THE INEFFECTIVENESS OF SANCTIONS TOWARDS ASPIRING NUCLEAR PROGRAMS

INEFFICACITÉ DES SANCTIONS À L'ÉGARD DES PROGRAMMES NUCLÉAIRES ASPIRANTS

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by

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I dedicate this thesis to my parents, whom I could not have done it without their support.

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Abstract

This thesis will address the main gap that can be observed in the existing literature, which is a lack of direct comparison between newly developed and aspiring nuclear states such as South Africa, North Korea, and Iran. All states which developed nuclear weapon programs after the Nuclear Non-Proliferation Treaty (NPT) was signed and which had sanction imposed on them with various degrees of success. Three main independent variables have emerged that need to be considered when looking at aspiring nuclear programs: regime-type, network-salience, and sanction compliance. These three independent variables will be looked at in combination of realist theory, employing Comparative Historical Analysis, for each of the three chosen cases. This thesis proves that there is a distinct relationship between each of the independent variables.

Résumé

Cette thèse abordera le principal écart qui peut être observé dans la littérature existante, qui est un manque de comparaison directe entre les États nucléaires nouvellement développés et en herbe tels que l'Afrique du Sud, la Corée du Nord et l'Iran. Tous les États qui ont développé des programmes d'armes nucléaires après la signature du Traité sur la non-prolifération des armes nucléaires (TNP) et qui se sont vu imposer des sanctions avec divers degrés de succès. Trois principales variables indépendantes sont apparues et doivent être prises en compte lors de l'examen des programmes nucléaires en herbe: le type de régime, les alliances et le respect des sanctions. Ces trois variables indépendantes seront examinées en combinaison avec la théorie réaliste pour chacun des trois cas choisis, la Corée du Nord, l'Iran et l'Afrique du Sud afin de tester les hypothèses. L'analyse historique comparative sera utilisée pour décrire une méthodologie précise et transparente et pour trouver les similitudes entre les trois cas.

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Abbreviations/Acronyms

AEB – Atomic Energy Board (of South Africa)
ANC – African National Congress
CHA – Comparative Historical Analysis
CL – Civil Liberties
CTBT – Comprehensive Nuclear Test Ban Treaty
DPRK – Democratic People's Republic of Korea (= North Korea)
EU – European Union
GDI – Global Democratic Index
GDR - German Democratic Republic's
EIU – Economist Intelligence Unite
IAEA - International Atomic Energy Agency
ICJ – International Court of Justice
IHL – International Humanitarian Law
JCPOA – Joint Comprehensive Plan of Action
MAD – Mutual Assured Destruction
NATO – North Atlantic Treaty Organization
NPT – Non-Proliferation Treaty
NU – Nuclear Umbrella
NWS – Nuclear Weapon State
P5- Permanent 5 UNSC members (United States, France, United Kingdom, China, Russia)
P5+1 – Permanent 5 UNSC members + Germany
PNE – Peaceful Nuclear Energy (South Africa)
PR – Political Rights
Stasi – (GDR) Ministry of State Security
UN – United Nations
UNSC – United Nations Security Council
UNSCR - United Nations Security Council Resolution
US – United States

Chapter 1 – Introduction

Nuclear Weapons were used for the first, and only time, when the United States dropped an atomic bomb on Hiroshima and Nagasaki on August 6th and 9th 1945.[1] Since then, many other states have developed nuclear capabilities and conducted nuclear tests. However, the weapons had such tremendous horrific short-term and long-term effects that they became virtually unusable. This became apparent in the following decades with the development of what became known as the 'nuclear taboo'[2]. Despite this, nuclear weapons ushered in an odd stability based upon the idea of deterrence, which while tested at times, [3] constrained the actions of the two rival superpowers of the day, the United States and the Soviet Union, in what was referred to as the Cold War.

In 1968, the Treaty on the Non-Proliferation of Nuclear Weapons, or the Non-Proliferation Treaty (NPT – for short) was signed and came into effect in 1970. Despite long held norms of non-use and non-proliferation and a widely accepted non-proliferation treaty, several countries continue to pursue nuclear weapons. Unsurprisingly, when these countries made efforts to obtain nuclear weapons, they were treated to sanctions by the international community, however the outcomes of these sanctions vary tremendously between cases. In short, the results are uneven. This thesis seeks to examines the possible reasons for the different outcomes in US-led nuclear sanctions towards Iran, South Africa, and North Korea.

This thesis will be using a comparative historical analytical model to discuss a set of variables that will account for the unintended outcomes of these sanctions. By using this method, this paper will be able to test the different sanctions models finding the common denominator in explaining the wide variety of outcomes. There are two hypotheses that this thesis will discuss. The first hypothesis is that the compliance rate will be higher when the state has significant friendly international ties to the sanctioning countries. The second hypothesis states that compliance will be lower if the regime type is authoritarian.

More formally, the two hypotheses (with a corollary) are as follows:

H1. Sanctioning a nuclear weapon proliferating country will be effective if the country under sanction is positively engaged with the sanctioning country;

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[1] M. Susan Lindee, *Suffering Made Real: American Science and the Survivors at Hiroshima, Lindee* (University of Chicago Press Books, 1997), https://press.uchicago.edu/ucp/books/book/chicago/S/bo3634560.html.

[2] Nina Tannenwald, 'The Nuclear Taboo: The United States and the Normative Basis of Nuclear Non-Use', *International Organization* 53, no. 3 (1999): 1..

[3] Farhang Jahanpour, 'Iran's Nuclear Programme and Regional Security', *The RUSI Journal* 152, no. 3 (1 June 2007): 30–35, https://doi.org/10.1080/03071840701470335.

H2a. Sanctioning a nuclear weapon proliferating country will be effective if the country under sanction is a democracy, and

H2b. Sanctioning a nuclear weapon proliferating country will be ineffective if the country under sanction is non-democratic.

This thesis seeks to test these hypotheses through an assessment of sanctions applied to three cases: South Africa, North Korea, and Iran. It is argued here that while the NPT and United Nations (UN) sanctions are perceived as effective in stopping aspiring nuclear programs, this has failed several times due to a set of common variables that exist in all three case studies. This thesis will first reconstruct the logic of the norms underpinning the NPT, and then analyze the historical roots and logic of sanctions as a response to violators of these norms and rules. Using a comparative historical analysis, this thesis will demonstrate how these norms and rules are not necessarily transferable, explaining why sanctions do not always achieve the intended outcome.

In the last couple of years alone, with the increasingly alarming nuclear tests conducted by the Democratic People's Republic of Korea (DPRK) and the United States (US) reaction to such tests, the topic of nuclear deterrence is in the forefront of many defence policy writers, such as Kenneth Waltz, Scott Sagan and Robert Powell. While there has been reasonable success with stopping the nuclear program of South Africa and Iran through the use of sanctions, there seems to be no effective way in stopping North Korea. The idea of a 'North Korean Missile Crisis', as Scott Sagan describes it is not only scary but also one that is extremely likely to happen[4].

Another important event is the withdrawal of the Iran Deal from the United States through President Trump. Throughout Obama's presidency, the Trump campaign criticized the administration for the Joint Comprehensive Plan of Action (JCPOA or simply the 'Iran Deal'), citing specifically the fact that it did not impose restriction on the ballistic missile systems that could have significant impact on the United States on home soil should they be used.[5] A year after the withdrawal went into effect, the Council on Foreign Relations looked back on the impact that this action had on the international system. They argue that not only did withdrawal from the deal exacerbated tensions in the Persian Gulf[6], but also

[4] Scott D. Sagan, 'The Korean Missile Crisis: Why Deterrence Is Still the Best Option', *Foreign Affairs*, November 2017.
[5] Landler, Mark. "Trump Abandons Iran Nuclear Deal He Long Scorned", *The New York Times*, 8 May 2018, sec. World, https://www.nytimes.com/2018/05/08/world/middleeast/trump-iran-nuclear-deal.html.
[6] Morello, Carol. "Pompeo Seeks Support from Allies to Monitor Persian Gulf Region amid Tensions with Iran", Washington Post, accessed 24 November 2019, https://www.washingtonpost.com/world/national-security/pompeo-seeks-support-from-allies-to-monitor-persian-gulf-amid-tensions-with-iran/2019/06/24/cfa953e0-969e-11e9-8d0a-5edd7e2025b1_story.html.

impacted the oil market and the individual oil price by barrel so significantly that Iran is unable to recover its economy.[7] Yet through the withdrawal from the JCPOA, the United States left itself only military options rather than also having foreign policy levers to work with.

The JCPOA works in conjunction with UNSCR 2231 to lift previous sanctions on Iran. However, it also seeks to strengthen ties between Iran and the Nuclear Weapon States (NWS) in order to ensure that Iran will "under no circumstances ever seek, develop, or acquire any nuclear weapons."[8] The Iran Deal was worked out between what is known as the P5+1, or the five permanent members (P5) of the United Nations Security Council (UNSC), the United States, United Kingdom, France, China, and Russia, plus Germany as major power, and Iran[9]. By bringing together these major powers and the concomitant assurance that Iran was not working on a nuclear weapon system, allowed for a lifting of economic and political sanctions so that the citizens of Iran were able to live in a working state.[10].

In a world that is seeing an increase of right-wing extremism, nuclear non-proliferation and the effectiveness of sanctions remains an important topic to talk about. The rise of right-wing extremism at a larger global scale is not only giving a voice to extreme ideas, but also the increase of dictatorships with potential adverse heads of states. As will be further discussed in this thesis, non-democratic countries are less likely to comply with sanctions of any kind, nevertheless those pertaining their nuclear programs. Not only will we be at risk of a second Cold War, but with the renewal and modernization of nuclear weapon arsenals, the reality of nuclear disarmament remains far off into the future.

This chapter will lay out the groundwork and give a historical background of nuclear weapons and the international laws that exists. It will discuss the Non-proliferation Treaty (NPT) and the issues that are prevalent, specifically surrounding the NPT and its implementation as well as the lack of enforcement around its articles. Nuclear deterrence strategy and the response by different states towards the pursuit of nuclear weapon programmes will also be highlighted.

