nuclear race between Brazil and Argentina,” with Collor adding two years later that bilateral inspections had given “a conclusive step for the total overcoming of any type of competition between our countries in the nuclear field” (FBIS 1988a: 23; FBIS 1990l: 28). The change in Brazil’s security environment, then, mirrored that of Argentina. By the late 1980s Brazilian leaders saw their Argentine counterparts as partners, not adversaries—military officials
no longer planned for conflict, and policymakers were no longer afraid of Argentina’s nuclear intentions (Barletta 1999: 22).

Hypothesis 2

The Brazilian nuclear program went hand-in-hand with its major power aspirations. Brazilian leaders denounced the NPT on the grounds that it “institutionalizes inequality between nations” and accomplished a “freezing of world power,” arguing that Brazil had every right to a nuclear program free of international inspections—and even to build nuclear weapons if it so desired (Rosenbaum 1975: 268-269). Brazilian leaders saw nuclear technology, even without weapons, as granting special status to the states which mastered it (Gamba-Stonehouse 1991: 232-233). Brazilian officials claimed that Brazil would obtain “new technological and political status” and “be transformed into a great power” by the agreement with West Germany (Rosenbaum 1975: 261; FBIS 1975c: D1-D2). Some Brazilian military leaders had also seen nuclear weapons as capable of accelerating their country’s rise to major power stature (CIA 1975b: 6-10). They looked to the example of Great Britain, which had in their view remained a major power in part because of its nuclear capability (Rosenbaum 1975: 268-269).

The new civilian leadership, however, sought to achieve major power status through non-nuclear means. Most prominently, they wanted to ensure their country’s future economic growth. As Grabendorff (1987: 352) has noted, in the late 1980s Brazilian policymakers increasingly relied on “diplomatic activities” and the country’s “economic weight” as “means for acquiring new international status” (Prosser 2008: 27; De Lima and Hirst 2006). Collor’s government, especially, emphasized that economic development was the surest means by which Brazil could bring its major power aspirations to fruition—secretary of state for science and technology Jose Goldemberg (2006: 42) argued that “the road to enter the First World is not the development of
nuclear weapons but solving the problems of underdevelopment.” Collor himself made a
campaign pledge “to see that Brazil gets to sit down at the table” with the Group of Seven largest
economies (G7) by not only catching up to them, but by lobbying for the G7 to be expanded so
that Brazil could be admitted into the “club” of elite economies (FBIS 1989h: 27). Unlike
military leaders, who had favored autarkic development, Collor was convinced that in order to
attract foreign investment and secure access to foreign technology, his administration needed to
dispel the ambiguity surrounding Brazil’s nuclear intentions. Thus, the nuclear weapons program
was seen by policymakers as blocking Brazil’s larger prestige goal: achieving major power status
by rising in the world’s economic hierarchy.

At the same time, during its pursuit of nuclear weapons (1970s-1990), Brazil was never a
“regional power” or “great power” in the way that this study defines the terms. Brazil’s total
military spending between 1971 and 1985 was less than that of Argentina, and only made up
18.2% of the regional total despite Brazil’s economic share of 34.2%. This disparity grew wider
in 1986-1990. Similarly, Brazil only initiated two Latin American MIDs during 1971-1985, and
no MIDs between 1986 and 2001. In 1975, at the height of military rule, before the economic
catastrophe of the 1980s, and at which point it was the world’s ninth largest economy, Brazil still
had only the world’s thirtieth highest military expenditures, and by 1990 it had fallen to fifty-
fourth despite its position as the tenth largest economy.

Brazilian leaders saw themselves as destined for what could be described as “natural
primacy,” based not on preeminent military strength but on Brazil’s unique advantages—its
population size, economic strength, and exceptional, multiracial national character (FBIS 1974a;
FBIS 1978b; FBIS 1980a). As its foreign minister declared in 1977, Brazil’s “importance in the
world” flowed naturally from “the potential offered by its continental size,” “the open and
progressive spirit of its people,” and from its “notable economic accomplishments” (FBIS 1977e: D2). Policymakers stressed “diplomacy” as a means of bolstering the country’s “national power” rather than unilateral military strength (FBIS 1964: DDDD1; FBIS 1974b: D1-D2; Myers 1984: 888; Grabendorff 1987: 351-352).

This was even more the case under civilian rule. Sarney claimed that Brazil had “no hegemonic pretensions” and only sought to pursue “complete [regional] integration,” and Collor noted that Brazil had “traditionally rejected” playing a “hegemonic role” or wishing “to exercise power” (FBIS 1987b: 20; FBIS 1990c: 61; Gamba-Stonehouse 1991: 237). On one occasion, Sarney did claim that “poorly trained Armed Forces” would result in a “loss of international prestige” by embarrassing the country. However, he did not equate the maximization of military might with Brazilian prestige; instead, he merely praised the “patriotism” and spirit of armed forces as an institution (FBIS 1987c: 36-38).

Even during military rule, nuclear weapons were never seen as key to Brazil’s major power aspirations. Rather, policymakers had seen their country’s “economic miracle” of the 1960s and 1970s as being at the core of its claim to major power stature, and as a result the economic hardship that it faced in the 1980s was particularly deflating to its sense of importance (Grabendorff 1987: 351; U.S. Department of State 1978: 3; hereafter State Dept.). As Naval Minister Mario Cesar Flores argued: “Either Brazil modernizes and internationalizes [its economic policies] or it loses its place in the world and in history” (Goldemberg and Feiveson 1994: 14).

On the whole, while it is unclear whether Collor, if given the opportunity, would have opted to simultaneously pursue nuclear weapons, spark an economic revival for his country, and continue Brazil’s active diplomatic involvement, what is clear is that the Brazilian preference for
non-military means of enhancing its major power legitimacy meant that a nuclear capability held no significant prestige benefits (H2) in their quest for major power status, particularly under civilian leaders. Indeed, the case of Brazil is consistent with H2’s core assumption—namely that most states, particularly aspiring major powers, will perceive there to be *some* prestige benefits to the acquisition of nuclear weapons, but that only for those which value “power status” will those benefits be an insurmountable obstacle to nuclear reversal.

**Hypothesis 3**

Brazilian policymakers were preoccupied not with a desire to gain international acceptance through NPT adherence, but to do away with the economic costs that nuclear ambiguity entailed. Rather than paying lip service to the nonproliferation norm, decision-makers in the Sarney and even the Collor administrations were more concerned with the tangible benefits that nuclear abandonment and the acceptance of IAEA safeguards were expected to bring—including access to technology such as supercomputers from the United States (Redick et al. 1995: 113-116; FBIS 1990i). Moreover, there still existed considerable animosity toward the discriminatory nature of the NPT—animosity which had not appreciably softened under Collor. Even in 1990, the head of the Brazilian nuclear program referred to the NPT as “the Treaty for Maintaining the Status Quo,” as Brazil’s leaders continued to see their country as a champion of those for whom the “status quo” meant a continued position of weakness: the Global South. Moreover, resentment of the NPT’s “inequality” continues even into the present (FBIS 1990e; FBIS 1991f: 36; FBIS 1994d; Herz 2011: 164). Thus, a desire to gain international respect through a firm nonproliferation stance was not critical in Brazil’s 1990 nuclear abandonment (Reiss 1995: 60).

**Hypothesis 4**
The same kinds of supply-side concerns faced by the Argentine nuclear program also afflicted that of Brazil. By the mid-1980s, Brazil’s program was also suffering, owing to technical difficulties and budget cuts, and had only created a small amount of very low-enriched uranium. Its existing reactors suffered from maintenance issues, the reactors it was building had been delayed, and the reactors it had planned to purchase were canceled; furthermore, the program did not have sufficient personnel to make use of the technology imported from West Germany (Reiss 1995: 56-57, 66-67; Adler 1987: 303-326; CIA 1983: 6, 9-10). Contributing to Brazil’s nuclear difficulties were sanctions by many developed countries, including the United States and to a lesser extent West Germany, which refused to export certain “dual-use” technologies such as “computerized precision machine tools, electronic components, and supercomputers” to both Brazil and Argentina. Moreover, since neither country’s program was under IAEA safeguards, they could not import nuclear technology from most states, and those that did export to them, such as Germany and the Netherlands, required strict bilateral safeguards (Doyle 2008: 320, 322; FBIS 1989f).17

Also contributing to Brazil’s nuclear woes was the economic adversity that it faced during the 1980s. Throughout the decade, Brazil’s economy grew quite slowly,18 and the country simultaneously accumulated the world’s largest external debt ($120 billion by 1990, or about twenty-five percent of GDP) and contended with ruinous hyperinflation, limiting its ability to commit sufficient resources to a nuclear weapons program (Grabendorff 1987: 354; FBIS 1991f: 32-33). As a result, the program’s budget was cut by forty percent in the mid-1980s (FBIS 1986e; Myers 1984: 901). Sarney and Collor perceived the economic situation to be an impetus

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17 (West) Germany did not require acceptance of full-scope IAEA safeguards from its customer states until 1995—a decision that was announced in 1990 and which weighed on Argentina and Brazil (Reiss 1995: 63).
18 Annual GDP growth averaged 1.6% between 1981 and 1990—far from the “miraculous” levels of the 1960s and 1970s. Moreover, GDP per capita decreased by annual average of 0.4% during this period (World Bank 2011).
for a change in economic policy—one more oriented toward private sector growth, foreign trade, and foreign investment—which by extension made nuclear abandonment all the more attractive (Solingen 1994: 161; FBIS 1985a; CIA 1990: 1, 7, 8; FBIS 1990c; FBIS 1988d).

Collor’s government, even more Sarney’s, saw the end of Brazil’s nuclear ambiguity as a precondition for the revitalization of the Brazilian economy. The Western strategy of technology denial had not only blocked Brazil’s nuclear progress; it also slowed other Brazilian development efforts, and as a result the government faced pressure from business, science, and finance interests to open up its nuclear program and abide by IAEA safeguards (Doyle 2008: 320-321; Redick 1995: 43). The foreign and economic ministries under Sarney and Collor also sought to end Brazil’s nascent weapons pursuit and open the program up to foreign inspections so that the country could reap the economic and technological benefits of an end to its isolation (Reiss 1995: 60; Redick et al. 1995: 116-118). Collor in particular argued that “access to modern technology…would lessen the huge gap that currently separates the developed countries…and the developing countries” (FBIS 1991c: 31).

As a result, Brazil made its nuclear programs more transparent, anticipating that foreigners would therein be more likely to trade with or invest in Brazil. In a symbolic gesture, Collor (with great fanfare) even shoveled cement into a nuclear test shaft, declaring it closed. As a result, in 1990 the United States offered to “cooperate in advanced technology.” President George Bush proclaimed that he trusted “the Brazilian Government’s demonstrations of its peaceful use of advanced technology” and expressed openness to the sale of supercomputers—and potentially more (FBIS 1990i: 33-34). Ultimately, 1991-2000 saw more than an eight-fold annual increase in foreign investment into Brazil as compared to 1981-90, and by mid-decade the economy was growing steadily.
Civilian governments’ preference for freer trade and economic integration especially manifested itself in Brazil’s relations with Argentina, as both saw the benefits of cooperation as yet another reason to denuclearize (Barletta 1999: 23; FBIS 1987b; FBIS 1991f). The nuclear issue was increasingly seen as an antiquated remnant of tensions that stood in the way of the expansion of trade (Reiss 1995: 57-58; Paul 2000: 111-112). Moreover, Brazilian policymakers sought technological cooperation with Argentina in the nuclear realm as a way of overcoming Western technology denial. Both countries hoped that breakthroughs in peaceful nuclear technology “would stimulate growth in metallurgy, chemistry, mineralogy, welding,” and other industries, and since they could hope to receive only minimal help from the developed world, they would seek each other’s aid rather than allow their mutual suspicions to linger (Reiss 1995: 53; Doyle 2008: 320).

**Hypothesis 5**

According to some scholars, since Brazil’s latent conventional capabilities far outstripped those of Argentina by virtue of the size of its population and economy, it had far more to lose from a nuclear rivalry than did Argentina because mutual nuclear possession would have all but nullified these advantages (Reiss 1995: 52; Rosenbaum 1975: 268; Child 1985: 102). Similarly, others have argued that since Argentina was almost certain to “win” any nuclear arms race between the two, Brazil had a security interest in discontinuing the race so that it would not be faced with a nuclear-armed Argentina before it possessed its own deterrent (Myers 1984: 906; Grabendorff 1987: 350-351). However, while Brazilian leaders certainly had no desire for an arms race, it is unclear how important such a concern was, given that they did not cynically point to the disadvantage that mutual nuclear possession would put them at. Thus, while Brazil was a classic case of a country that had everything to lose from a nuclear arms race (H5), it is difficult
to say that this fact was as decisive in its nuclear reversal as supply-side issues (H4) and the rapprochement with Argentina (H1).

In sum, the case of Argentina fulfilled the expectations of H1-H4, with Brazil’s fulfilling H1, H2, H4, and H5. Mutual confidence that the other would not build a bomb dramatically reduced the perceived utility of nuclear weapons, as did Argentina’s shift away from aspiring regional power status after 1983. Additionally, Menem sought to bolster Argentina’s reputation as a responsible, trustworthy country by acceding to nonproliferation agreements. Finally, even though they had only been subject to Western technological sanctions, Menem and Collor felt that nuclear reversal would also reinforce their countries’ efforts to restore economic growth by promoting regional integration and attracting foreign investment. Whether economic hardship was caused by sanctions is less important than the fact that lifting sanctions and gaining international confidence were seen as key to facilitating growth.

Libya

Muammar Qaddafi’s pursuit of nuclear weapons began shortly after he took power in 1969. However, Libya failed to procure nuclear assistance (including actual weapons) from a variety of suppliers, forcing Qaddafi to turn to other sources, such as the Soviet Union and Pakistan, and to the creation of Libya’s own program (Jentleson and Whytock 2005/06: 56; Cirincione et al. 2002: 307). Libya’s nuclear ambitions continued into the 1980s and 1990s, but mismanagement and “the weakness of its technical manpower base” continued to render Libya dependent on foreign assistance. Since most prospective suppliers (including, eventually, the Soviets) did not trust its intentions, nuclear progress was halting. By 1995, after limited success in the plutonium reprocessing route to a bomb, Qaddafi turned to uranium enrichment; moreover, he found a willing partner in Pakistan thanks to the proliferation network of Pakistani scientist
A.Q. Khan. That said, even with the influx of foreign materials and opportunities for personnel training abroad, Libya’s domestic program was still poorly managed, the materials it received through the Khan network were often faulty, and it never managed to enrich uranium. In short, Libya was far from building a bomb in 2003 (Bowen 2006: 27-45; Sinai 1997: 97).

Paradoxically, even though the 1990s saw intensified Libyan efforts to develop a bomb, during this same time period Qaddafi’s government reined in its support for terrorism and sought to puncture Libya’s international isolation. The 1992 imposition of UN sanctions in response to the bombing of Pan Am Flight 103 over Lockerbie, Scotland, was accompanied by changes in Libyan foreign policy; Qaddafi’s rhetoric began to soften, and Libya’s support of terror dramatically declined. The Libyans’ attempts to woo foreign governments, particularly in Europe, were targeted primarily at ending their economic isolation and attracting foreign investment into the Libyan oil industry, with the end to U.S. unilateral and UNSC multilateral sanctions being the ultimate prize. Libya’s 1991 promise that it would end support for terrorist activities was largely upheld; Qaddafi even halted Libya’s support for radical Palestinian groups and began cooperating with other Arab states on counter-terrorism (Jentleson and Whytock 2005/06: 62; Bowen 2006: 52, 56; Takeyh 2001: 68). In 1998, Qaddafi agreed to send the Lockerbie suspects to the Netherlands to be tried under Scottish law, and over the next four years, Libya accepted responsibility for the bombing and agreed to compensate victims’ families (Bowen 2006: 56-57; Economist 2003).

Most important for this study was Libya’s willingness to abandon its nuclear program. Although the Libyans stepped up the pace of their nuclear program in the 1990s, they simultaneously indicated—with increasing urgency—their desire to abandon it in exchange for the lifting of sanctions. According to some sources, the most likely explanation for this
contradiction is that Qaddafi sought a “bargaining chip” that he could offer as a quid pro quo for the lifting of sanctions (Bowen 2006: 67). The first such overture came in 1992, as multilateral sanctions loomed, but it was not taken seriously by the Americans, who made discussion on virtually all other issues contingent on resolving Lockerbie (St. John 2004, 388; Bowen 2006: 59). Whether the 1992 Libyan offer was in earnest is difficult to say, as it may have simply been an attempt to stave off sanctions. According to Senator Gary Hart, the target of this overture, his Libyan contact vaguely told him that “everything” would “be on the table” in negotiations. One would expect if Qaddafi truly was willing to put every issue “on the table” that Libya would have been far more pliant than it was on the issue of Lockerbie, which was not settled to American satisfaction until ten years later.19 In any case, the Libyan nuclear program continued.

After UNSC sanctions had been suspended in April 1999, extended secret negotiations began on Lockerbie, Libyan sponsorship of terror, and WMD, and they continued on-and-off until December 2003. Indeed, May 1999 saw the first direct Libyan offer to abandon its WMD programs, and Libya signed a number of anti-proliferation treaties and conventions over the next few years. Although talks were temporarily halted in the early years of the Bush Administration, suspicions about Qaddafi’s intentions were ultimately overcome by the reality of Libya’s cooperation on Lockerbie and its support for the administration’s “war on terror.” The months between March and December 2003 saw significant progress on the WMD issue, including Libyan acceptance of U.S. and British inspections. Ultimately, the three parties came to an agreement on December 19, and comprehensive IAEA inspections began soon thereafter (Jentleson and Whytock 2005/06: 70-74; Bowen 2006: 58-69; St. John 2003: 473-475).

Hypothesis 1

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During the 1970s and 1980s, Libya was embroiled in ideological conflicts with Egypt and the Sudan, in part because of their support for peace with Israel (Huliaras 2001: 8-9). With the death of Gamel Abdel Nasser and Anwar Sadat’s accession to power, Libyan-Egyptian relations deteriorated, particularly after Sadat left Qaddafi out in planning the Yom Kippur War with Israel and began to seek U.S. involvement in Arab-Israeli affairs. As a result, Qaddafi called Egypt a “breathing outlet for the Zionist enemy” (FBIS 1985g: Q1). When the existence of a 1974 Libyan-backed coup against Sadat came to light, the relationship turned openly hostile, and the two countries fought a brief war in July 1977 (Ronen 2004: 86-87; Bowen 2006: 13). Relations remained sour under Hosni Mubarak, with Qaddafi continuing to argue that Egypt needed to be “liberate[d]” (FBIS 1983d: Q2). But even though he periodically suspected in the 1970s and 1980s that Egypt was building up its presence on the border, by all indications he was not afraid for Libya’s existence; indeed, he argued that Egypt was weak, and that Libya was unfazed by “Egyptian aggression” and “not interested” in Egypt’s border presence (FBIS 1985g: Q2). He only referred to Egypt as threatening insofar as its cooperation with the United States somehow opened the door to an American attack (FBIS 1978a; FBIS 1981d; FBIS 1985e).

Regardless, in the late 1980s and early 1990s, Libya’s rivalry with Egypt diminished. Relations were normalized and their border re-opened in 1989, with Qaddafi and his advisors arguing that Egypt was a friend that had “special relations” with Libya based on their “shared interests” and “common destiny” (Mark 2002: 9; FBIS 1989i: 13; FBIS 1995: 21-22). This shift was largely the result of Qaddafi’s prudent reassessment of Libyan foreign policy. Libyan forces had been forced to withdraw from Chad in 1987 by a coalition of regional forces aided by the United States and France, and Libya was increasingly isolated. Qaddafi turned to Mubarak’s

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20 Qaddafi may have assumed that Sadat and Mubarak would never launch a full invasion of a “sister Arab state.” The 1977 war lasted only four days, with few casualties and ground forces involved, and Egypt was criticized by Arabs for its few border incursions (Shaked and Ronen 1987: 121-125).
Egypt as a bridge between it and the West—as a “mediator” that could help lobby for an end to sanctions—and serious tensions never resurfaced (Ronen 2001: 6-8; Niblock 2002: 229; Vandewalle 2006: 181).

Much as with Sadat, Qaddafi despised Sudanese President Numayri, and he provided support for rebel forces that overthrew Numayri in 1985 (FBIS 1981b). However, even though Qaddafi had suggested that Numayri’s threats were “dangerous,” he did not call Sudan itself dangerous, suggesting instead that Libya was more than prepared to deal with any Sudanese aggression and never hinting that the country’s existence was in danger (FBIS 1981d; FBIS 1984a). Moreover, relations dramatically improved in the late 1980s, with Qaddafi referring to Libyan-Sudanese ties as “quite excellent” (FBIS 1985g: Q3). Indeed, he supported the new government in its war with southern rebels (whom he had previously backed), and in the late 1990s, Libya and Egypt became co-mediators in Sudan’s civil war, with Qaddafi actively promoting Egyptian-Sudanese reconciliation (Shaked and Ronen 1987: 122-123; Huliaras 2001: 7-9, 23; FBIS 1994c).

Qaddafi’s perception of the threat posed by Israel is more difficult to decipher, as Israel (even more than Egypt and Sudan) was for him an ideological bête-noire that he constantly disparaged for rhetorical effect and personal satisfaction. But although Qaddafi claimed that “the existence of Israel” was “a ‘veto’ on our future, our strength, and our existence,” it is unclear whether his desire for nuclear weapons was more the result of a fear of Israeli attack than the prestige that he thought would accrue to whichever Arab state possessed the “Arab bomb” to counter Israel’s own nuclear capability (FBIS 1985g: Q1). On the one hand, Israel had declared that its air force could hit “any target in the Arab world including Libya,” and Qaddafi had argued in 1986 that an Israeli attack “cannot be ruled out” (Bowen 2006: 20-21; FBIS 1986a).
Similarly, Qaddafi may have asked for a Soviet nuclear weapon on the grounds that it would “create strategic parity with Israel,” and Qaddafi’s son Seif al-Islam claimed in March 2004 that his father had wanted nuclear weapons “for use in the event of a conflict with Israel” (Bowen 2006: 20-21). However, his claim that “progress in the Israeli-Palestinian peace process” had made nuclear weapons “unnecessary” was certainly disingenuous, given that Libya had opposed Arab-Israeli cooperation (Kerr 2004; Vandewalle 2006: 181).