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[7] Landler, 'Trump Abandons Iran Nuclear Deal He Long Scorned'.
[8] United Nations Security Council "Resolution 2231" (2015)http://www.un.org/en/ga/search/view_doc.asp?symbol=S/RES/2231(2015)
[9] BBC, 'North Korea's Missile and Nuclear Programme', *BBC News*, 12 October 2020, sec. Asia, https://www.bbc.com/news/world-asia-41174689.
[10] 'Iran Nuclear Deal: Key Details', *BBC News*, 11 June 2019, sec. Middle East, https://www.bbc.com/news/world-middle-east-33521655.

Background

Prior to the creation of the NPT in 1968, there was no foundation in international humanitarian law to curtail the spread of nuclear weapons to other countries. Before its inception, the International Atomic Energy Agency (IAEA), formed in 1957 in Vienna, had the role of the world's nuclear inspectorate and to further nuclear non-proliferation.[11] Together, the NPT and the IAEA function as law and enforcement, respectively. The NPT is a multilateral, binding treaty that strives towards the mutual goal of nuclear disarmament. It has been signed by 191 states, including the five states already in possession of nuclear weapons. Not only does it put limits on arms and is a disarmament agreement, it also strives to work towards peaceful nuclear activity that are inspected and sanctioned by the IAEA as a way to create transparency and accountability.

Proliferation as a concept is composed of two aspects: vertical proliferation and horizontal proliferation. Vertical Proliferation is the phenomenon of stockpiling and increasing one's own nuclear arsenal. Horizontal proliferation is the spread and trade of nuclear weapons and its knowledge to other countries.[12] General disarmament includes the tear down of already existing stockpiles, but also to not aid other countries in developing their own nuclear technology. In the past the NPT has sought to address both vertical and horizontal proliferation. The NPT has been most successful in horizontal proliferation, seeing as since the Cold War most nuclear weapon states have decreased their nuclear arsenal. Unfortunately, this has started to unravel in the past few years specifically between Russia and the United States.[13]

Since the IAEA is independent from the United Nations, even though it reports to the General Assembly and the Security Council, it is able to enforce and inspect the rules that are written in the NPT. The IAEA states in their mandate that their primary function is to inspect and ensure state's cooperation with the NPT. The "inspection by an impartial, credible third party [has] been a cornerstone of international law for decades. Where the intent exists to develop a clandestine nuclear weapons program, inspections serve effectively as a means of both detection and deterrence"[14]. Again in the mandate, the term deterrence is used, however the more important part is that the IAEA provides an unbiased way of ensuring that the NPT is followed, while also functioning as a way to gather intelligence on potential future nuclear powers.

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[11] 'IAEA Safeguards: Stemming the Spread of Nuclear Weapons', IAEA Bulletin 34 (International Atomic Agency, 2001).
[12] Erik Gartzke and Matthew Kroenig, 'Nuclear Posture, Nonproliferation Policy, and the Spread of Nuclear Weapons', *Journal of Conflict REsolution* 58, no. 3 (6 December 2013): 395–401, https://doi.org/10.1177/0022002713509056.
[13] Nina Tannenwald, 'The Vanishing Nuclear Taboo?', 29 January 2019, https://www.foreignaffairs.com/articles/world/2018-10-15/vanishing-nuclear-taboo.Nina
[14] 'IAEA Safeguards: Stemming the Spread of Nuclear Weapons'.

When talking about nuclear proliferation, it is often immediately followed by deterrence. The concept of deterrence is as old conflict itself; however nuclear weapons gave the concept new immediacy following the Second World War. After the use of the atomic bombs by the US on Japan in 1945, it very quickly became apparent that no other weapon system existed that could match the destructive potential of nuclear weapons. The unmatched destructive potential of nuclear weapons, and the growing scale of atomic attacks brought a new meaning for nuclear deterrence. Instead of thousands of casualties, nuclear weapons affect millions of people not only in the moment but for years after. From the standpoint of the Soviet Union, having now observed the devastation wrought by this new weapon, the easiest way to deter the United States from using their nuclear weapons again would be to build their own. And here the logic of the security dilemma takes over and countries quickly started to build their own nuclear weapon arsenal.

While the US enjoyed a so-called nuclear monopoly and deterred through the promise of massive retaliation, once the ensuing arms race resulted in the USSR developing nuclear weapons of their own, mutual assured destruction (MAD) was born. The MAD deterrence theory functioned like the old security dilemma in that especially during the Cold War, the stockpile of nuclear weapons was so high, that any massive exchange of nuclear weapons would result the destruction of both the USSR and US.

However, the horrific logic of MAD was not the only concept that prevented the use of nuclear weapons. Arguably the more useful concept that emerged was the so-called 'nuclear taboo'. Brown University professor Nina Tannenwald argued that due to the drastic short-and long-term effects of atomic and later hydrogen (or thermonuclear) devices, it has become unthinkable to use a nuclear bomb, hence the taboo.[15] Not only was the use of nuclear weapons illogical, it was recognized as immoral too. The nuclear taboo is further explored in the literature review in the subsequent pages of this thesis.

Currently there are nine nuclear weapon states: China, France, India, Israel, North Korea, Pakistan, Russia, the United Kingdom, and the United States.[16] Interestingly, and likely not coincidentally, the permanent members of the UNSC – China, Russia, France, the UK, and the USA – are also the five official 'nuclear-weapons states' (NWS). While these are the only states that have either confirmed or believed to possess nuclear weapons, there are many other countries, such as Iran, that possess nuclear technology and capabilities to harness nuclear energy into a nuclear weapon. It is important to note that

[15] Nina Tannenwald, *The Nuclear Taboo: The United States and the Non-Use of Nuclear Weapons since 1945*, vol. 87, Cambridge Studies in International Relations (Cambridge: Cambridge University Press, 2007)..

[16] 'The Global Nuclear Nonproliferation Regime', Council on Foreign Relations, accessed 10 November 2020, https://www.cfr.org/report/global-nuclear-nonproliferation-regime.".

> [si]nce Article 9 of the NPT defines Nuclear Weapon States (NWS) as those that had manufactured and tested a nuclear device prior to 1 January 1967, it is not possible for India, Pakistan, Israel or North Korea to be regarded as NWS as they have tried to be. All those countries are in violation of the NPT, and providing them assistance in nuclear fields, such as the US agreement with India to supply it with nuclear reactors and advanced nuclear technology, have constituted violations of the Treaty. The same applies to military co-operation with Israel and Pakistan[17].

The Non-Proliferation Treaty is a binding multilateral treaty with the goal of disarmament by the nuclear-weapon states. The main goal of the treaty is not only to promote the peaceful and safe use of nuclear energy but also to achieve future complete nuclear disarmament. Since the treaty entered into force on 11 May 1995, over 190 parties have signed and ratified it including the five NWS. This treaty has been the most significant of any arms limitation treaty due to the number of parties that are signatories.[18] While there has been a wide policy discussion about the effectiveness of sanction on nuclear weapon programs, University of California professor Etel Solingen, states that often sanction are ineffective for a regime that draws their very legitimacy from the possession of nuclear weapons[19]. However, the NPT is still the primary treaty regarding mutual nuclear disarmament.

The NPT consists of 11 articles, however there are some that carry more weight than others. Within the text of the articles are ambiguities that are open to interpretation and have been used as loopholes that states, such as Iran, have cited in order to justify their nuclear program. Articles I, II, IV and VI are the most binding ones concerning to the case studies of Iran and North Korea. Before exploring the text, it is important to note that the Islamic Republic of Iran signed and ratified the NPT in February 1970[20] and is thereby bound by its rules, whereas the Democratic People's Republic of Korea (DPRK), also known as North Korea, has ratified the treaty in 1985 however later on it withdrew from the treaty in 2003.[21]

Article I states that all NWS should not assist or transfer the knowledge of any nuclear weapon-technology to other countries. Article II mirrors Article I in saying that countries are not allowed to acquire any form of nuclear weapons technology from those that do possess the technology or even acquire them on their own. Article IV is one of the most complicated Articles in the treaty from the perspective of enforcement of the treaty's spirit. Due to its ambiguity that it "not

[17] Jahanpour, 'Iran's Nuclear Programme and Regional Security'.
[18] http://www.un.org/disarmament/WMD/Nuclear/NPT.shtml
[19] Solingen, Etel. *Sanctions, Statecraft, and Nuclear Proliferation*. ed. New York, NY: Cambridge University Press, 2012.
[20] http://disarmament.un.org/treaties/s/iran%28islamicrepublicof%29
[21] "Fact Sheet on DPRK Nuclear Safeguards".International Atomic Energy Agency. May 2003 https://www.iaea.org/newscenter/focus/dprk/fact-sheet-on-dprk-nuclear-safeguards

only allows the use of nuclear technology for peaceful purposes but even declares that it is 'the inalienable right' of every country to do research, development and production, and use nuclear energy for peaceful purposes, without discrimination as long as Articles I and II are satisfied. It further states that all parties can exchange equipment, material, and science and technology for peaceful purposes"[22]. In short, Article IV holds that nuclear technology per se is fine and it is the technology's weaponization that is forbidden.

This is one of the key loopholes that have been cited by the Iranian government in defence of the nuclear program. The last key Article is Article VI, which states "[e]ach of the Parties to the Treaty undertakes to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament, and on a treaty on general and complete disarmament under strict and effective international control"[23]. The wording "in good faith" has also proven to be very ambiguous and even today we have not seen any of the NWS completely disarm or even implemented measurements to begin disarming. Despite this, the NPT can be seen as ineffective as the wording of the treaty is rather open to interpretation and even though the IAEA is functioning as an inspector, it has not deterred Iran, Iraq, India, Pakistan, Israel or North Korea from building up their nuclear programs. One of the main reasons why the IAEA is unable to function fully is due to the fact that while it is independent of the UN, it only has a limited enforcement capability. If a country refuses to allow access to certain facilities the IAEA is unable to gain access and is only able to inspect what is shown. This issue of non-compliance is especially notable in the case of Iran.[24]

The NPT is not the only treaty that deals with nuclear weapons, even though it lays out the most commonly known rules and aspirations regarding disarmament. The International Court of Justice (ICJ) can give an advisory opinion on the legality of nuclear weapons as states in not only the NPT, but also various UNSC Resolution, the Additional Protocols' as well as the 1899 Hague Regulations. Yet breaches occur more often than they should.

Breaches of the NPT and issues of non-compliance are often accompanied by political controversy. Due to differing domestic and alliance interests among member states, leaders are less likely to report a case of non-compliance concerning an ally to the UNSC. It is much easier to simply ask for further evidence, verification and reporting on the problem. On the outset, it is custom to seek consensus regarding noncompliance judgements. This practice becomes problematic when members avoid casting their vote and prefer to abstain, mostly

[22] Jahanpour, 'Iran's Nuclear Programme and Regional Security'.
[23] http://www.un.org/disarmament/WMD/Nuclear/NPTtext.shtml, see also Jahanpour, Farhang. "Iran's Nuclear Programme and Regional Security." *The RUSI Journal* 152, no. 3 (2007):30-35.
[24]Nicholas L. Miller, 'The Iranian Nuclear Program (1974–2015)', in *Stopping the Bomb*, The Sources and Effectiveness of US Nonproliferation Policy (Cornell University Press, 2018), 217–43, https://www.jstor.org/stable/10.7591/j.ctt1w1vkd5.14., 232.

for political reasons; it fuels ineffectiveness when it comes to incidences where a clear breach of the NPT has occurred such as in Iran.[25]

The debate around a nuclear Iran has become much more prominent since August 2002, when a dissident Iranian group revealed that Iran was preparing to open a large-scale enrichment facility that could translate into not only the building of an ambitious nuclear weapons program, but also an extremely important international security problem.[26] Currently, their nuclear program is focused on the enrichment of uranium for peaceful purposes such as energy production purposes as is allowed under the Non-Proliferation Treaty Articles I, II, and III. However, several governments such as the United States and other European governments do not believe this claim made by the Iranian government.[27]

Philosophically, the idea of non-proliferation is challenged by the presence of the NWS. How can one dissuade non-NWS from developing nuclear programs if the NWS themselves have failed to abide by the NPT? One of the points of tension, and United States suspicion, is that Russia is suspected to be helping Iran advance their nuclear program[28]. Specifically, the nuclear reactor plant at Bushehr, which is the reason for its suspicion of a non-peaceful program, has been developed with Russian assistance and therefore suggests that Article I (prohibition of nuclear weapon technology transfer) of the NPT has been breached. Not only is Iran benefitting from this breach of the treaty but other developing nuclear countries such as North Korea, Israel, Pakistan and India could also benefitted from assistance given by Russia as well as China[29].

Since Article I has been breached and Iran has received assistance in building and developing their nuclear program, compliance with Article II is also in question. Currently this Article has not yet been breached; however, Iran is a signatory to the NPT so therefore it is completely illegal for them to receive nuclear weapons in the present or future. This is another point of discontent by the US and the EU: that Iran may not only use their nuclear power reactors for energy production, but also to master low-enriched and high-enriched uranium that is needed to manufacture an atomic bomb. Iran has denied these allegations and argued that its program is still in compliance with international law and the NPT.[30]

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[25] Trevor Findlay, 'IAEA Noncompliance Reporting And the Iran Case', *Arms Control Today* 46, no. 1 (2016): 30–35. 30

[26] Paul K Kerr, 'Iran's Nuclear Program: Status', CRS Report for Congress (Congressional Research Service, 11 August 2009). 1–4.

[27] Mbanje, Bowden B.C, and Darlington N. Maluku. "The effectiveness of the nuclear Non-Proliferation Treaty (NPT) in curbing Iran's nuclear programme: A Critical analysis." *GSTF Journal of Law and Social Sciences (JLSS)* 1, no. 1 (January 2012): 14-19.

[28] Beehner, Lionel. "Russia's Nuclear Deal with Iran." February 28, 2006. Accessed September 13, 2018. https://www.cfr.org/backgrounder/russias-nuclear-deal-iran.

[29] Ibid.

[30] Bowden Mbanje and Darlington N. Maluku, 'The Effectiveness of the Nuclear Non-Proliferation Treaty (NPT) in Curbing Iran's Nuclear Programme: A Critical Analysis', *Journal of Law and Social Sciences* 1, no. 1 (January 2012): 14–19.

Another point of tension is the secrecy of the Iranian nuclear program; critics have argued that if indeed it is a completely peaceful program, with no implied military motive, why did the Iranian government feel the need for such secrecy.[31] Iran has countered this accusation by saying that due to the extremely hostile American position on this issue Iran had no other way of developing their program. Yet even when faced with further sanctions did the Iranian nuclear program "steadily strengthen their nuclear capabilities"[32]. When countries such as Iran, who has had relatively close economic relations with other Western countries, are able to breach the NPT it should come to no surprise that a decidedly non-Western and non-democratic country such as North Korea was also able to develop a nuclear program.

In October 2002, the IAEA found that North Korea was on the brink of developing highly enriched uranium, which could be used for building nuclear weapons, confirming long-grown suspicion from the last decades. When the inspectors asked the DPRK officials to clarify their planned use, they did indeed confirm that they were looking to build nuclear weapons. While meetings between the IAEA Director General Mohamed El Baradei and the North Korean government were encouraged, North Korea never responded to the request that they should not take any further steps in building up their program since it stands in violation with the NPT Article I.[33] In January of 2003, the DPRK officially announced its withdrawal from the NPT and is thereby the first state to do so. Following this statement, rumours of the restart of nuclear reactors were present however, they remained unconfirmed due to the lack of IAEA inspectors on the ground.[34] Since 2003 many negotiations and talks such as the Six Party Talks[35] have taken place. However, these talks have met with limited success as ongoing nuclear tests conducted by the DPRK have done nothing but send mixed messages to the international community. These interruptions make it harder to build a strong and solid groundwork for serious negotiations or the signing of multilateral treaties.

North Korea's willingness to re-sign and then withdraw from the NPT highlights not only the unpredictability of the North Korean dictatorship but also the mistrust existing between the different countries.[36] So far North Korea has

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[31] Ali M. Ansari, *Confronting Iran: The Failure of American Foreign Policy and the Roots of Mistrust* (London: C Hurst & Co Publishers Ltd, 2006). 1

[32] Jung-Hyun Lee, 'The Status of Iran's Nuclear Program', in *Assessment of the Nuclear Programs of Iran and North Korea*, ed. Jungmin Kang (Springer Netherlands, 2013), 99–111, https://doi.org/10.1007/978-94-007-6019-6.

[33] International Atomic Energy Agency, 'IAEA and DPRK: Chronology of Key Events', Text, International Atomic Energy Agency (IAEA, 25 July 2014), https://www.iaea.org/newscenter/focus/dprk/chronology-of-key-events.

[34] Ibid.

[35] consisting of negotiations between China, Japan, Russia, the United States, South and North Korea

[36] Lee, 'The Status of Iran's Nuclear Program'.Bajoria, Jayshree, and Beina Xu. "The Six Party Talks on North Korea's Nuclear Program." Council on Foreign Relations. Last modified September 30,

undertaken four separate nuclear tests: in 2006, 2009, 2013, 2016, and the most recent ones throughout 2017.[37] The last test in 2016 involved a small hydrogen bomb and the DPRK claims to have detonated it in self-defence against the US due to aggressive nuclear stance and vast nuclear arsenal on the part of the US. North Korean officials declared that, "[t]he DPRK's fate must not be protected by any forces but DPRK itself"[38]. Since the death of Kim Jong-il, his son and successor Kim Jong-un has made it clear nuclear weapon development is a wish of his late father, and that the existence of North Korea as a nuclear power is non-negotiable.[39] The problem that arises with the nuclear tests that have been conducted by North Korea is that technically they are not breaches of the NPT, since North Korea is no longer a party of the treaty and therefore is not bound to its obligations.

However, the fact that North Korea possesses highly enriched uranium does effectively break the Agreed Framework that was signed between the United States and North Korea in 1994.[40] The treaty stated that all nuclear power would be replaced with light water reactors that not only would take over the heating and electricity production but would also serve as mutual formal assurance between the two parties of the disarmament of the potential threat of nuclear weapons.[41] This treaty has been effectively broken since 2003, when North Korea demanded that all IAEA inspectors leave the country following the suspicion that the DPRK developed a nuclear program. The tests that have been conducted could be considered a breach of law under the Comprehensive Nuclear Test Ban Treaty (CTBT) of 1996 that was adopted under United Nations Resolution 50/245.[42], The CTBT states that each state party to the treaty is prohibited from carrying out any nuclear explosions, tests or otherwise. They also are not allowed to encourage, cause or participate in a nuclear explosion.[43] The only problem with the CTBT is that it has not technically gone into effect yet. Even though 183 countries have

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2013. http://www.cfr.org/proliferation/six-party-talks-north-koreas-nuclear-program/p13593.

[37] BBC, 'North Korea's Missile and Nuclear Programme'. accessed April 26, 2019,

[38] Justin Safi and Michael McCurry, 'North Korea Claims Successful Hydrogen Bomb Test in "Self-Defence against US"', *The Guardian*, 6 January 2016, sec. World news, https://www.theguardian.com/world/2016/jan/06/north-korean-nuclear-test-suspected-as-artificial-earthquake-detected.

[39] Jinwook Choi, 'A GAME CHANGER: NORTH KOREA'S THIRD NUCLEAR TEST AND NORTHEAST ASIAN SECURITY', *The Journal of East Asian Affairs* 27, no. 1 (2013): 99–125. 105-107.

[40] INFCIRC 457(November 1994) https://web.archive.org/web/20031217175315/http://www.iaea.org/Publications/Documents/Infcircs/Others/infcirc457.pdf

[41] Ibid.

[42] Justin Safi and Michael McCurry, 'North Korea Claims Successful Hydrogen Bomb Test in "Self-Defence against US"', *The Guardian*, 6 January 2016, sec. World news, https://www.theguardian.com/world/2016/jan/06/north-korean-nuclear-test-suspected-as-artificial-earthquake-detected.. *United Nations*. 17 September 1996.

[43] "Comprehensive Nuclear-Test-Ban Treaty CTBTO" *CTBTO Preparatory Commission*.

signed and ratified the treaty, it can only go in effect when countries such as China, India, Israel, Pakistan, and the United States have ratified the treaty seeing as these were the countries that possessed nuclear weapons or nuclear reactors at the time.[44] Both Iran and North Korea have not signed this treaty. Due to the non-signing they are not bound to the terms of the CTBT. Yet the refusal to sign and abide by its terms could be seen as a confirmation not only for the existence of the individual nuclear programs, but also as a statement of their active pursuit of a nuclear weapon program.