Seif al-Islam’s claim aside, it is unclear whether Qaddafi actually considered Israel to be an immediate threat to Libyan security. Israel was not a rival with which Qaddafi had particular points of contention (nor did they share a border from which an invasion could come)—rather, Israel’s existence was the problem, and no change in Qaddafi’s threat perceptions could have led him to speak favorably of it. He continued to argue that the Arabs had a “right” to possess nuclear weapons so long as Israel did, but given his cessation of support for Palestinian terrorism and diminished calls for war against Israel, such concerns appear to have been more a concern of pride than of Libyan security; he suggested that any Arab country—even Egypt—would be justified in obtaining nuclear weapons as a matter of principle (Bowen 2006: 21; Bahgat 2007: 133).21 Seif al-Islam argued that Israel was no longer Libya’s enemy (Rublee 2009: 162), and Qaddafi noted in 2003 that “it is no longer acceptable or reasonable to say that the Jews should be thrown into the sea,” instead arguing in favor of one state for Israelis and Palestinians (Rublee 2009: 162; Anderson 2003: 2). In short, regardless of whether Qaddafi feared an Israeli attack in the first place, he distanced himself from his most extreme antagonism toward Israel.

By 2003, Libya’s only remaining adversary was the very country with which it sought to improve relations by giving up its nuclear program: the United States (Bowen 2006: 56). Qaddafi frequently condemned what he called U.S. “aggression,” which could (he claimed) be launched

from Egyptian or Sudanese territory and which he argued “[constituted] a danger to our existence,” particularly in the 1980s (FBIS 1981d: Q1; FBIS 1983c: Q1-Q2; FBIS 1984b: Q2; FBIS 1985e: Q4). Indeed, he argued that “if [Libya] had possessed a deterrent,” the United States would not have dared to attack his compound in 1986 (Bowen 2006: 21). One of the conditions that Qaddafi insisted upon for nuclear abandonment was that the Bush Administration forswear regime change. While members of the administration denied this promise had been made, it is easy to imagine that Qaddafi would have asked for such an agreement, considering the 1986 bombing and the U.S. invasion of Iraq in March 2003 (Jentleson and Whytock 2005/06: 74).

Nonetheless, given the advent of secret negotiations in 1999, the conciliatory tone in the two countries’ relations beginning in the 2000s (notably Qaddafi’s outrage at the September 11 attack), and their cooperation on counter-terror, hostilities were drawing to a close (Hirsh et al. 2005; Jentleson and Whytock 2005/06: 74; St. John 2004: 393-394). Adversarial Libyan rhetoric was no longer the norm; indeed, Seif al-Islam argued in early 2003 that “Libyan-American relations appear finally to be on a positive course” and expressed a hope that the United States could act as an “elder brother” (Al-Qadhafi 2003: 35, 44). In a sign of the two countries’ conciliation, he even later claimed that the 1986 U.S. attack had been justified because they had been at “war” (Leung 2007).

Hypothesis 2

During most of Qaddafi’s rule, Libya was not only an aspiring regional leader in the Arab World, but also an aspiring regional power in the Middle East.\(^{22}\) Initially, Qaddafi’s goal of unifying the Arab states had made the acquisition of nuclear weapons enticing; since “the Israelis posses[s] more than 200 nuclear warheads while the Arabs do not have a single one,” he wanted

\(^{22}\) In the evaluation of H5, I use “the Arab World” to refer to the Arab states of the Middle East and North Africa (including Sudan), whereas I use “the Middle East” to refer to the Arab states plus Israel. Turkey and Iran are not considered here, as they were not central to Qaddafi’s Arab- and African-centric world view.
to obtain a bomb in order to defend the Arab world and assert its strength (Bowen 2006: 12, 18-19, 22; Bahgat 2007: 132-135).

For Qaddafi, the prerequisite for Arab leadership was regional power status vis-à-vis Israel and the Arab regimes that “accommodated” Israel or the West. In his view, states such as Egypt had “weakened the ability of the Arab nation to confront the enemy [Israel]” and thus had “betrayed the Arab nation” (FBIS 1983d: Q2). Rather than invoking Libyan military might to assert its national greatness, Qaddafi invoked the need to establish “unity” among the still-faithful and assert the “Arab power” that was necessary to “battle” with Israel and Arab traitors (FBIS 1972: T5, T14). Thus, since the Arabs were to “confront” Israel for dominance in the Middle East, and Qaddafi (in his mind) embodied the Arab World, Libya fulfilled the criterion of an aspiring regional power (FBIS 1983d: Q2). Qaddafi saw himself as fit to lead the Arab World as Nasser’s spiritual heir; and he sought to work with fellow Arabs to dominate the Middle East, assert “Arab power,” and subvert his enemies—indeed, Qaddafi was blatantly clear about his desire for the destruction of Israel (and traitorous Arab regimes), which he saw as necessary to achieve the “greater Arab homeland” that would allow for the fulfillment of the “Arab destiny” (FBIS 1988e: 20).

Although Qaddafi saw himself as a worthy “guardian of Nasser’s legacy,” deserving of the mantle of “pan-Arab leadership,” the leaders of the surrounding Arab states took neither him nor his boasts seriously (Hagger 2009: 97; Vandewalle 2006: 80-81, 131; FBIS 1985f: Q1-Q2). By the late 1970s, most of them had become resigned to at least temporary co-existence with Israel. As such, after years of repeated failure in pursuit of his goal of “union” with other Arab states, such as Egypt, Syria, and Algeria, and especially in the wake of longstanding tensions with “reactionary” Arab states, Qaddafi had become disillusioned with pan-Arab leadership.
The final blow to Qaddafi’s dream of Arab unity—which he now called a “mirage”—came with the imposition of UNSC sanctions in 1992, as the Arab states all abided by them (Huliaras 2001: 10; FBIS 1992a). Qaddafi then argued that “we must turn to our own [Libya’s] interests only,” as “Libya has had to put up with too much from the Arabs for whom it has poured forth both blood and money” (Ronen 2004: 90, 94; Rublee 2009: 161). In the wake of this ideological shift, Qaddafi shed one of his primary motives for nuclear weapons. It no longer made sense for Libya to pursue a nuclear option to counter Israel’s in the name of the Arab world; simply put, other Arab governments were not interested in an “Arab bomb” held by Libya.

Instead, Qaddafi increasingly saw his country as a prospective regional leader in Africa. In 1999, he declared that “I have no time to lose talking with Arabs,” and instead argued in favor of “Pan-Africanism and African unity” (Takeyh 2001: 67). In order to vindicate his new self-image, Qaddafi championed the economic and political integration of the continent and became an active mediator in its many conflicts—including the Sudanese civil war and the Congo-Uganda conflict (Vandewalle 2006: 181-182, 193-194). “The future is for big spaces,” he claimed. “Libya is part of the African space.” Qaddafi called for the creation of a “United States of Africa” that would include a central bank and standing army, and no less a figure than Nelson Mandela praised Qaddafi as “the revolutionary icon of our time.” Indeed, Mandela and the Organization of African Unity spearheaded opposition to the sanctions on Libya (Takeyh 2001: 67; St. John 2004: 464-468; Anderson 2003: 17-18).

Libyan aggression and military spending similarly subsided; between 1970 and 1989, Libya had initiated eighteen MIDs against either “reactionary” Arab states (Egypt, Sudan, Sudan).

Tunisia) or against Israel, whereas between 1990 and 2001, Qaddafi only initiated two MIDs against any state. Libya’s military expenditures between 1971 and 1980, and between 1981 and 1989, had made up 6% and 4.2% of the Middle East’s total, respectively; however, between 1990 and 2003, Libya’s share of military spending was only 2.5% of the regional total, despite a regional economic share of 5% in that period. In short, by the mid-1990s, Libya was not an aspiring regional power in the Middle East.

Hypothesis 3

Libya’s abandonment of its WMD programs was consistent with its broader shift away from a “rogue” foreign policy, and the evidence indicates that Qaddafi undertook this about-face in part because he was weary of being shunned by the international community. Qaddafi praised the international nonproliferation effort and called on other countries to abandon their nuclear weapons programs. Prime Minister Shukri Ghanem similarly argued that the West could “trust” Libya because “we want to abide by the regulations” of international conduct, noting that “it's better to come from the cold than staying in the cold” (Economist 2003; Leung 2007). Qaddafi (as always) “craved recognition” through Libyan foreign policy; indeed, as noted above, he reinvented himself as a peacemaker and regained respect in the eyes of African leaders that had been put off by his aggressive tendencies. Western-educated Seif al-Islam was especially in favor of nuclear abandonment and pressured his father to restore Libya’s image (Rublee 2009: 159-162; Dunne 2004; Leung 2007).

However, it is unclear just how much international acclaim and acceptance Qaddafi expected to gain from the abandonment of Libya’s nuclear program; by the early 2000s, Libya

24 GDP data for Libya is unavailable before 1990, and data for Iraq is excluded for the period between 1990 and 2003 due to data availability issues. Admittedly, using the measure of military expenditures versus GDP is less appropriate in Libya’s case (though still telling), as Qaddafi sought to assert Arab dominance in the Middle East rather than Libyan dominance—he just saw himself as the appropriate leader of the pan-Arab cause.
had already largely rehabilitated its reputation through the settlement of Lockerbie and the end to its support of terrorism, and Libyan relations with countries in Africa and Europe had already markedly improved (Anderson 2003: 19-20; St. John 2003: 464-472; Vandewalle 2006: 171-172, 184). While the end of Libya’s pursuit of WMD further improved its image—2004 saw Qaddafi’s first visit to the European Union in Brussels, not to mention the restoration of U.S.-Libyan relations—it is difficult to say that Qaddafi’s desire to use nuclear reversal to gain international respect was more than a mild contributing factor (Vandewalle 2006: 183).

Hypothesis 4

As implied by its thirty-year drive for nuclear weapons, Libya’s efforts were plagued by technological limitations. Most potential foreign suppliers were reluctant to assist the Libyan nuclear program, with two exceptions: the Soviet Union and Pakistan, whose aid gave the Libyan program a jump start in the 1970s. Libya received fuel for its nuclear research reactor from the Soviets, yellowcake uranium concentrate from Niger, and personnel training from Pakistan. However, Soviet assistance ended in the mid-1980s, causing significant delays in the expansion of Libya’s power plants, which were intended to provide plutonium for nuclear explosives. Libyan efforts to convert yellowcake into enrichment-ready uranium—and to actually enrich uranium—were, by the early 1990s, similarly unsuccessful (Bowen 2006: 27-33; IAEA 2004: 3-7). Despite its ties with A.Q. Khan’s proliferation network, Libya was never able to actually enrich uranium to a sufficient level for use in a bomb, owing in large part to the program’s limited scientific manpower and the faulty centrifuge equipment it obtained (Bowen 2006: 36, 39-44; Bahgat 2007: 130-131). On the whole, then, the Libyan nuclear program was plagued by technical difficulties and was never able to stand on its own without heavy foreign assistance—which was often unreliable and halting at best—thus fulfilling H4 from the mid-1980s to the

Libya’s economic situation was similarly dire. Even before UNSC sanctions were imposed in 1992, Libya was already afflicted with thirty percent unemployment and fifty percent inflation—in large part due to a global drop in the price of oil, upon which much of Libya’s revenues were dependent. This was compounded by U.S. and multilateral embargoes on oil equipment, contributing to a fifty percent cut in output from the 1970s. Libya’s GDP oscillated between 1992 and 2003, but the trend was negative—the economy regained its 1992 level only in 2000, and by 2003, Libya’s GDP was seventy percent of what it had been eleven years earlier despite its population’s having grown by twenty percent (Takeyh 2001: 65; Economist 2003).²⁵

The ailing economy was also a source of domestic discontent that put pressure on Qaddafi. The Libyan government’s inability to fulfill all of its welfare obligations contributed to a general dissatisfaction with Qaddafi’s rule, which was notably manifested not only through popular demonstrations, but also through Islamist violence and a number of attempted military coups (FBIS 1991h; FBIS 1993c; FBIS 1996; Takeyh 1998: 166-168; Bowen 2006: 54-57). The revival of the country’s economy became the rallying point for a faction of Qaddafi’s advisors, among them Seif al-Islam, that favored rapprochement with the West—and in particular the United States—in order to end sanctions and attract investors. Ultimately, Qaddafi eventually accepted the position of these “pragmatists,” rejecting that of “hard-liners” who preferred defiance (Takeyh 2001: 65-66; Vandewalle 2006: 186-187). Prime Minister Ghanem argued that growth could only be “achieved through reconsidering Libya’s relations with the international community,” and Qaddafi himself declared that “The fashion is now free markets and investments” (Asia Africa Intelligence Wire 2003; Takeyh 2001: 66).

²⁵ Data on Libyan foreign debt and percentages of real GDP growth unavailable (World Bank 2011).
Although UNSC sanctions had been suspended in 1999, the lifting of U.S. sanctions—which representatives of the Clinton Administration had said would require progress on the WMD issue—promised to have a dramatic effect on Libya’s fortunes (Bowen 2006: 60). This was in part because U.S. sanctions on Libya included as targets foreign companies dealing with Libya, in part because the sanctions caused uncertainties to linger regarding Libya’s investment climate, and in part simply because the American economy was so large (Vandewalle 2006: 175; Jentleson and Whytock 2005/06: 65, 75, 78; St. John 2004: 393).26 Indeed, beginning in 2004, foreign investment and GDP in Libya rocketed upwards as U.S. restrictions were lifted (UNCTAD 2010).

Hypothesis 5

The question of whether Qaddafi was frightened into nuclear abandonment is complicated by conflicting American and Libyan accounts. On the one hand, the Bush Administration sought to portray Libya’s nuclear abandonment as the result of its invasion of Iraq earlier in the year because of its supposed WMD programs. Assistant Secretary of State Paula DeSutter argued that the Iraq War taught that the pursuit of nuclear weapons brought “not security but insecurity” (U.S. Congress Senate Committee on Foreign Relations 2004: 13). Additionally, she claimed (incorrectly) that “the Libyans made their first overtures” as Iraq was being invaded in March 2003 (U.S. Congress House of Representatives Subcommittee on International Terrorism, Nonproliferation, and Human Rights 2004: 27). On the other hand, Seif al-Islam predictably denied that the Iraq War had anything to do with his country’s decision, presumably because he did not want to give the impression that his country had bowed to intimidation (Leung 2007).

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Given that an unambiguous offer to give up Libya’s nuclear program had been made in 1999, it seems that the fear of a preemptive attack was not the root cause of Qaddafi’s decision. However, when one considers the timing of the Libyan nuclear abandonment in late 2003—and especially Qaddafi’s March 2003 offer to accelerate negotiations—it is difficult to believe that the Iraq War was irrelevant to the decision. This is especially the case given the memory of the 1986 U.S. bombing of Qaddafi’s compound, which had caused a considerable stir within the regime (Vandewalle 2006: 142-144). The October interdiction of the BBC China, a vessel loaded with centrifuge-quality aluminum from the Khan network, likely also added an extra element of credibility to the possibility of an attack on Libya (Bowen 2006: 66). Additionally, Undersecretary of State John Bolton had made it clear that the Libyans were still considered to be a “rogue state” (Jentleson and Whytock 2005/06: 73). In 2002, a number of U.S. news stories reported that, as part of a Bush Administration review of its national security strategy and nuclear posture, U.S. policymakers were considering both expanding the “axis of evil” to include seven countries and the use of tactical nuclear weapons in the case of “‘immediate, potential or unexpected’ contingencies” with certain countries—and Libya was included in both groups (Mark 2002: 1). One would expect that Qaddafi would have been made aware of such stories, and it is unlikely that he would have asked the Bush Administration to forswear “regime change” if he had not feared the possibility of an attack. Indeed, even Seif al-Islam hinted that “I think we are safer without those items [nuclear weapons],” and Qaddafi reportedly told Italian Prime Minister Berlusconi that “what happened in Iraq” made him “afraid” (Leung 2007; Bowen 2006:

27 “Libyan sincerity on arms in doubt,” Washington Times, 9 September, 2004. That said, if fear of attack (rather than sanctions) was Qaddafi’s primary motivation for nuclear reversal, it is unclear why he would have brazenly violated the spirit of negotiations by accepting the China. Indeed, there is some speculation that the Libyans may have notified the Americans in advance as a gesture of good faith. See Stephen Fidler, Mark Huband, and Roula Khalaf, “Return to the Fold: how Gadaffi was persuaded to give up his nuclear goals,” Financial Times, 27 January, 2004.
While there was not a direct preemptive threat made against the Libyans, it is difficult to imagine that Bush’s doctrine of preventive war against proliferators would have been lost on Qaddafi. Indeed, it could be said that there was a threat of preventive war leveled at all actual or potential members of the “axis of evil.” In this light, the Bush Doctrine and the invasion of Iraq are best seen as accelerating Libya’s nuclear abandonment. Despite the progress that had been made since 1999 in the resolution of the Lockerbie bombing, the United States had been dragging its feet in negotiating on the WMD and sanctions issues since the latter had been imposed in 1986, and thus it is possible that Qaddafi saw the Iraq War, and the intensified interest in WMD that came with it, as an opportunity to strike a deal on Libya’s own programs (St. John 2004: 393-396; Jentleson and Whytock 2005/06: 75-77; Bowen 2006: 60-63).

Thus, Libya’s nuclear reversal fulfilled the conditions of all five hypotheses. Because of disillusionment with his prospects for pan-Arab leadership, Qaddafi ceased to seek a position of dominance in the Middle East (H2), desiring instead to improve Libya’s reputation in the West and in Africa (H3) and end crushing sanctions (H4) by reining in the behavior that had earned it the reputation of a rogue state. The possibility that Libya might be invaded by the United States then provided further incentive for its nuclear reversal (H5). Libya’s improved relations with the United States reduced its perception of the U.S. threat as well, and given Qaddafi’s less provocative rhetoric and the end to Libya’s support for Palestinian terror—along with Seif al-Islam’s accommodating proclamations and attempts to play down the Israeli threat—it is fairly clear that Qaddafi ceased to see Israel as a pressing, existential threat to Libyan security (if he ever had at all).
South Korea

South Korea had profound security motivations to pursue a nuclear weapons capability. After being almost totally conquered in the Korean War, it was forced to contend with the possibility of its own destruction at the hands of North Korea (Reiss 1988: 82-83). Moreover, because of North Korea’s position in the Communist bloc, and because of China’s intervention on the side of the North in the Korean War, the South Koreans also had to consider the possibility of Chinese or Soviet support for their northern neighbor in a future conflict (Hoon Kang 1985; FBIS 1983a). 29

South Korean insecurity, however, had been offset by their 1953 Mutual Defense Treaty with the United States and the presence of U.S. forces in the country. But concerns about the reliability of the American commitment arose in the early 1970s as the United States opened relations with China and withdrew from Vietnam. Even before these events, in 1969 President Richard Nixon had issued his “Nixon Doctrine,” stating that U.S. allies would be expected to hold primary responsibility for their own security. South Korean President Park Chung Hee declared that the Nixon Doctrine was “a message…that [the United States] won’t rescue [South Korea] if North Korea invades again”—a message that was reinforced by the sudden withdrawal of an American combat division in 1971 (Oberdorfer 1997: 13). Park turned to nuclear weapons to satisfy his country’s security needs and “free [South Korea] from dependence on U.S. military protection” (GulHong 2011: 483, 487-488; CIA 1978: 2-3). A 1970 secret committee similarly recommended that the country acquire nuclear weapons, and by 1973, plans had been set, scientists recruited, and negotiations begun with a number of suppliers for a facility that would

29 President Park Chung Hee claimed in 1975 that his country might be able to weather a North Korean invasion—but only one that lacked Chinese or Soviet assistance (Reiss 1988, 100).
allow South Korea to reprocess plutonium for a bomb (Pollack and Reiss 2004: 261-262; Oberdorfer 1997: 69; Reiss 1988: 91).

By 1974, the United States had taken note of the South Korean program, and over the next two years, American pressure forced the program’s termination and the full safeguarding of South Korea’s nuclear efforts. The United States at first threatened to cut off peaceful nuclear assistance, but later went as far as to threaten the end of the U.S.-South Korean security relationship. The prospect of being promptly left to fend for itself was a powerful incentive for nuclear reversal, and South Korea abandoned its incipient weapons program in early 1976 and canceled its pending purchase of a French reprocessing plant—an action that was made more palatable by the United States’ reaffirmation of its security guarantee (CIA 1978: ii, 7-8, 17; State Dept. 1975b; Gul Hong 2011: 496, 500-501, 507-509).

**Hypothesis 1**

There was some speculation on both the American and South Korean sides that the latter may have been able to hold off a North Korean invasion. Nevertheless, South Korea needed a nuclear deterrent to guarantee its survival because of the precarious position of the capital Seoul. A sudden North Korean attack threatened to overwhelm the city, which was only thirty-five kilometers from the border, before all of South Korea’s strength could be brought to defend it, essentially decapitating South Korea before the war could even begin. As such, without the American guarantee, Park felt he needed to instill “the fear of nuclear annihilation” in the North Koreans to prevent an invasion aimed at Seoul (Gul Hong 2011: 488, 503-504; Reiss 1988: 98; Oberdorfer 1997: 68). Indeed, he claimed that the U.S. presence was necessary until South Korea could match North Korea “one-to-one”—which he estimated was five years away, and he noted that the U.S. security umbrella would be necessary so long as the threat from China and the
Regardless of whether South Korea could win in a war with the North, the U.S. security guarantee and military presence ensured that such discussion would remain hypothetical. Even though the staying power of the American engagement in the peninsula had been in question, the fact is that the continued presence of American nuclear weapons and ground troops—the most important symbols of the American commitment—guaranteed that in the short-term South Korea would not be attacked by the North.\(^\text{30}\) It was only in 1977 that the American abandonment became a distinct possibility, as President Jimmy Carter promised to remove all American troops and nuclear weapons by 1982 (Reiss 1988: 84-85).