Another issue is the cooperation that exists between the Iranian and North Korean government, in terms of developing their nuclear programs. At the time of the 2013 nuclear test "Tehran reportedly asked Pyongyang if key experts could be sent to observe the test of 2013. Interestingly, Iran is said to have paid Pyongyang tens of millions of dollars for the privileged of observing the test"[45]. This request from Iran and the fact that Iran is in the process of building a plutonium nuclear reactor is worrying in more than just the evidence that North Korea most likely is in the position of owning nuclear warheads that can be mounted on a missile. Both North Korea and Iran have effectively refused the CTBT by possessing enriched uranium and nuclear plants.

The fact that both Iran and the DPRK have refused to sign and abide by the CTBT can also function as an indicator that the two countries are friendly enough with each other that they could consider themselves potential allies, and this could lead to future security dilemmas in the international sphere.[46] Even though the DPRK has now conducted several nuclear tests and declared that no sanction will deter them from building a strong and prosperous country, not much has changed in the military strength since Kim Jong-un has taken over the dictatorship upon his father's death.

Throughout the last decades it is clearly visible that both Iran and the DPRK have violated not only the NPT but also the CTBT, which have resulted in sanctions, but with little effect. These countries stand in direct contrast with South Africa who eventually bent to the international community and the sanctions that were placed on them. The logic of nuclear deterrence has dominated the field of nuclear proliferation but its gaps are shown when it comes to North Korea and its non-compliance. Indeed, why is it that sanctions sometimes work, while at others times seem to have no or even the opposite effect?

Looking at the disconnect between the NPT warranted disarmament and the issue of developing new nuclear programs after its signing. The issue of

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[44] "The Global Nuclear Nonproliferation Regime Issue Brief." *Council on Foreign Relations*, June 25, 2013.
[45] Bruce E. Jr. Bechtol, *North Korea and Regional Security in the Kim Jong-Un Era: A New International Security Dilemma* (Palgrave Macmillan UK, 2014), https://doi.org/10.1057/9781137400079. 22-24.
[46] Ibid. 22-29.

enforcement and how there is no clear plan to deal with outliers will be explored in this thesis.

This chapter has outlined the background and emergence of nuclear weapon within the international system. It has established a common ground for the next several chapters and highlighted some of the fault lines that exist within international treaties, specifically the NPT, when it comes towards non-complying states such as North Korea, and Iran. While it has not addressed the third case of South Africa it has clearly shown why non-compliance of states such as North Korea and Iran is severely problematic and why there is a push for disarmament in addition to the many nuclear proliferation treaties that already exist.

This thesis will be split into several chapters. This first chapter outlined the political and legal background that surrounds nuclear weapons. In chapter two, the existing literature regarding sanctions, the nuclear debate, and proliferation will be discussed highlighting the existing gap of discussion which this thesis seeks to bridge. Chapter three will focus on the theoretical framework of deterrence through a realist viewpoint, explaining why a comparative historical analysis is the best approach for this research. Chapter 4, 5, and 6 will individually look at each independent variable discussing each case on their own, and chapter 7 will not only conclude this thesis but also look at further areas of research.

Chapter 2 - Literature Review

In chapter 1, this thesis laid out the groundwork and gave a historical background of nuclear weapons and the international law that exists. It highlighted the issues that are prevalent specifically surrounding the NPT and its implementation as well as the lack of enforcement around its articles. Chapter 1 also discussed that through the principle of MAD, a nuclear deterrence strategy was established and successfully carried out throughout the Cold War, yet several states have started to develop and gain a nuclear weapon program since the signing and ratification of the NPT in 1970.

The literature that surrounds nuclear proliferation and sanctions appears to have three principle themes. The first theme – deterrence and nuclear proliferation – revolves around a debate between two of its main scholars, Scott Sagan and Kenneth Waltz. A second theme is focused on the interplay between the rule of law and norms of use for nuclear weapons. Finally, a third theme is focused on the implementation of sanctions towards aspiring nuclear weapon states.

The main gap that can be observed in the existing literation is the lack of a common variable that accounts for sanction compliance for states with similar regime-types such as South Africa, North Korea, and Iran and their response to US-led nuclear sanctions, when they are in clear defiance of the Non-Proliferation Treaty.

This chapter will clearly lay out the main arguments that exist and highlight the above-mentioned growing gap within the literature that surrounds the debate around aspiring nuclear regimes such as North Korea, South Africa, and Iran. While relying on secondary sources, such as peer-reviewed journal articles and books, much of the legal debate and its treaties are from primary sources whenever possible.

Debate on Deterrence and nuclear proliferation

The first theme that is prevalent in the literature is deterrence and nuclear proliferation. Coming out of the Cold War, and the height of MAD theory, nuclear weapons signalled not only a strong military capability but acted directly as a safety guarantor for each state. Sagan and Waltz debate on why states would or would not proliferate based on whether it is in a state's national interest to either stockpile their weapon arsenal or push for a complete mutual disarmament.

The concept of deterrence is not a new one and has surrounded the NPT since its inception in 1968. The concept of deterrence is widely debated in the field of international relations, one of the most famous ones is the "Great Debate" between Kenneth Waltz and Scott Sagan. While Sagan and Waltz are not strict deterrence theorist, their debate highlights the interplay between nuclear proliferation and nuclear deterrence. These two scholars debated the continuous presence of not only nuclear weapons but also why or why not states should retain them or aim for

nuclear disarmament as is laid out as part of the NPT.[47] In their book *The Spread of Nuclear Weapons: A Debate Renewed*, they explore different theories as to why states want to build and pursue a nuclear weapons program and what, if any, political consequences could emerge on domestic and international scales. Advocating for the possession of nuclear weapons in order to deter other countries from developing nuclear weapon programs, Waltz defines his theory of deterrence as one that dissuades "a state out of attacking because the expected reaction of the opponent may result in one's severe punishment."[48]

According to Waltz, deterrence significantly reduces the possibilities that war will break out between countries that possess nuclear capabilities due to the principle of Mutual Assured Destruction (MAD). The MAD doctrine is one that comes out of the Kennedy Administration during the Cold War, often associated with the Cuban Missile Crisis. This doctrine is based on the idea of nuclear deterrence theory in that, should both the attacking and defending country utilize nuclear weapons, it would result in the destruction of both sides. Therefore, nuclear weapons are often seen, ironically, as a guarantor of security, rather than a detractor of it.

Should deterrence fail, the wars that will be fought are less likely to threaten a country's vital interests should that country be in possession of nuclear weapons. Waltz's theory has received wide support and the concept of deterrence is closely linked to the creation of the NPT, as well as the use of economic and political sanctions. Even though Waltz is in favour of the NPT and the disarmament clause that is part of the NPT, he still strongly believes that in order for deterrence to function each state should have nuclear weapons to act as a failsafe backup. This is the exact scenario that horizontal proliferation encourages. He is of the opinion that a complete mutual disarmament would not be in the interest of the NWS as it would restrict their hard power in the international sphere. This would keep states at the threshold of a nuclear war, yet the nuclear taboo would constrain their use.

Andrew Futter states that part of an effective nuclear deterrence policy is the ability of the head of state to lie. He states that in order for a state to act as a deterrent their state leader has to be able to convince both his electorate and his cabinet on the use or non-use of nuclear weapons *in extremis*, even if it is against his or her own opinion. He gives the example of the United Kingdom, and the issues that come with being a nuclear weapon states as a transparent democracy. The key take-away however, is that the Prime Minister must be able to convince his potential adversaries that they are completely willing to use nuclear weapons and give a hawkish stance towards them if they want to stop horizontal proliferation and use the nuclear weapons as a deterring factor in a conflict.[49]

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[47] Article VI http://www.un.org/disarmament/WMD/Nuclear/NPTtext.shtml

[48] Sagan, S. Waltz, K. *The Spread of Nuclear Weapons: A Debate Renewed* New York W.W. Norton &Company (2002): 5.

[49]Steve Cooke and Andrew Futter, 'Democracy versus Deterrence: Nuclear Weapons and Political Integrity':, *Politics*, 5 October 2017, https://doi.org/10.1177/0263395717733978.

Whereas Waltz argues that more nuclear weapons may be better, Scott Sagan argues the opposite and is in favour of complete disarmament. One of Sagan's most important points is that deterrence theory can certainly function, but only if all states mutually disarm. In contrast, Waltz argues that the stockpiling of nuclear weapons is the better alternative presuming that NWS have functioning command and control structures of the nuclear programs, yet this is not always the case. When looking at recently aspiring nuclear states such as Iran and North Korea, these are often headed by either military organizations or civilians who are more focused on internal problems rather than external problems that are important for the nation's security.

Waltz argues what new nuclear states *should* do, whereas Sagan looks at what they *are more likely to do* based on their own national interests.[50] Most states act accordingly to a realist point of view, where power and the perception of power is key. Power and national interest are closely linked, and the owning of a functioning nuclear program is a key expression of power towards other actors. Waltz argues that deterrence has a 100% success rate and that it doesn't really matter which state, whether ally or not, possesses nuclear weapons as they then often police themselves towards non-use. Sagan opposes this viewpoint, stating that while this type of deterrence may have successfully functioned in the Cold War, this does not account for new threats such as nuclear weapon theft by terrorist groups. He points out that specifically in the case of Iran, they lie at a geographical hotspot of terrorist activity and that theft of nuclear weapons is certainly in the realm of possibilities, and individuals often act very different than states do. Sagan also points out that diplomacy should be the first approach that the United States take to interact with Iran on their nuclear weapon program. He believes that nuclear power should certainly be developed, as long as it doesn't expand to weapon building, and that there should be help offered from NWS towards aspiring nuclear states when it comes to developing nuclear technology and power. Waltz contrasts this by stating that the only reason for states to have and develop nuclear weapons is for deterrence purposes.[51]

Similar to Waltz, King's College London War Studies Professor Lawrence Freedman states that there are three main reasons why states, such as Great Britain, possess nuclear weapons. The first reason is in order to defend and deter against current and potential enemies who are developing nuclear capabilities. This notion also pays homage to the MAD doctrine which dominated Cold War strategic thinking. Second, while the US and Russia are the primary nuclear powers, it is very important to have an independent nuclear security strategy. Lastly, traditionally middle powers such as the UK and France have often used their own

[50]Scott Sagan and Kenneth N. Waltz, *The Spread of Nuclear Weapons: An Enduring Debate*, 3rd ed. (W.W. Norton & Company, 2012), https://politicalscience.stanford.edu/publications/spread-nuclear-weapons-debate-renewed-second-edition.41-79.