However, even in this case the prospect of a nuclear South Korea ensured that U.S. commitments would continue, as during the mid- and late-1970s, various South Korean officials hinted that nuclear weapons were not off the table if the U.S. were to end its presence or nuclear umbrella (Reiss 1988: 94, 104; FBIS 1977b; FBIS 1975d: E1-E2). The Americans took note; the Director of Central Intelligence (1977a: 3) argued that “the withdrawal of all US nuclear weapons will clearly strengthen [Park’s] determination to move toward military self-reliance,” and others stressed that the future of South Korean decision-making would depend upon the reliability of the U.S. security guarantee (State Dept. 1975a; CIA 1978). Ultimately, the result of South Korean admonitions—and of Park’s “demand” that the United States reaffirm its security guarantee—was a continued U.S. presence in South Korea (FBIS 1977d: E1). The United States rescinded its initial plan to withdraw its ground troops and nuclear weapons from the country, promised that South Korea would remain under its nuclear umbrella, and pledged that it would “take prompt countermeasures…in the event of an attack on the ROK [Republic of Korea]” (Gul

\(^\text{30}\) The Americans agreed; one estimate noted that what “weighs most heavily in P’yongyang’s calculations is the US security commitment, and, particularly, the presence of US forces in the South” (CIA 1978: 1).
In short, because of the U.S. security guarantee, South Korea fulfilled the conditions of H1. That is not to say that the South Koreans were entirely satisfied with the American commitment; officials continued to argue that their country would have no choice but to develop weapons if the U.S. security guarantee was ever in question, even raised the specter of doing so if the U.S. presence ended. Indeed, Park argued that South Korea would “be forced to adopt measures to ensure our continued existence” without the U.S. umbrella (FBIS 1976b; FBIS 1977b; FBIS 1976a: E2). Park certainly would have preferred self-reliance—as he put it, “The pressing question for South Korea is how long we can trust the United States”—but such desires are to be expected, given the uncertainty that comes from policymakers’ operating in an anarchic international system (Gul Hong 2011: 487). The fact is that at the time of its nuclear abandonment, South Korea was not in danger of being invaded in the short-term. It was, however, in danger of being abandoned by the Americans—which would have put its survival in danger—if it continued to pursue nuclear weapons.

**Hypothesis 2**

South Korea was not an aspiring regional or major power in the 1970s. Like Israel, it was far more concerned with its survival than with its international status, and as such was highly sensitive to the prospect of U.S. unreliability (Reiss 1988: 79-81). There were no invocations of nuclear weapons or military might as symbols of South Korean “national greatness”; rather, Park’s concern was U.S. dependability. Park realized that South Korea was far from a regional powerhouse, and was dwarfed by China, the Soviet Union, and Japan. A 1978 study by the National Unification Board argued for nuclear weapons as tools for “political deterrence, military deterrence, and as compensation for the [potential] withdrawal of American forces”—
not to vindicate any status ambition or bring prestige (Reiss 1988: 94-95). Park’s desire for nuclear weapons was the product not of a vision of South Korea as a regional power, but rather was based on unease at remaining dependent on a foreign power (Gul Hong 2011: 487, 505-507; DCI 1977a: 3; CIA 1978: 2-3).

**Hypothesis 3**

The nonproliferation norm was a non-factor in South Korea’s nuclear reversal. Park’s government only ratified the NPT seven years after signing it (at the behest of the United States), and even after ratification in 1975, the government did not abandon its weapons program for another year—again, after significant U.S. pressure had been applied. What is more, Park (along with other South Korean leaders) continued to suggest that South Korea might again seek nuclear weapons if it felt that its survival depended upon it—they were concerned not with winning international respect but with security (FBIS 1975b: E2). Nor did Park’s government pay lip-service to the NPT or the nonproliferation norm it stood for; in fact, there existed a great deal of suspicion toward ratification among the South Korean public and elite (Reiss 1988: 92).

**Hypothesis 4**

South Korea’s nuclear ambitions were not stifled by technical difficulties. The country had no dearth of qualified scientists, who possessed “the theoretical knowledge and technical ability to build a nuclear explosive device.” In order to obtain the necessary fissile material to build a bomb, Park turned to plutonium reprocessing; the South Korean peaceful nuclear program already produced enough spent fuel to make “20 to 28 bombs a year,” and all it needed was the ability to reprocess the fuel to make it bomb-ready. As a result, the South Koreans agreed to purchase a reprocessing plant from France that would have allowed them to begin

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carrying out its plans for a weapon (Reiss 1988: 91). It was only as a result of U.S. pressure that
South Korea agreed to cancel the deal with France, and thus the technological hurdle of
plutonium reprocessing by itself was not a motivation for nuclear reversal (Gul Hong 2011: 492-
493, 497).

What is more, the South Korean economy was thriving. Between 1971 and 1975, South
Korea’s GDP growth averaged 7.6% annually, and between 1962 and 1976 it went from the
seventy-second largest economy to the twenty-eighth, thanks in large part to its strategy of
“Nation Building Through Exports” and close economic ties with the United States and Japan.
However, some have argued that fear of economic reprisals from the United States was key to
Park’s decision to halt the South Korean program (Solingen 2007: 88-93; Reiss 1988: 92-93, 96).
Indeed, the United States did threaten to sever its nuclear assistance, notably a loan of over $200
million for South Korea’s Kori-2 reactor, and while Park’s decision-making remains opaque, one
can imagine that he may have feared for South Korea’s deep foreign economic ties (Gul Hong

However, by all accounts Park underestimated the likely magnitude of the U.S. outcry.
Even though he took significant steps to ensure the program’s secrecy, Park believed that
American opposition would be short-lived, and that the United States would eventually
acquiesce to South Korea’s need for a nuclear deterrent as it had done with Israel (Gul Hong
2011: 488; CIA 1978: 13; State Dept. 1975b: 3). Furthermore, it is unclear whether the United
States would have even taken the economic measures that analysts have suggested it might have,
and the evidence that the United States ever actually discussed the possibility of terminating the
economic relationship is unconvincing. According to one account, Secretary of State Henry
Kissinger threatened “a major break in bilateral economic relations” to force South Korean NPT
ratification in early 1975 (Solingen 2007: 91). However, other American documents do not corroborate this account; one estimate argued that in 1975, Park was still under the impression that the United States would tolerate the South Korean weapons program (CIA 1978: 13). U.S. Ambassador Richard Sneider, in a December 1975 request that the State Department step up pressure on the South Koreans, only mentioned that “nuclear assistance” had been previously put on the table, and he noted that “the whole range of security and political relationships”—notably not the economic relationship—would be threatened (Gul Hong 2011: 500-501, 502).

Unlike the United States’ threats to cut off aid in the security realm—which it could have justified on any number of grounds, such as fiscal concerns or domestic isolationist sentiment in the aftermath of Vietnam—the imposition of sanctions would likely have raised eyebrows in the Communist world and Japan. The United States would have been hard-pressed to explain such coercive measures against its erstwhile ally, and it seems doubtful that it would have wanted to throw South Korea to the wolves through any hint that it may have been developing nuclear weapons—let alone to then desert it. Moreover, even though South Korea’s foreign debt was sizeable—by 1975, it had reached one hundred percent of the country’s GDP—policymakers were unconcerned about the rising debt load, deeming it manageable given the country’s growth levels (FBIS 1976c; FBIS 1976e). Thus, in the absence of any direct evidence to the contrary, economic explanations of South Korea’s nuclear abandonment are incomplete (Solingen 2007).

It is possible that the American threat to terminate U.S. nuclear assistance played a role in Park’s decision-making (Pollack and Reiss 2004: 262-263). But by late 1975, such pressure had been insufficient; it was only after the American security guarantee had been jeopardized that Park agreed to cancel the deal with the French and shelved his drive for a weapon (Gul Hong

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32 Foreign debt data unavailable from the World Bank (2011). Therefore, I used the amount of debt in 1975 dollars ($5.5 billion, obtained from FBIS 1975f) and converted it to 2011 dollars.

In short, supply-side factors—including the threat of economic hardship—were not crucial in South Korea’s nuclear abandonment.

**Hypothesis 5**

In December 1975, per Sneider’s suggestion, the State Department threatened Park’s government that the U.S.-South Korean security relationships would be jeopardized if it refused to cancel its purchase of the French reprocessing plant (Gul Hong 2011: 500-501, 507; Reiss 1988: 93). A special U.S. envoy was dispatched to South Korea to suggest that the U.S. security guarantee would be rescinded if Park continued with the French deal, and it was after this threat had been made that the South Koreans abandoned the deal with France and effectively put their weapons ambition on hold (Hymans et al. 2001: 103). The prospect of being abandoned by the United States before it possessed a deterrent was a powerful incentive for nuclear reversal; as noted in the discussion of H1, any war between North and South, regardless of the winner, would have been tremendously costly—especially given Seoul’s proximity to the border.

It is unclear whether South Korea feared a preemptive attack by North Korea, China, or the Soviet Union in response to its nuclear weapons ambition (Reiss 1988: 101-103). However, given the secrecy with which the South Korean program was pursued, it is likely that Park had hoped to obtain a weapon before the United States or its neighbors discovered the program, in which case it would have possessed a deterrent to thwart any attack from a neighbor (Hymans et al. 2001: 99). In any case, the possibility of a preemptive Communist attack would very likely have only had a marginal impact on Park’s decision, since the potential withdrawal of the American security guarantee already put South Korea in peril. In short, it is clear that South Korea was not prepared to stand alone in early 1976, and as such fulfills the expectations of H5.

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On the whole, South Korea’s experience is consistent with H1, H2, and H5. Because of the South Koreans’ feelings of inferiority vis-à-vis their neighbors, the country was never an aspiring regional power in East Asia. However, owing to the U.S. security guarantee and presence on the peninsula, policymakers were never forced to contend with the immediate possibility of an overwhelming Communist assault. Their concern was always with the future of the U.S. commitment, and while Park remained wary of U.S. reliability, he was unwilling to risk an immediate cut-off of American security assurances to pursue nuclear weapons.

**South Africa**

South Africa’s peaceful nuclear activities began in 1949 with the creation of its Atomic Energy Board (AEB). These efforts were bolstered by nuclear cooperation with the West, as South Africa was able to trade its raw uranium and then to obtain enriched uranium, training for its nuclear scientists, and nuclear facilities in return (Walters 1987: 88-89). As such, by the late 1960s the South African nuclear program was flourishing. South Africa’s enrichment of low-grade uranium began early in the decade, and with the completion of its first major enrichment plant (the “Y-plant”) in 1969, the South Africans produced their first highly enriched uranium in 1978 (Purkitt and Burgess 2005: 35-42; Reiss 1995: 7-9).

At the same time, however, covert planning to build an explosive device (ostensibly a “peaceful nuclear explosive” [PNE] for mining) began in the 1960s (Albright 1994: 40-41). By 1974, despite the increasing refusal of foreign countries to provide nuclear assistance, the creation of an explosive was in sight. In 1977, a “cold test” (using a depleted uranium core instead of highly-enriched uranium) was planned for South Africa’s first-ever PNE. The test was delayed because of the international outcry that followed the Soviet Union’s satellite discovery of the testing site, but there is speculation that South Africa (with Israel) tested a nuclear device

In the face of escalating regional threats, namely the establishment of Communist rule in Angola and Mozambique (backed by the Soviet Union) and the presence of Cuban forces in Angola, South African interest in nuclear weapons intensified. When P.W. Botha took power in 1978, he gave his “unconditional support” to building a nuclear deterrent, and by the late 1980s six weapons had been completed, with work on a seventh underway (Steyn et al. 2003: 43-44; Purkitt and Burgess 2005: 60). However, South Africa’s nuclear capability was always shrouded in secrecy; until 1993, its leaders never acknowledged that it possessed a deterrent, and the weapons were never planned for actual use (Liberman 2001: 57). Rather, the South Africans’ three-phase nuclear strategy was to keep their weapons secret until they felt threatened, at which point they would inform U.S. and European leaders that they possessed them in the hope that they would come to South Africa’s aid. If these first two phases failed to allay their concerns, they would then publicly reveal their nuclear capability and conduct an underground test (Albright 1994: 38; Horton 1999: 25-26).