[51]Scott D. Sagan, Scott Sagan, and Kenneth N. Waltz, 'Nuclear Iran, A: Promoting Stability or Courting Disaster?', *Journal of International Affairs* 60 (1 April 2007): 135–50.

nuclear weapon programs as insurance policies. While the actual use of nuclear weapons has formed into not only unthinkable uncertainty with the nuclear taboo being the norm, the future is very uncertain, and a nuclear stockpile serves as a key deterrence.[52] Based on the arguments of both Freedman and Waltz the possession of nuclear weapons is a distinct advantage for North Korea, Iran, and South Africa. Especially as smaller states compared to the US and Russia, nuclear weapons would serve these states as a way to strengthen their independence on an international scale. But there are many reasons as to why states chose to not proliferate. One of them is the interplay that exists between the rule of law and norms that surround the use of nuclear weapons. Another is the threat of sanctions that could be nuclear, political, and economic in nature on a unilateral or multilateral scale.

Not only are states often bound by domestic law when it comes to their nuclear programs but also by International Law such as the NPT. This not only strengthens domestic nuclear policy as insurance policy but also helps ensure a common adherence of the same set of rules in the international sphere.

IHL and the issue of breaking International law, international norms, and sanctions

The second theme that is apparent in the literature is the legal aspect of nuclear weapon programmes. International Humanitarian Law (IHL) and International Customary Law (ICL) cover the use, legality, and characteristics of nuclear weapons very well, while this definition states the characteristics very well, and does say that unique measures should be taken, it does not explicitly make the nuclear bomb illegal.

In 1996, the ICJ defined the characteristics of nuclear weapons in its advisory opinion[53], and explicitly states that "it is imperative for the Court to take account of the unique characteristics of nuclear weapons, and in particular their destructive capacity, their capacity to cause untold human suffering, and their ability to cause

[52] Lawrence Freedman, 'FT.Com Site: Nuclear Deterrence May Still Have Role', *FT.Com*, 2006, 1-.

[53] "[The Court] ... notes that nuclear weapons are explosive devices whose energy results from the fusion or fission of the atom. By its very nature, that process, in nuclear weapons as they exist today, releases not only immense quantities of heat and energy, but also powerful and prolonged radiation. […]the first two causes of damage are vastly more powerful than the damage caused by other weapons, while the phenomenon of radiation is said to be peculiar to nuclear weapons. These characteristics render the nuclear weapon potentially catastrophic. The destructive power of nuclear weapons cannot be contained in either space or time. They have the potential to destroy all civilization and the entire ecosystem of the planet […] Further, the use of nuclear weapons would be a serious danger to future generations. Ionizing radiation has the potential to damage the future environment, food and marine ecosystem, and to cause genetic defects and illness in future generations. In consequence **...** it is imperative for the Court to take account of the unique characteristics of nuclear weapons, and in particular their destructive capacity, their capacity to cause untold human suffering, and their ability to cause damage to generations to come." *Legality of the Threat or Use of Nuclear Weapons*, 1996 I.C.J. 226, paragraphs 35-36.

damage to generations to come"[54]. IHL, customary international law, the law of armed conflict, *jus in bello* and other conventions such as the NPT concern itself not only with the use but also the threat of use of nuclear weapons.[55] Many of these laws are customary and not written down, however over time, many states have incorporated these laws and customs into their military doctrine. Even though many states address nuclear weapons and policies regarding the use and threat of them, it is often done on a policy and security basis, not on an international legal basis, such as the wide-ranged efforts from the Obama administration, as well as the modernization efforts from the Trump administration.[56] However, the use and legality of nuclear weapons is not only covered in the situation of international armed conflict, but also outside of it. In their advisory opinion, the ICJ was careful not to determine the legality of nuclear weapons and their use in extreme circumstances such as national self-defence.[57]

The use of a nuclear weapon by a country must follow the proportionality principle and is thereby not only in theory but also in practice effective and is able to be prosecuted against.[58]The principle or proportionality must be upheld at all cost. Not only does this serve to curb potential massacre but also genocide disguised as a mere nuclear response. If the response to a nuclear attack is not proportional to the original attack and is combined with newer targeting weapon systems combined with the intent to completely eradicate an enemy could quickly amount to genocide. The current more problematic situation is the procurement and use of nuclear weapons by a non-state actor. Although highly unlikely, it can happen and due to US concern, on 28 April 2004 the United Nations (UN) Security Council, acting under Chapter VII of the Charter, adopted Resolution 1540 without a vote, in which it affirmed that the proliferation of nuclear, chemical, and biological weapons and their means of delivery constitute a threat to international peace and security and obliged all states to: "refrain from providing any form of support to non-state actors that attempt to develop, acquire, manufacture, possess, transport, transfer or use nuclear, chemical or biological weapons and their means of delivery"[59]. In war times the use of nuclear weapons is prohibited by the 1899

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[54] *Legality of the Threat or Use of Nuclear Weapons,* 1996 I.C.J. 226, paragraphs 35-36.
[55] IHL is a binding body of law that is recognized by all states around the world and is enforced through the ICJ.
[56]Charles J Jr. Moxley, John Burroughs, and Jonathan Granoff, 'Nuclear Weapons and Compliance with International Humanitarian Law and the Nuclear Non-Proliferation Treaty', *Fordham International Law Journal* 34, no. 4 (2011): 598-694. 607-609.
[57] Jill Sheldon, 'Nuclear Weapons and the Laws of War: Does Customary International Law Prohibit the Use of Nuclear Weapons in All Circumstances?', *Fordham International Law Journal* 20, no. 1 (1 January 1996): 181.184.
[58] *Legality of the Threat or Use of Nuclear Weapons,* 1996 I.C.J. paragraphs 37-50. http://www.un.org/law/icjsum/9623.htm
[59]'Nuclear Weapons under International Law: An Overview' (Geneva Academy, October 2014), Nuclear Weapons under International Law: An Overview (October 2014) http://www.geneva-

Hague Regulations, as well as the UN Charter under Chapter VII states that nuclear weapons and their use can pose threats to the peace and security of the international community and the UN Security Council is given the power to impose sanctions on those countries that pose a threat.[60] One of the issues that comes with that is the veto power that the P5 possess, thereby effectively blocking any sanctions that are against their own national interest.

Nina Tannenwald argues in her 1999 article, focusing exclusively on nuclear weapons, that due to the non-use of nuclear weapons since 1945, it has created a norm of non-use rather than a clear success of nuclear deterrence. The norm of a 'nuclear taboo' was created by Presidents John F. Kennedy, and President Lyndon B. Johnson of not using nuclear weapons due to their inherent immorality. While President Nixon did not have these personal morality issues of their inherent wrongness, he argued that his administration certainly had them. While the nuclear taboo might only be a normative element it has stigmatized the use of nuclear weapons around the world. Yet it is important to note that this stigmatization took several years to take hold. In his 1973 article Fred Iklé states that in the 1950s and 1960s it the earlier years of the Cold War the issue of nuclear weapon use was surrounded by the debate of where to strike rather than whether to strike or not on the first place. He highlights that immediately after World War II and the use of strategic bombing on industry buildings had desensitized military leaders to the loss of civilian life as part of collateral damage and that the idea of strategic bombing could be applied to nuclear bombs in the same way that it had been employed during World War II. He describes the shift that took place from strategic singular retaliation strikes to strikes that would assure mutual destruction and that this would be more of a deterrent towards the USSR than the strategy they had previously employed. It is remarkable that this article was written 10 years after the Cuban Missile Crisis and the realist theory of MAD was at its height then, while the notion of the nuclear taboo was already in place it clearly took much longer for it to be the stigmatized norm it is today.[61]

Tannenwald also argues that the nuclear taboo had become part of the American identity after not only the end of the Cold War but also throughout the first Gulf war. She presents the point that realists have argued that nuclear weapons should not be considered the ultimate weapon any more, since other weapons of war have been created that have created similar results of destruction without the lasting after-effects.[62] In her 2007 book, *The Nuclear Taboo: The United States and*

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academy.ch/docs/projets/ILPI%20Nuclear%20Weapons%20Under%20International%20Law_An%20Overview.pdf. 6-8..

[60] United Nations Charter. http://www.un.org/en/sections/un-charter/chapter-vii/

[61] Fred Charles Iklé, 'Can Nuclear Deterrence Last Out the Century?', 28 January 2009, https://www.foreignaffairs.com/articles/russian-federation/1973-01-01/can-nuclear-deterrence-last-out-century.

[62] Tannenwald, 'The Nuclear Taboo: The United States and the Normative Basis of Nuclear Non-Use'..

the Non-Use of Nuclear Weapons Since 1945, she argues that the nuclear taboo stems out of behaviour by several US Cold War Administrations that formed the non-use of nuclear weapons from merely a normative issue to a moral one, hence creating the taboo. She also states that while this moral nuclear taboo may deter state actors from using nuclear weapons, the taboo was just that, usually only applicable for state actors, due to the belief that non-state actors such as major terrorist groups would simply not have the means to acquire nuclear weapon technology. This view again shifted after the September 11, 2001 attack when evidence was gathered that terrorist groups like Al Qaeda were actively looking to acquire nuclear technology.[63]

Almost 20 years later, she states that this notion of a nuclear taboo is starting to unravel as norms and institutions of nuclear restraints are changing in a world of upgrading existing nuclear arsenals.[64] She notes that while a 'global zero', a world without any nuclear weapons, is still the goal, in the last five years several states such as the United States and Iran are heading in the opposite direction.[65] She argues that despite the various treaties, arms control agreements, national security policies, and a general consensus around the nuclear taboo and mutual disarmament, the US and Iran now seem to be reinvigorating there development efforts. This clearly suggests that what used to work during the Cold War era and throughout the 1990s and early 2000s now seems to be no longer applicable.

The existence of the NPT has not prevented states such as South Africa, Iran and North Korea in developing a nuclear weapons capability over the last three decades. Deterrence may be seen as the best perceived option, as argued prominently by Kenneth Waltz in his 2007 article in regard to Iran[66]. Throughout the Cold War and early 1990s, the Non-Proliferation Treaty, the adjunctive UNSC Resolutions, and other sanctions that were implemented as a result of the treaty's violations varied in their ability to curtail the spread of nuclear weapons. Tannenwald argues that, while the nuclear taboo proved very effective during the Cold War, it has lost prevalence as a norm throughout the last 20 years and the NPT has proven ineffective and in need of amendment when it comes to dealing with Iran and North Korea[67].

While the NPT is a Treaty that has emerged out of the UN, the UN itself has no enforcement mechanism to deal with states who break the NPT such as Iran, North Korea, and South Africa. It has to rely on the states to let in the IAEA to conduct its independent reports on the status of a country's nuclear weapon programme. Due to the lack of universal enforcement mechanism, one tool that has been

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[63] Tannenwald, *The Nuclear Taboo*..381.
[64] Nina Tannenwald, "The Vanishing Nuclear Taboo?," *Foreign Affairs* 97, no. 6:18.
[65] Ibid. 24.
[66]Sagan, Sagan, and Waltz, 'Nuclear Iran, A'.
[67] Nina Tannenwald, 'The Vanishing Nuclear Taboo?', October 2018, https://www.foreignaffairs.com/articles/world/2018-10-15/vanishing-nuclear-taboo.

favoured by many states of the years is the implementation and thread of sanctions. The tool of sanctions is the third theme that has emerged from the literature.

Sanctions

When talking about sanctions, it is important to note that not all sanctions are equal. They are most often separated into three main areas: economic, political, and military. Each area can be used independently of one another. They can also be unilateral and multilateral in nature and can be implemented by singular states or international organizations such as the EU, NATO, and the UN. In the case of the UNSC Resolutions, the Security Council will often call on its member states to invoke sanctions, which can either be in one area or multiple. The most measurable area of sanction effectiveness is the impact of economic sanctions. Marcus Noland, a senior fellow at the Peterson Institute for International Economics, has also looked at the Non-impact of UN Sanctions on North Korea. He argues that the main reason why UN sanctions have not had a significant impact on the North Korean nuclear ambition is due to its close trading alliance with both China, and South Korea[68]. It is important to note that his article was written in January of 2009, and much has changed in the last decade, however the argument of the importance of alliances still stands today**.** The importance of allies and their own standing and relations within the international system has stayed. In his article Noland specifically argues that North Korea relies on its allies China, and South Korea, however it is important to note that in the last decade, the alliances that the DPRK has have shifted, and its relationship with South Korea has significantly cooled. Yet despite this the DPRK is still able to conduct several missile delivery systems and seems no closer to disarming then they did in 2009.

In his article he looks at both empirical and quantitative evidence of North Korea's trade with China and South Korea for luxury goods and weapons. After the nuclear test in October of 2006. The UNSC adopted Resolution 1718, this placed economic sanctions on North Korea's importation and exportations of luxury goods, technology, as well as arms-related goods.[69] Noland notes that while initially countries were against imposing heavy sanctions after the 1993-94 nuclear crisis on the Korean peninsula, by 2006, both Russia and China had publicly started to impose sanctions against North Korea in order to limit its nuclear capabilities.

An issue that he noted is that while the UNSC adopted sanctions against the DPRK, each country was left to interpret the extent and implementation of these sanctions. Some countries like Russia, who are in favour of sanctioning the DPRK, also defined the sanctions so narrowly that they barely made an impact at

[68] Marcus Noland, 'The (Non-) Impact of UN Sanctions on North Korea', *Asia Policy*, no. 7 (2009): 61–88.
[69] Ibid. 63.

all.[70] Through the use of quantitative methods, Noland is able to argue that instead of a severe drop of trade exchange between China and North Korea there actually seems to be an increase of trading goods between the two countries in the year (2006-2007) after UNSC1718 went into effect[71]. This phenomenon is also articulated in H1 and H2b of this thesis. H1 and H2b stand in direct contrast with one another yet are directly correlated to one another. H1 states that in order for sanction to be effective against a nuclear proliferating country it has to be positively engaged with the sanctioning country. The importance of sanctions and the positive engagement is critical to this thesis as it not only looks at the sanctions that are in place but also the effect and direct impact that they have on the country they are placed upon. H2a and H2b are looking at the impact that sanctions have on a country and if the impact is correlated whether the regime-type is democratic or not.[72]

The literature surrounding sanctions suggests that there seems to be a direct correlation between the regime type of the country under sanctions and the effectiveness of the sanction that are in place. Noland concludes that sanctions are not effective when competing economic partners exist and the implementation of the UN sanctions are left open to interpretation. This suggests that economic sanctions can be extremely effective when looking to stop horizontal proliferation, yet they may not have enough of an impact on vertical proliferation if they are not multilateral sanctions. This interdependence of states is noted in one of the independent variables of network salience.

In March 2016, Bo Ram Kwon of the Korea Institute for Defence Analysis argues that certain conditions need to be met in order for the sanction to be implemented successfully. She concludes that there are four trends that should be present in order to have the best impact as an economic tool against nuclear aspiring regimes such as Iran and North Korea. Not only are there four conditions that should be present but also three major implementation ways.

She states that sanctions tend to be most effective when there are four trends present. First there is a sense of urgency towards the shared ultimate goal among key stakeholders, second both multilateral and unilateral sanctions are applied within a timely manner. Third, laws and sanctions are tailored specifically to its target audience and its vulnerabilities and adaptation. And the fourth and

[70] Ibid. 66.
[71] Ibid. 66-69. Figure 1 and 2.
[72] H1. Sanctioning a nuclear weapon proliferating country will be effective if the country under sanction is positively engaged with the sanctioning country;
H2a. Sanctioning a nuclear weapon proliferating country will be effective if the country under sanction is a democracy, and
H2b. Sanctioning a nuclear weapon proliferating country will be ineffective if the country under sanction is non-democratic.

maybe the most important one, as well as there has to be a large enough incentive present for the country's leadership to consider a change of the status quo.[73]

In direct correlation to the above mentioned four trends go three major implementation hurdles that can be present. First, the prohibition of economic exchanges which directly affects the target's vulnerability specifically in an area that the target of the sanction heavily relies on. Secondly, the sender, or enforcer, of the sanction needs to be strong-willed to not only implement the sanction but is able to scale the intensity appropriately and enforce them accordingly. Lastly, if the domestic conditions that are present in the target's countries are not conducive enough for change, the sender will be unable to achieve change through sanctions.[74] She identifies these four conditions which Iran had present when the Iran Deal was implemented yet it was absent in the case of North Korea. While she focuses on two of the same three cases as this thesis, she mainly discusses how the implementation of UN sanctions has failed and succeeded for each country. She does not attempt to look at the effectiveness of sanction prior to 2000.

In her book *Sanctions, Statecrafts, and Nuclear Proliferation,* University of California professor Etel Solingen collects multiple essays on sanctions on nuclear regimes. There are multiple visible trends that are apparent throughout the book. She clearly states that while economic sanctions have often been thought of as an effective alternative to military force, in recent years sanctions are perceived as ineffective due to the lack of enforcement from the international community.[75] Inward-looking regime types, specifically autocratic ones, are often the most resistant to sanctions. Both sanctions and positive inducement are often ineffective in these countries, especially North Korea, and Iran.[76] This leads to the question if sanctions are the best tool to deter would-be proliferators or if it's simply the best tool available to different states.

Scholars Celia Reynolds and Wilfrid Wan, empirically track the sanctions and positive inducements that have been applied to both North Korea[77] and Iran[78] in the time span of 1990-2009. However, Solingen also notes that there has been

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[73] Bo Ram Kwon, 'The Conditions for Sanctions Success: A Comparison of the Iranian and North Korean Cases', *Korean Journal of Defense Analysis* 28 (1 March 2016): 139–61.154.
"When the key stakeholders share a sense of urgency about their ultimate goals; when multilateral sanctions are complemented with unilateral sanctions in a timely fashion;
when the laws are tailored to the target by identifying its core vulnerabilities and adaptations;
when the target's leadership has incentives to change the status quo"

[74] Ibid. 154-156.

[75] Etel Solingen, 'Ten Dilemmas in Nonproliferation Statecraft', in *Sanctions, Statecraft, and Nuclear Proliferation* (New York: Cambridge University Press, 2012), 297–352.

[76] Ibid. 300-301

[77] Celia L Reynolds and Wilfred T. Wan, 'Empirical Trends in Sanctions and Positive Inducements in Nonproliferation', in *Sanctions, Statecraft, and Nuclear Proliferation* (New York: Cambridge University Press, 2012), 56–124. Table A3.1, A3.2, B3.5, B3.6

[78] Ibid.56-125. Table A3.1, A3.2, B3.7, B3.8

reasonable success using the combination of positive inducement and sanctions on inward-looking regimes such as Libya[79].