But with the end of the Cold War, South Africa’s deepening economic and political isolation, and the accession of F.W. de Klerk’s government in 1989, the dismantling of the country’s nuclear arsenal was ordered that same year and completed in the following one. Moreover, on the recommendation of a committee he had appointed, de Klerk terminated the nuclear weapons program altogether and ratified the NPT in 1991. However, the process of dismantling the weapons and shutting down the Y-plant was done in secret; de Klerk only publicly announced it two years later, in 1993, for fear of being lumped together with Iraq as a proliferator (Albright 1994: 38; De Villiers et al. 1993: 103-104).

35 Virtually all documents related to the program were destroyed before de Klerk’s 1993 announcement, thus forcing analyses of the South African case to rely heavily on after-the-fact accounts (Reiss 1995: 23-24).
Hypothesis 1

The major threats that the South Africans faced throughout the existence of their nuclear program stemmed from their fear of a Communist-supported “total onslaught” from its northern neighbors. Many analysts have referred to this persistent South African image—one of a white regime isolated by blacks and abandoned by its allies—as constituting a “laager” (circling of the wagons) complex, as part of which the Afrikaners treated worst-case scenarios as the basis for future planning (Moore 1987: 52, 129; Purkitt and Burgess 2005: 19).

Pretoria’s longest-standing conflicts were the guerrilla wars being fought by the South West African People’s Organization (SWAPO) against South Africa’s occupation of Namibia, and by the African National Congress (ANC) in opposition to the South African policy of apartheid. SWAPO and ANC guerrillas also had bases in Angola, whose Marxist government gave them essentially free reign, leading the South Africans not only to violate the border in search of their enemies but also to invade and occupy the southern part of the country (Moore 1987: 48-49; Steyn et al. 2003: 5-6).

To make matters worse, with the collapse of the Portuguese Empire in 1975, as well as the impending collapse of white rule in Zimbabwe late in the decade, South Africa faced the prospect of encirclement by hostile states. The advent of Communist rule in Mozambique, Angola, and Zimbabwe produced a tremendous amount of uncertainty as to the future of South Africa’s security; Communist influence appeared to be on the march, with the United States seemingly unconcerned with the region’s fate (De Villiers et al. 1993: 101; Moore 1987: 59). Moreover, Soviet and Chinese military assistance, along with the increasing Cuban presence in Angola (peaking at fifty thousand troops in the mid-1980s) and the UNSC arms embargo of
1977, threatened to shift the regional balance of power in the direction of Communist-supported forces (Purkitt and Burgess 2005: 53-54, 58; Steyn et al. 2003: 5-6; Albright 1994: 45). Indeed, many neighboring states, among them Angola, Mozambique, and Botswana, had supported the insurrections in Zimbabwe in the early 1980s (Walters 1987: 10-11, 72-74).

President Botha responded to these threats with the implementation of a “total national strategy,” as part of which nuclear weapons would ensure against “the worst-case scenario” of a combined, Soviet-assisted assault (Walters 1987: 64-74; Moore 1987: 49, 55-58). Even under Botha’s predecessor, B.J. Vorster, South African officials in 1975 argued that the threat to South African security posed by hostile states and pro-Communist groups “had developed to the point of being a real danger,” and as a result, defense spending and the size of the military increased dramatically during the late 1970s (Betts 1980: 292; Purkitt and Burgess 2005: 28). Vorster’s interior minister argued that “no rules apply at all if it comes to a question of our existence,” and plans had even been made to target the Angolan capital with nuclear weapons to impress South Africa’s seriousness upon the West (FBIS 1977a: E3; Horton 1999: 2).

Some analysts have doubted whether the threat posed by South Africa’s enemies was severe enough to warrant developing nuclear weapons. Moore (1987: 53-56) has noted that South Africa spent enough on defense to constitute one-third of the entire African continent’s military expenditures (minus Egypt) and that it had a sizable advantage in tanks and planes. However, this takes into account neither Communist assistance to South Africa’s enemies, nor the non-state actors who were hostile to the apartheid regime, nor the possibility that the Soviet Union could intervene on a large-scale.36 There was clearly a fear among the South Africans that their security was being increasingly imperiled by internal and external threats, and that a Soviet

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36 In 1981, for example, the Soviets moved two warships into the capital of Mozambique in response to a South African raid on that country (Moore 1987: 55-56, 63).
attack was always a possibility. Indeed, in a message to Foreign Minister Pik Botha, U.S.
Undersecretary of State Lawrence Eagleburger agreed with the South African sentiment that they
faced a “global adversary, employing both political and military strategems to try to work its will
in southern Africa” (State Dept. 1983: 2).

P.W. Botha, while still defense minister, argued for the creation of a “deterrent” that
would enable South Africa “to resist a fairly heavy conventional attack,” and the U.S.
intelligence community observed that the South Africans were afraid “that heavy Soviet military
involvement against the Republic could eventually wear down its conventional armed forces”
(Purkitt and Burgess 2005: 54; DCI 1980: 4). The most alarming (albeit remote) possibility that
some within the government raised was the potential of Soviet- or Chinese-supplied weapons of
mass destruction in African hands, as certain officials believed had been considered for Egypt
(Purkitt and Burgess 2005: 53, 59).

In short, there was a perception among policymakers in the Vorster and Botha
governments that South Africa’s security situation could deteriorate. After Soviet and African
support for the revolutions in Angola and Zimbabwe, not to mention the foreign support that
existed for SWAPO and the ANC, and given Soviet support for an anti-South African
insurrection, the Afrikaners could not discount the possibility of a “total onslaught” aimed at
Pik Botha noted that the ultimate goal of South African foreign policy was the “assured existence
of the whites here,” and South African officials considered black liberation groups within South
Africa to be another potential arm of a “total onslaught” (FBIS 1983g: U2; Flournoy and
Campbell 1988: 396). Indeed, as if to verify Afrikaner fears, the strategy of the Pan Africanist
Congress, another black liberation group, suggested that revolution in South Africa “could
develop from a guerrilla type of war in the countryside,” further stretching the SADF (Walters 1987: 66).

Thus, because the South Africans feared the possibility of a “total onslaught” from not only the surrounding states but also from guerrilla forces and extra-regional Communist actors, they faced a threat of uncertain magnitude. This, combined with their isolation-induced paranoia, precluded the possibility of nuclear abandonment. The South African case, then, did not fulfill H1 while the program was active during the 1970s and into the 1980s.

**Hypothesis 2**

Even though much of South Africa’s conduct was consistent with this study’s conception of an aspiring regional power—namely its preeminence in military spending and its subversion of neighboring states—the apartheid regime attempted to achieve military dominance in southern Africa not for prestige but for survival (Moore 1987: 53; Walters 1987: 12-13, 72-76). In essence, the most hawkish position could be summarized as “let us destabilise them [black African states] lest they really succeed in destabilising us” (Geldenhuys 1984: 145). Much like Israel, South Africa was a pariah state in its region; instead of visions of regional pre-eminence, the white leadership was seized with dread of a “total onslaught” that could threaten the existence of white rule in the country (Jaster 1989: 14-15).

While the South Africans initially saw themselves as destined to dominate the region in the 1950s and 1960s—positioning themselves as Britain’s successor in Africa by achieving “South African suzerainty” vis-à-vis newly independent territories—this ambition had changed by the late 1970s as South Africa appeared increasingly endangered by internal subversion and outside attack (Jaster 1989: 9-10). The Afrikaners now felt besieged by their neighbors, who were seen as in league with one another—not only because many of them fell to Communist
rule, but also because the “Manifesto on Southern Africa” issued by the Organization of African Unity had declared black Africa’s support for “armed struggle” against states ruled by white minorities (Jaster 1989: 47). Rather than invoking South Africa’s “national greatness” or predestined supremacy in the region, South African policymakers in the 1970s and 1980s attempted to play down South Africa’s strength and reassure its neighbors that it had no aggressive designs so as not to create the anti-South Africa coalition that it so feared (Jaster 1989: 77, 82-88). Botha and SADF leaders justified the need for military strength not on the basis of a desire for supremacy or national glory, but rather on the grounds that doing otherwise would allow the Soviet Union to “impose its will” in the region (FBIS 1980b: E5; FBIS 1984d).

Unlike the Argentines, who for a while clung to hopes for restored primacy, the Afrikaners feared for their survival; any lingering ambition for regional power status was submerged by fear, making South Africa more comparable to Israel than to Argentina. Similarly, unlike Libya’s Qaddafi, who consistently antagonized his neighbors with little regard to their relative strength and out of principle, the South Africans were sufficiently afraid of what their neighbors (with Soviet backing) could unleash upon them that they actively pursued non-aggression with their enemies even as they fought with and actively subverted them (Moore 1987: 57-59; Walters 1987: 74). In short, South Africa sought domination simply for security’s sake—to pursue what one analyst has called a “defensive empire” through a foreign policy of “survival” (Braun 1989: 83-93).

Hypothesis 3

As indicated by South Africa’s maintenance of apartheid, even in the face of extensive condemnation, policymakers in the Vorster and especially the Botha government put little stock in global opinion (Jaster 1989: 77, 79-81). Indeed, South Africa’s pariah status gave rise to the
“laager complex” that defined the fears of the Afrikaners—they felt they had been betrayed and abandoned by the outside world, and as such, they did not value the norm of nonproliferation (Steyn et al. 2003: 50; DCI 1977b: 3). In particular, the South Africans resented their removal from the IAEA’s Board of Governors in 1977—an action taken as a symbolic condemnation of apartheid—despite South Africa’s possession of the most advanced nuclear program in Africa (Moore 1987: 106).

Correspondingly, South African leaders did not speak highly of the norm of nonproliferation or express a desire to win international respect. The Afrikaner government saw the nonproliferation regime as hypocritical, largely because condemnation of proliferation was applied unevenly. The South Africans were especially galled by their having been barred from and censured at a 1979 IAEA Conference that was held in, of all places, India, which had detonated its nuclear explosive five years earlier (Moore 1987: 106, 109-110; Liberman 2001: 70). As the South Africans discussed potential NPT ratification with U.S. officials in 1986, there was no illusion even among the Americans that their willingness to consider the treaty was based solely on forestalling economic sanctions and facilitating South Africa’s access to nuclear technology (Liberman 2001: 73). Undersecretary of State Chester Crocker noted that the South Africans’ “opening gambit” in NPT negotiations with the United States was to ask “whether there was anything in it for [them]” if they acceded to the treaty (State Dept. 1986a: 1; State Dept. 1986b: 1).

Hypothesis 4

South Africa’s drive to obtain nuclear weapons was only temporarily interrupted by substantial supply-side difficulties. Its peaceful nuclear program had benefitted enormously from cooperation with the West; the Safari-1 light water reactor was purchased from the United States
in the early 1960s, and South Africa’s uranium enrichment plant (Y-plant) received substantial assistance from the United States and West Germany (Walters 1987: 26-27, 89-90). It was only in the mid-1970s that nuclear trade with the West was curbed. In 1977, the Carter Administration canceled all present and future shipments of enriched uranium to South Africa unless the latter signed the NPT (Moore 1987: 98, 115; Albright 1994: 39). As a result, the South Africans’ Safari-1 research reactor was forced to operate at an extremely limited capacity until early 1981.