A possible side effect of applying sanctions on these regimes is a potential strengthening of the regime, specifically autocratic dictatorships. North Korea's dictators seem to take sanctions as a legitimization of their power, yet autocratic regimes like Iran struggle more heavily. Pre-existing rifts within the Iranian autocracy were exacerbated by the applied economic sanctions, increasing the reliance on its oil revenues and the justification on repressing the population of Iran.[80]

It is important to note that not all sanctions are equal. Sanctions are commonly divided in two ways: comprehensive, and targeted. As the name suggests, targeted sanctions are often specified on one area, such as financial sanctions. The UN has commonly applied targeted sanctions with varying results. A common side effect of sanction is that, as Dan Drezner notes, a direct correlation between applied sanctions and significant drops in press freedom, democracy and an increase of repression in authoritarian regimes. While it may seem that targeted sanctions are a more humane policy tool, comprehensive sanctions have proven to end civil unrest more quickly.[81]

Solingen argues that the effectiveness of sanctions, specifically economic ones, are dependent on the regime type. Inward-looking regimes, like Iran and North Korea, that have a nationalistic economic growth model, sometimes correlating within religious identities, are more likely to use their nuclear programs as tools of modernization as well as a way to politically defy the international community. In direct contrast, are regimes that use their economic growth as tools of global integration and internationalization. These regimes seem to have either no interest in nuclear weapon programs or a more likely to curb their nuclear ambition in order to advance with their foreign alliances.[82] She argues that regimes that are depending on allies for their economic growth, seem to be hit the hardest by comprehensive sanctions as they do not have a monopoly on certain resources. Yet Iran has demonstrated that while affected by comprehensive sanctions, the targeted one instead strengthened their control over their own oil reserves.[83]

Another trend that is traced throughout Solingen's book is the idea of military threats against nuclear regimes, as part of a sanction scheme. The idea behind the MAD doctrine is using nuclear weapons as a deterrence factor against opponents. Sometimes sanctions against nuclear ambitious states are coupled with

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[79] Solingen, 'Ten Dilemmas in Nonproliferation Statecraft'. 301.
[80] Ibid. 300-304.
[81] Daniel W Drezner, 'An Analytically Eclectic Approach to Sanctions and Nonproliferation', in *Sanctions, Statecraft, and Nuclear Proliferation* (New York: Cambridge University Press, 2012), 154–73. 159-161.
[82] Etel Solingen. "Introduction" in *Sanctions, Statecraft, and Nuclear Proliferation*. Ed Etel Solingen. New York, NY: Cambridge University Press, 2012.3-29.10-14.
[83] Etel Solingen, "Ten dilemmas in nonproliferation statecraft".301.

a military threat. This is not new and while US President Trump may tweet that he is willing to unleash "fire and fury"[84] onto North Korea if they do not comply, Kim Il-sung had already identified similar threats in 1977 as paper tigers.[85] The United States are not the only ones that have threatened the use of military force as a means of forcing compliance. French President Nicolas Sarkozy noticed that regimes, like Iran, will not co-operate and treat these military threats as paper tigers unless the threat level is extremely high.[86]

Similarly, to Bo Ram Kwon's four conditions that should be present in order for sanctions to make the maximum amount of impact, Scholar Scott Helfstein argues in his article that in order for sanctions to be effective, they have to be imposed on the country from an existing or potential ally, which affects the country's foreign and economic policy. He argues that in the case of South Africa's nuclear disarmament, the internal pressure combined with the externally applied sanction pushed South Africa to cooperate in hope of a strengthening bond with the United States as a future ally.[87] His main argument is that instead of sanctions, the best way to improve nuclear non-proliferation is the establishment of bilateral and multilateral ties. This logic is similar to the establishment of NATO in 1949, the idea that states who are friendly and dependent with one another are less likely to go to war with one another.[88] Yet one of the big issues with this argument is that not only does the NATO logic only seem to work with democratic states, but also it predisposes a certain willingness on both sides to engage in friendly interaction with one another.

One tool that the United States has often used in the past as part of its extended deterrence strategy and as a way to reduce horizontal proliferation is the Nuclear Umbrella (NU). It is important to distinguish between extended deterrence and the NU at this point. Extended deterrence is when one state, the defender, helps deter an attack on an allied state. This can be done through treaties and alliances and is always founded on a broad security commitment from both sides. As part of extended deterrence, the defender state is able to use different tools such as military power, economic or political sanctions, as well as nuclear weapon power. Scholar Terence Roehring notes that it is important to understand that a nuclear umbrella and extended deterrence "are not interchangeable".[89] In his book, he makes the argument that South Korea is certainly benefitting from the NU that is provided by the US for them. The US NU ensures that South Korea is shielded

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[84] Meghan Keneally, 'From "fire and Fury" to "Rocket Man," the Various Barbs Traded between Trump and Kim Jong Un', *ABC News*, 12 June 2018, https://abcnews.go.com/International/fire-fury-rocket-man-barbs-traded-trump-kim/story?id=53634996.
[85] Etel Solingen, "Ten dilemmas in nonproliferation statecraft".341.
[86] Ibid.
[87] Scott Helfstein, 'Friends Don't Let Friends Proliferate', *Political Science Quarterly* 125, no. 2 (2010): 281–307. 282-283.
[88] Ibid. 283-284.
[89]Terence Roehrig, *Japan, South Korea, and the United States Nuclear Umbrella* (Columbia University Press, 2017), https://doi.org/10.7312/roeh15798. 17.

from North Korea without having to develop their own nuclear arsenal. This is beneficial for the US not only because it works as a tool of horizontal proliferation, but also because South Korea is not only a buffer between North Korea and the US but also it is able to keep a direct eye on North Korea and China through its alliance with South Korea.

However, this can also become an issue for the United States, as many states may not want to depend on the NU of the US anymore and are thinking about developing their own nuclear program instead. It comes back to trust and how close of an alliance do you have with the United States as the NU does directly impact the balance of power between two states.

Dartmouth Professor Nicholas Miller has done extensive research on why non-proliferation sanctions have worked in the past. He specifically looks at political and economic sanctions as part of the reason why states have not developed new nuclear weapon programs. Using quantitative data, he suggests that it is only rational for states to decrease their existing nuclear arsenal when faced with the threat of US-led sanctions.[90] Yet both North Korea and Iran have developed their nuclear programs to a functional level and are not looking to de-escalate their programs. In his book he approaches the issue of US non-proliferation policy in a mixed method approach focusing on four cases in-depth: France (1954-1960), Iran (1974-2015), Taiwan (1964-1978), and Pakistan (1972-1987). Miller identifies several key variables suggest the effectives of US non-proliferation effect. His theoretical observations suggest that there are three main variables: 1) the level of dependence on the United States; (2) the credibility of sanctions threats; and (3) unilateral vs. multilateral sanction.[91] This thesis will look at Miller's approach on the Iran case and attempt to replicate his findings as well as support them against this paper's own key variables, that while similar will take a different methodological approach than Miller. Miller's main theory combines the nuclear domino effect and a sanctions approach to argue that states with nuclear ambitions are often deterred due to their high dependency on the United States, and the threat of sanctions is often enough to curb their aspiring weapon programs.

The nuclear domino effect describes a situation that is very similar to the security dilemma, "where proliferation in one state (state A) causes a significant increase in the probability of proliferation in a second state (state B)"[92]. Both concepts stem from a realist standpoint and have underlined nuclear strategy predominantly in the Cold War. Miller states that the combination of the nuclear domino effect and US foreign and geopolitical policies, are often results of not only their proliferation policy, but also due to the lack of time for actual policy

[90] Nicholas L. Miller, 'The Secret Success of Nonproliferation Sanctions', *International Organization* 68, no. 4 (2014): 913–44.
[91] Nicholas L. Miller, 'Theorizing the Sources and Effectiveness of US Nonproliferation Policy', in *Stopping the Bomb*, The Sources and Effectiveness of US Nonproliferation Policy (Cornell University Press, 2018), 10–39, http://www.jstor.org/stable/10.7591/j.ctt1w1vkd5.6. 36-7.
[92] Ibid. 21.

change to happen. Miller argues that it is not only sanctions that are key in deterring against nuclear weapon states, but the state that is imposing the sanctions such as the United States, through sanctions in combination with its own foreign policy and proliferation policy.

The existence of the NPT has not prevented states such as Iran and North Korea in developing a nuclear weapons capability over the last two decades. Deterrence may be seen as the best perceived option. The Non-Proliferation Treaty, the adjunctive UNSC Resolutions, and other sanctions that were implemented as a result of the treaty's violation have been ineffective and in need of amendment when it comes to dealing with Iran and North Korea. The discussion on sanctions is one that has many different sides, and this thesis will primarily focus on the effectiveness of nuclear sanctions as a main variable to determine the outcome of proliferating states. It acknowledges that political and economic sanctions most likely play a factor in the overall outcome, but in order to focus the scope of this thesis will not look at these. This theme has also called into question if sanctions are the only diplomatic tool available to states.

The Gap

Much discussion and literature has been produced on nuclear weapons, deterrence theory and the effectiveness of sanctions. Waltz and Sagan have effectively displayed in their debate not only the opposing arguments about deterrence theory, but also some of the common fault lines of nuclear proliferation. Freedman, focused on the evolution of nuclear strategy specifically during the Cold War area. Yet nuclear weapons remain a contemporary topic, not only with the Iran deal that the Obama Administration brokered, and the Trump Administration promptly revoked. Moreover, the mystery of how North Korea remains capable of building a nuclear program, despite all the existing UN Sanctions on their country, remains.

The perceived effectiveness of UN Sanctions and the NPT as well as the US relationship with them is explored by Nicholas Miller in his new book[93]. While Miller did not address the issue of North Korea in his book, Marcus Noland did in his article almost a decade ago[94].

Despite having looked at the failed UN sanctions and nuclear regimes before, such as Etel Solingen in her book, no one has done a thorough comparison of why sanctions worked for South Africa, somewhat for Iran, and not at all for DPRK. Exactly this gap is what will be addressed in this thesis. This thesis will further compare North Korea with the cases of Iran and South Africa in order to explain the different outcomes in US-led nuclear sanctions towards Iran, South Africa and, North Korea.

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[93] Nicholas L. Miller *Stopping the Bomb: The Sources and Effectiveness of US Nonproliferation Policy*.
[94] Noland, 'The (Non-) Impact of UN Sanctions on North Korea'.

This chapter has provided an overview of the three main trends that exist in the literature that surrounds nuclear proliferation. The first theme – deterrence – and whether or not nuclear weapons and the potential use of them are enough of deterrent factor for horizontal proliferation to take hold or not. The second theme is focused on the interplay between the rule of law and norms of use for nuclear weapons, within that this thesis looked at principles of realist theory, Tannenwald's nuclear taboo, and the use of the nuclear umbrella. Finally, a third theme is focused on the implementation of sanctions towards aspiring nuclear weapon states. The main gap that can be observed in the existing literation is the lack of direct comparison between newly developed and aspiring nuclear states such as South Africa, North Korea, and Iran. All states which developed nuclear weapon programs after the NPT was signed and which had sanction imposed on them with various degrees of success. Chapter 3 will provide an in-depth look behind the methodology and theoretical framework that is used in this thesis to argue and analyze the evidence against the three hypotheses.

Chapter 3 - Theory and Methodology

As previously mentioned, there is a distinct gap in proliferation literature when looking at the reason why US-led nuclear sanctions have succeeded in the case of South Africa but failed against the Iranian and North Korean nuclear weapon programs. This chapter will look closer at the main implications that the literature has produced and look at how realist theory is able to operationalize the three independent variables of sanction compliance, regime-type, and network-salience in order to support its hypotheses. Using a comparative historical analysis, this chapter will set up the framework to be used in the subsequent chapter when looking at the evidence for each case study.