Moreover, the Y-plant experienced technical difficulties and was closed for periods of time between the late 1970s and 1981, and the South Africans were still having difficulty obtaining equipment to expand their enrichment capabilities because of supplier reluctance (Reiss 1995: 11; Purkitt and Burgess 2005: 63-64; Moore 1987: 97-100; DCI 1980: 2). Thus, H4 was fulfilled in the late 1970s because of the program’s technological problems.

Nonetheless, South Africa was able to both find additional sources of foreign support and enrich its own uranium, which ultimately allowed it to overcome nuclear sanctions in the long-term. Deals were made in the late 1970s and early 1980s with several European countries and Israel to purchase a variety of nuclear supplies—including 130 tons of low-enriched uranium from a number of European utility companies (Purkitt and Burgess 2005: 49-51; Office of Scientific Intelligence 1979). Additionally, South Africa’s own program was increasingly able to bridge the gap between its needs and what was available to it. By 1981 the Y-plant was able to produce a steady supply of forty-five percent enriched uranium—a degree of enrichment sufficient not only to keep the Safari-1 reactor functioning, but also to produce a rudimentary explosive device. Moreover, South Africa had a plethora of Western-trained scientists and engineers (Albright 1994: 39). As a result, by the mid-1980s, the South African nuclear program was essentially self-sufficient, and the Y-plant was able to meet the country’s uranium

Similarly, while South African growth was by no means spectacular—annual GDP growth averaged 2.6% between 1975 and 1984, compared to 5.5% between 1961 and 1974—the economic situation (not to mention the threat of sanctions and disinvestment) did not become dire until the mid- and late-1980s, and are discussed in the section below dealing with 1989-1991.

Hypothesis 5

The Afrikaners had no reason to fear being abandoned by the West because of their nuclear ambitions. Indeed, its three-phase nuclear strategy revealed that the South African government actually saw the possession of nuclear weapons as a way to attract Western security assurances, and that its leaders had no qualms with unveiling their arsenal if their worst-case scenario materialized. Additionally, there was no fear of a Soviet reprisal if they merely announced their nuclear capability, and no plans had been made to guard against the results of a first strike by its enemies, such as scattering the country’s nuclear weapons (Liberman 2001: 57; Reiss 1995: 12-13).

The evidence does not decisively suggest that there were any significant threats transmitted to the South Africans after either the 1977 discovery of South Africa’s testing site or the suspicions in 1979 that a flash in the South Atlantic was a South African nuclear test. According to one source, the Soviets raised the possibility of a preemptive attack to the United States in response to the August 1977 incident. However, since this source had been arrested as a Soviet spy, it is unclear both whether his claim is credible and whether the South Africans knew about the supposed threat (Albright 1994: 42). Indeed, a U.S. assessment during the crisis argued that “fear of adverse foreign reaction” would not be a “sufficiently compelling reason for South
Africa to avoid a test” (DCI 1977b: i).

Thus, up until the late 1980s, South African nuclear abandonment was precluded not by regional power aspirations, but rather by the threat perceptions of top policymakers and the lack of a clear incentive to abandon the weapons program (save for several years of technical setbacks). Moreover, there is insufficient indication that the South Africans ever feared that they would be attacked because of their nuclear weapons program; the fact is, they were already afraid of an attack, regardless of their program.

**Part II: 1989-1991**

**Hypothesis 1**

By 1989, the security threats that had prevented South African nuclear abandonment were quickly disappearing. Ceasefires in both Angola and Namibia had been agreed upon in 1988, and in December, negotiations culminating in the Tripartite Agreement between South Africa, Angola, and Cuba resulted in the withdrawal of Cuban forces, peace between South Africa and Angola, and the independence of Namibia early the next year. This ended the most overt manifestation of Communist influence in southern Africa and removed a major source of tension between South Africa and its neighbors. Soviet support for Angola, Mozambique, and the ANC had also dried up by 1989, with the Soviets actually pressing the ANC to tone down its guerrilla war against the South African government, thus facilitating the organization’s legalization (Kempton 1990). The collapse of the Communist bloc and the transformation of Soviet foreign policy that were unfolding as de Klerk took power in September 1989, and ultimately the break-up of the Soviet Union, meant that the Afrikaners no longer had reason to expect a Soviet-backed “total onslaught” (Steyn et al. 2003: 29, 96; Reiss 1995: 20; Albright 1994: 46).
The improvement of South Africa’s security situation was the factor that de Klerk most emphasized in explaining nuclear reversal. He claimed that South Africa’s vulnerability had drastically diminished by virtue of improved interstate relations in southern Africa, and that the end to regional tensions was in sight (FBIS 1990b; FBIS 1991e). De Klerk noted that “the global political situation” had changed just as “dramatically,” as “the implosion of Russia as an expansionist world power” enabled South Africa to consider both nuclear disarmament and military spending cuts (FBIS 1993a: 6; De Klerk 1998: 273-274; Liberman 2001: 75). Foreign Minister Botha similarly claimed that the collapse of the Communist threat had transformed South Africa’s security situation such that the country felt safe in ratifying the NPT (FBIS 1991b). Thus, by late 1989, the Afrikaners no longer feared an overwhelming conventional attack on South Africa.

Hypothesis 2

Under de Klerk, South Africa moved even farther from being an aspiring regional power. He put no emphasis on dominating southern Africa or on asserting the country’s military might. Instead, military expenditures were dramatically cut; South Africa’s share of regional military spending, while still by far preeminent, was 63.3% of the regional total in 1989-94, compared to its GDP share of 85.8%. Moreover, de Klerk focused on restoring South Africa’s position as a respected country and on forming bonds of peace and cooperation in southern Africa (Purkitt and Burgess 2005: 129-130; Liberman 2001: 75). De Klerk sanctioned Namibia’s independence and made peace with the ANC and Angola, and under his government, South Africa moved away from subverting its neighbors and intensified its promotion of regional economic development. He declared in 1990 that “Southern Africa now has a historical opportunity to set aside its

37 Excluding the year 1992 for data availability issues. Data includes Angola, Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Zambia, and Zimbabwe.
conflicts” and claimed that the region faced a choice between “a common approach to economic development” and “further decline and ruin” (FBIS 1990b: 5-6). In particular, he argued that South Africa had the capacity and duty to promote regional “peace, stability, and progress,” adding that “the prospect of moving away from a confrontational relationship with…our neighbors in Africa, in particular, to one of cooperation and developments [was] good” (FBIS 1993a: 5-6).

Hypothesis 3

De Klerk saw a firm nonproliferation stance as a way to win the international respect that he very much desired. The evidence suggests that he wanted to end the nuclear program and sign the NPT even before the recommendation of his exploratory committee; he hand-picked members who he knew were favorable toward disarmament, telling them: “I have one vision….I want to make this country once again a respected member of the international community” (Purkitt and Burgess 2005: 124). To this end, he informed committee members that he preferred disarmament as a means of “gaining international acceptance,” and he asked how quickly the NPT could be ratified (Reiss 1995: 17-18; Liberman 2001: 73-74).

Given his commitment to ending apartheid and South Africa’s pariah status, along with his declared “commitment to nonproliferation,” de Klerk’s actions are consistent with the expectations of H3 (FBIS 1993a: 5). De Klerk wholeheartedly embraced the NPT, and he saw doing so as a way to end South Africa’s psychological isolation. Indeed, a number of cabinet officials felt that he was “overly hungry” to be accepted by the outside world and that he should have used the nuclear program as a bargaining chip instead of unilaterally disarming (Liberman 2001: 80-81). Thus, de Klerk wanted his country to be welcomed as a responsible player by the international community, and saw nuclear reversal as key to that goal (De Klerk 1998: 273-274;
Hypothesis 4

The late 1980s were a time of economic upheaval for South Africa. Between 1985 and 1989, annual average GDP growth was an anemic 1.5%, with GDP per capita shrinking almost one percent per year. By 1989, foreign debt had reached over eighty-five percent of GDP and was also a major concern to policymakers (Liberman 2001: 79; Levy 1999: 416; FBIS 1989d).38 Even though the cost of upkeep for South Africa’s existing arsenal was negligible, total nuclear abandonment would have decreased the cost of maintaining South Africa’s peaceful nuclear program. Nuclear sanctions not only forced it to enrich its own uranium from the ground up and thus pay “between ten and twenty times the open-market price,” but also restricted its uranium exports (Purkitt and Burgess 2005: 130; Liberman 2001: 75; Sole 1986: 3-6). As such, de Klerk wanted to ratify the NPT as quickly as possible so that South Africa could secure access to nuclear technology and materials under the treaty (Reiss 1995: 17; FBIS 1993a: 5).

Additionally, de Klerk and many of his advisors saw South Africa’s nuclear ambiguity and its abstention from the NPT as detrimental to their other economic goals: greater involvement in the global economy and the attraction of foreign investment. Investment was fast-diminishing in the 1980s, due to both the imposition of multilateral economic sanctions and to the uncertainty that came from rising political instability and inter-racial violence (Levy 1999: 416-417; Flounroy and Campbell 1988: 388-389). De Klerk argued that “investment would play a decisive role in determining the success or failure of a new South Africa,” and that any barriers to investment had to be dismantled (FBIS 1993b: 8). His government was increasingly concerned about what Finance Minister Barend du Plessis referred to as the “internationally organized

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38 Foreign debt data unavailable from the World Bank (2011) prior to 1994. Therefore, I used the amount of debt in 1989 dollars ($60 billion, obtained from FBIS 1989b) and converted it to 2011 dollars.
assault on the economy,” and Pik Botha expressed to U.S. officials his hope that joining the NPT might “reduce…threats of punitive sanctions” (Liberman 2001: 76; State Dept. 1986a: 4). Thus, in de Klerk’s view, nuclear reversal and the end of apartheid were necessary in order to not only head off more sanctions and private disinvestment, but also to actively get back into the West’s favor and restore investor confidence.

In this light, the end of South Africa’s nuclear program is best seen alongside the end of apartheid as a means of normalizing South Africa’s relations with the rest of the world. Pik Botha noted that de Klerk and his Cabinet saw joining the NPT as a way to “hasten” the process of removing sanctions and rejoining the international community by “demonstrating the irrevocability of [positive, democratic] change [in South Africa] to foreign capitals” (Liberman 2001: 80). Indeed, after an annual average of -$4.68 million in direct foreign investment between 1989 and 1993 (the year of de Klerk’s announcement), investment shot up to an annual average of over $1300 million between 1994 and 1998 (UNCTAD 2010). This stunning rise is consistent with the de Klerk government’s expectation that nuclear reversal would solidify the process of economic normalization. In the end, whether nuclear abandonment was necessary to achieve de Klerk’s economic goals—that is, whether ending apartheid would have been sufficient by itself—is an open question, but what is clear is that he and his government saw it as a complementary means of moving back into the international community’s good graces (Horton 1999: 31-32). Thus, the burgeoning debt crisis, uncertain economic future, and presence of sanctions provided incentives for nuclear reversal.

**Hypothesis 5**

With the fall of the Communist bloc, the withdrawal of Cuban forces, and peace with its neighbors, the South Africans faced virtually no threat whatsoever. It had no reason to fear that
any Western or Communist country would attack South Africa, or that their neighbors would acquire a nuclear capability to counterbalance its own, especially since no country knew for certain that South Africa had a dedicated nuclear weapons program. Nor did its neighbors have the technological and financial resources—not to mention clear motivations, given the decline of regional tensions—to obtain nuclear weapons (Moore 1987: 126-128; Ogunbadejo 1984). In short, the South African nuclear arsenal was not a significant security liability.

Thanks to the decline of the Soviet and Cuban threats, de Klerk did not perceive there to be an existential Communist danger to South Africa (H1). Moreover, he saw nuclear abandonment as a way to establish South Africa as a responsible actor in the international community—both as an end in itself (H3), and in order to facilitate the country’s access to foreign trade and investment and alleviate the country’s economic woes (H4).

**Conclusion**

To summarize, the theory proposed by this study is supported. Because of the perpetual security motivation that all states have to desire nuclear weapons, the consistent pressure from pro-nuclear interest groups with a stake in the program’s continuation, and leaders’ aversion to abandoning an already-begun drive for the ultimate weapon, there must be clear disincentives for the continuation of a nuclear program in order for nuclear reversal to occur. None of the cases examined here terminated their nuclear weapons programs while they still had a significant reason to keep it—namely the presence of an existential threat or regional or great power pretensions—as H1 and H2 were fulfilled in each case. Argentina, Brazil, and Libya came to terms with their adversaries through diplomacy, conciliatory rhetoric, and less aggressive foreign policies, whereas South Korea guarded itself from its neighbors through the U.S. security guarantee and South Africa owed its security to the collapse of the international Communism.
Moreover, civilian policymakers in Argentina forewent regional dominance in favor of cooperation, Qaddafi became sufficiently disillusioned with pan-Arabism that he abandoned ambitions for a unified, dominant Arab nation in the Middle East, and the other three cases were either too preoccupied with survival or with bolstering their economic might to value military dominance as a source of regional or global status.

Moreover, each country faced at least one facilitating condition for nuclear reversal—whether a desire to be accepted as a “responsible” country through nonproliferation, economic hardship, or a security threat aimed at its program. H4 was the most commonly fulfilled. This study has shown diminished economic growth, combined with high levels of foreign debt, to be strongly associated with nuclear reversal. Economic conditions played a crucial role for most notably Libya, but also for Argentina, Brazil, and South Africa. That said, however, even though Argentina and Brazil were never subject to general economic sanctions and investor flight, they still saw nuclear reversal as a way of not only ending technological sanctions, but of creating a favorable environment for attracting foreign investment and expanding regional trade. In sum, even if nuclear ambiguity was not the source of economic distress—or, as in Libya and South Africa, the cause of sanctions—nuclear reversal was nonetheless seen by policymakers as a way to establish a reputation for stability, responsibility, and benign intentions, and thus reinforce their efforts to dispel sanctions, gain investor confidence, and facilitate economic growth.

These findings are consistent with the theory of Solingen (1994), who argues that states whose leadership is dominated by “liberalizing coalitions” favoring privatization and foreign economic ties are unlikely to pursue nuclear weapons, as doing so would jeopardize their broader economic goals. But while I do not contest this logic, one must also keep in mind the context in which these policymakers operated. In each case, leaders saw the promotion of free trade and
foreign investment as a way to relieve the hard times afflicting their countries—their preferences for free markets and foreign economic ties did not emerge in a vacuum.

Moreover, without the presence of economic hardship—or of an expectation that pursuing nuclear weapons could lead to economic hardship—the existence of a “liberalizing coalition” in government is insufficient by itself to motivate nuclear reversal. This is most clearly demonstrated in the South Korean case; even though the country had built itself up largely thanks to its foreign economic ties, there is insufficient evidence that President Park feared putting South Korea’s economic future at risk by pursuing nuclear weapons. Given the economic punishment that has been imposed because of the nuclear programs of Iraq, Iran, and North Korea in recent years, this expectation may now be automatic. In short, economic hardship motivates nuclear reversal by making states sensitive to sanctions and forcing them to reconsider not only the monetary costs of their nuclear programs, but also their foreign economic strategies—thus making them even more likely to see nuclear reversal as conducive to their broader economic goals.

H3 and H5 were each fulfilled in three cases. Menem, Qaddafi, and de Klerk all wanted to improve their countries’ images, and saw nuclear reversal as a means to that end, whereas Park Chung Hee was more concerned with ensuring his country’s survival in the long-term to pay much heed to international norms—he had to be coerced into giving up South Korea’s program. Similarly, Brazilian leaders, by virtue of their lingering major power ambitions, remained skeptical of the discriminatory nonproliferation regime. Finally, H5 was fulfilled for Brazil, Libya, and South Korea, which faced the prospect of losing a nuclear arms race, U.S. invasion, and U.S. desertion, respectively. Indeed, Libya was subject to a sort of carrot-and-stick approach—it could improve relations with the United States if it abandoned its program or
possibly face attack if it did not, thus fulfilling both H1 and H5. On the contrary, South African leaders already feared for their survival to such an extent that even if a preemptive threat had been made, it would likely have made little difference, and Argentine policymakers were leading in the arms race with Brazil and were not (yet) afraid of a preemptive Brazilian invasion—as Reiss (1995: 45) has noted, they had been “rivals” but never “enemies” (Milenky 1982: 34).

**Policy Implications**

The first implication of my findings is that diplomatic and economic isolation can be a powerful motivation for nuclear reversal, as in Argentina, Brazil, Libya, and South Africa. This provides a degree of hope for leaders in the West and elsewhere seeking to prevent the spread of nuclear weapons yet avoid the use of force. However, there is only so much that outside pressure can do; nuclear reversal is also dependent upon the threat perceptions and status aspirations of state policymakers. As such, the most effective anti-proliferation policies will both assuage proliferators’ insecurity—whether through diplomatic rapprochement or the provision of a security guarantee—and at the same time impose a cost upon their continued defiance.

That said, however, if a state’s leaders have regional power pretensions, then there is an inherent limit on what the international community can do to stop its nuclear ambitions. In this case, the best option may in fact be the promotion of regime change, whether through force or economic collapse (as in Argentina). Alternatively, state leaders may abandon their ambitions for regional or great power status for a number of other reasons; in the case of Argentina, policymakers almost surely realized that they could not match Brazil’s growing strength, and in Libya, Qaddafi realized that Arab leadership was a “mirage” that could not be realized by possessing nuclear weapons.

The issue of governmental change is largely omitted by the theory presented here. It is
presumably easier for state policymakers to end a nuclear program when they have not had a hand in actively promoting it, and indeed, regime change has been shown to facilitate nuclear reversal. In Argentina, Brazil, and South Africa, the coming of new leaders who rejected regional dominance, desired international respect, or who saw their country’s nuclear program as detrimental to economic recovery was crucial. Even in Libya there was a shift in opinion, as Qaddafi sided with officials advocating an end to Libya’s isolation.

This study’s theory does not indicate when nuclear abandonment will occur, but only the conditions that must be present—the absence of an existential threat or regional power ambitions, along with either the desire to gain international respect by joining the NPT, economic hardship, or a security threat borne from its nuclear program. (Presumably, though, fewer threats, greater economic hardship, etc., will make reversal more likely.) The pace of nuclear reversal is likely to be heavily affected by domestic politics and policymakers’ personalities. Regime change could potentially hasten the process, not only by bringing leaders with different threat perceptions (H1), values (H2 and H3), or economic priorities (H4), but by allowing for major policy innovation and the use of political capital to overcome domestic opposition. A change in leadership will not always be required; indeed, as in Libya and South Korea, sufficient pressure can force even the leader who approved the program to abandon it. However, while it may not be a necessary condition, regime change is most certainly conducive to nuclear reversal.

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39 In Argentina and Brazil, for example, civilian leaders were forced to contend with factions that opposed bilateral inspections, the acceptance of IAEA safeguards, and NPT ratification—including resentful militaries (Redick 1995: 42-44; Spector 1990: 224-226; Doyle 2008: 316-317). Moreover, bold policy innovations require equally bold leadership from policymakers willing to change their countries’ foreign policies and challenge entrenched interests. See Reiss (1995: 21-22, 68-71) for a discussion of the leadership qualities of de Klerk, Menem, and Collor. Qaddafi and Park, by virtue of their supreme authority, were also well-positioned to undertake radical policy shifts.
Final Thoughts

The above case studies provide further evidence supporting my theory’s assumptions: for one, that there will always be certain entrenched interests—scientists, bureaucrats, or military officials—that advocate for a program’s continuation. In the cases of Argentina and Brazil, Menem and Collor had to overcome opposition from their military and nuclear establishments. Indeed, for both men, wresting control of their nuclear programs from the armed forces was one step in the larger process of asserting civilian primacy in government (Reiss 1995: 57, 60n72, 69; CIA 1985: 4, 7, 16; FBIS 1991g; FBIS 1992b). Similarly, in South Korea, the armed forces supported the weapons program, and even though many scientists were not made privy to the program’s aim, a number of them felt that “their promotion and status would be guaranteed with the progress of the weapons-related program” (Gul Hong 2011: 488-491; Hymans et al. 2001: 101).

In South Africa, Chairman A.J. Roux and the scientific establishment at the AEB/AEC advocated for the program, especially during its early years. Many scientists opposed nuclear abandonment when de Klerk took office, both because they “balked at destroying devices they had devoted years to creating,” but also because their careers and “professional pride” had become bound to the nuclear program. Indeed, some even threatened to sell nuclear secrets unless they were given generous unemployment benefits (Reiss 1995: 18; Horton 1999: 19, 32; Newby-Fraser 1979: 36). In much the same way, the nuclear weapons program had many advocates in the military-industrial complex, particularly in armaments giant Armscor, which controlled the program from the late 1970s. Although the military was initially skeptical of building nuclear weapons, as time progressed certain interests—particularly in the air force, which had become involved in the management of the program—came to support the effort
Moreover, there is evidence indicating that policymakers can be very reluctant to terminate a nuclear program even without an immediate need for one and even if the state has good reason to do so. Case in point, de Klerk’s hand-picked auditor of the dismantlement process in South Africa favored destroying South Africa’s weapons slowly in order to maintain a functioning deterrent for longer (Reiss 1995: 18). Similarly, South Korea’s Park Chung Hee greatly desired to be in control of his own country’s security, and he had to be forced into nuclear reversal. It is fairly clear that American reassurances by themselves (H1) would not have brought about South Korea’s nuclear reversal; Park wanted an independent nuclear capability in order to hedge against the future potential of American unreliability (Gul Hong 2011: 503-507; Pollack and Reiss 2004: 271; DCI 1977a: 3; CIA 1978: 2-3).

The decision to preclude one’s obtainment of the ultimate weapon is not one made lightly. Indeed, it is difficult to imagine how a policymaker could rationalize effectively giving up the ability to acquire the ultimate weapon if the state faced an existential threat or if its leadership had regional or great power ambitions. That said, even if these conditions are met, the potential future uses of a nuclear option—not to mention policymakers’ aversion to wasting the progress that has already been made and to expending the effort required to challenge the status quo—will be such that leaders would also need a powerful disincentive to continue the program. In the end, any state should be averse to foregoing its nuclear option.
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