Theory

Based on the literature, there are three main causal paths that need to be looked at in order to theorize and test the effectiveness of US-led nuclear sanctions on aspiring nuclear states. The first causal path, situated in the context of the Cold War, is rooted in realism itself. Both Waltz and Steve Weber present a realist argument that the international system is an anarchical one, and in order to affect change one has to structurally change the international system. The idea of bipolarity and power is ingrained in the system and major technological developments, as seen during both the first and second world wars have not fundamentally changed the international system. According to Waltz, even the introduction of nuclear weapons did not affect the structure of the international system.[95]

Morgenthau defined realist theory in his book *Politics Among Nations* where he states that the national interest is always about power and ways to obtain it within the international system. He argues that realist theory and the majority of the international system is structured on a balance of power between different states.[96] During the Cold War, the USSR and the United States had nuclear missiles aimed at one another and were ready to use them if needed. This enforced the bipolarity and power balance of the international system during that time. While this did not change the international system, Weber argues that "deterrence is a system-wide condition"[97], and while the introduction of nuclear weapons itself did not change the international system, MAD did. As explored in the literature review, MAD functioned effectively as a deterrent throughout the Cold War, due to its widespread impact, which was not achievable previously by other weapon systems. Iklé also highlights the importance of MAD in his article when talking about nuclear deterrence and its strategy against the USSR in during the first half of the Cold War. In his article he highlights that not only was vertical proliferation the

[95] Steve Weber, 'Realism, Detente, and Nuclear Weapons', *International Organization* 44, no. 1 (1990): 55–82. 61-63
[96] ROBERT JERVIS, 'Hans Morgenthau, Realism, and the Scientific Study of International Politics', *Social Research* 61, no. 4 (1994): 853–76.854-857.
[97] Ibid. 63.

main goal but also that the idea of non-use was really underpinned by the reality that a strategic nuclear strike could cause a nuclear genocide.[98]

MAD as well as the threat and belief that the stockpiling of nuclear weapons and the nuclear domino effect was the most effective nuclear strategy, only in the later portion of the 1970s and early 1980s did the nuclear taboo start to play a role in US nuclear policy. This adheres to Waltz's argument that the best deterrent is the stockpiling of nuclear weapons.

The second issue is that the due to the lack of enforcement of international law through a central agent, states have often been able to break sanctions and laws without major consequences. The main consequence for breaking IHL seems to be the threat of having unilateral or multilateral sanctions applied to them. In an international system that is governed by the realist sentiment of balance of power, sanctions are not impactful enough on the international system and its actors to force structural change. Both Miller and Solingen argue and observe throughout their research is that the threat of sanctions seems to not impact inward-looking regimes, as heavily as outward-looking regimes. According to realist theory, even with applied sanctions, if the state is not influenced in its actions both domestically and internationally there is no reason for the state to change its behaviour. This sentiment leads to the first observable independent variable: regime-type. Based on Miller's and Solingen's argument this thesis theorizes that compliance with sanctions is more effective when dealing with regime's that have a strong democratic history and are more interested in internationalization.

This suggests the third point, that while sanctions are often a good tool for positive inducement in deterring a state in their nuclear aspirations, they become a strong tool of diplomacy through their use as a negative inducement. In her research, Solingen strongly suggests that not only geopolitical threats, but economical threats play a heavy on state compliance. Both Noland and Miller also touch on this fact that sanctions seem to be more effective in their outcome when they are not only encompassing political but also economic threats. Realist theory suggests that if a sanctioned country has the political power to enforce sanctions in their favour, they will do so in order to advance their national interest. This suggests that the sanctioned country is also more likely to comply with the sanctions if not only it is in their national interest to do so but also if the sanctioned country is on friendly terms with the sanctioning country. This can be directly observed, and will be further explored in the next chapter, in the case of South Africa and its nuclear development program and its interactions with the United States.

Throughout the Cold War the realist policy of MAD and the increasing norm of a nuclear taboo favoured horizontal as well as vertical proliferation.

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[98] Fred Charles Iklé, 'Can Nuclear Deterrence Last Out the Century?', Foreign Affairs 51, no 1 (January 1973), https://www.foreignaffairs.com/articles/russian-federation/1973-01-01/can-nuclear-deterrence-last-out-century.

Vertical proliferation was practiced by all NWS but most significantly by the Soviet Union and the United States. The sheer amount of warheads that existed between those two states was shocking[99]. Yet while the US engaged in vertical proliferation at home, it also looked to have practiced horizontal proliferation through NATO and the UN. The building of the Berlin Wall effectively drew a geographical line on the map between the USSR and its allies and the US and its allies. NATO was created in 1949 and with it came its infamous 'musketeer article', article V, which states that an attack against one member, is an attack against all, and every member state has the responsibility to react.[100] This includes a nuclear attack by the Soviet Union. Through the creation of this article, NATO managed to include itself under the NU's of not only the US but also the UK and France as nuclear weapon states themselves. While NATO is an international organization and not its own country, it is a significant military and value-based alliance that falls under the extended deterrence category of US foreign policy.

Since the fall of the Soviet Union and the early 1990s, neither horizontal or vertical proliferation seemed to be the main driver behind nuclear deterrence anymore and the nuclear taboo took on a much bigger role. Even though the NPT was signed in 1968 and came in effect in 1970, sanctions seemed to not be a big deterrent until after the Cold War. This was most likely due to the bi-polarity of the international system, which during the Cold War was neatly split in two between two superpowers. There was no reason to adhere to sanctions if your direct opponent was in the same situation, it would just further the existing stalemate. However, after the fall of the Berlin Wall in 1989 and the dissolution of the Soviet Union, the US became the leading NWS even though other states had acquired nuclear weapons during the first half of the Cold War. Due to the fall of the Soviet Union, the international system started to become multi-polar once again in its power politics, and in order to not only create but maintain stability, the US started to enforce sanctions in multiple areas as part of their foreign and defence policy.

When looking at the nine NWS, it is clear that they fully engaged with horizontal proliferation throughout the process of not only acquiring nuclear weapon technology but also vertical proliferation once their weapon programs became operational. When looking at the period between 1944 and 1968, one is able to deduce that the driving principle behind vertical proliferation was mainly based on the nuclear domino effect that was enhanced by the nuclear arms race between the United States and the USSR.

In order to argue the ineffectiveness of US-led nuclear sanctions on aspiring nuclear states, this thesis will look at South Africa, Iran, and North Korea. Ineffectiveness is defined as non-compliance and non-implementation of the

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[99] Robert S. Norris and Hans M. Kristensen, 'Global Nuclear Weapons Inventories, 1945–2010', *Bulletin of the Atomic Scientists* 66, no. 4 (1 July 2010): 77–83, https://doi.org/10.2968/066004008.
[100] NATO, 'The North Atlantic Treaty', NATO, 4 April 1949, http://www.nato.int/cps/en/natohq/official_texts_17120.htm.

conditions for the removal of sanctions by the sanctioned country. In order to be deemed as effective and compliant, states have to not only implement the changes demanded by the sanctioning country but also implement and follow IHL for a minimum of 25 years. This time frame was chosen as it encompasses a full generation and ensures that the policies are adhered over the ruling period of several heads of state and are fully accepted into the countries norms and values.

For each of the chosen cases, this thesis will look at the independent variables of regime-type, network-salience, and sanction compliance, and the importance of each through thorough analysis. These independent variables are derived directly from the three observable implications from the literature review as well as the realist theory that frames this thesis.

Regime-type is not only a theoretical pillar of a state but also a driving factor in how the countries policies are developed. In countries that have long-standing democratic decisions, the foreign and defence policy reflects this through their policies and engagements in intra-national organizations such as NATO and the UN. The importance of alliances is not only important when it comes to defence and security policy of a state but also when looking at the potential security dilemma and situation it could encounter. Again, inward-looking regimes when compared with outward-looking regimes have a high influence on how these states respond within the security and defence sphere both politically as well as economically. Therefore, the variable of network-salience will be assessed by looking at which networks each case is part of on both a treaty-based alliance level and a less informal one.

This, as well as the theory surrounding sanction compliance suggests that allied states are not only less likely to go to war against one another but are more likely to help one another as well. Each of these variables are able to be observed through trade agreements, bi-lateral and multi-lateral agreements, and treaties. The adherence and compliance to these agreements can be measured and operationalized using comparative historical analysis (CHA) to determine the impact of the independent variables on the dependent variable. By way of refresher, the dependent variable is the degree of development of a nuclear weapons program for a given country.

Using CHA, this thesis will be able to structure a concise argument as to which combination of independent variables accounts for the variation in results of these case studies. As already explored in the literature review, Miller looked at a very similar problem, specifically the effectiveness of US non-proliferation policy throughout the latter half of the 20th century. Miller did so using a mixed-method approach rather than trying to pin point exact variables.[101] His theoretical observations suggest that there are three main variables: 1) the level of dependence on the United States; (2) the credibility of sanctions threats; and (3) whether the

[101]Miller, 'The Secret Success of Nonproliferation Sanctions'.915.

sanction was unilateral or multilateral.[102] This thesis will look at Miller's approach on the Iran case and attempt to replicate his findings as well as prove them against this paper's own key variables, that while similar will take a different methodological approach than Miller.

Miller's main theory combines the nuclear domino effect and a sanctions approach to test whether a state with nuclear ambitions can be deterred due to their high dependency on the United States, and if the threat of sanctions is enough to curb their aspiring weapon programs. His theory is based on the vertical proliferation stance that the stockpiling of one's own arsenal will deter aspiring nuclear programs. This theory certainly held true throughout the height of the Cold War and works in tandem with the nuclear umbrella that the United States has since provided. However, throughout the last thirty years, horizontal proliferation and the use of sanctions through the NPT have started to become the dominant player in deterrence theory. This shift of deterrence theory and use of IHL through the NPT marks an important shifting point in proliferation theory. This shift in deterrence theory will be explored in each case and will look at the effectiveness of sanctions from 1949 – 2019. Special attention will be paid to the ending of the Cold War and how the ending of the Soviet Union has or has not impacted the aspirations for each nuclear program.

The realist framework that both Miller and Solingen theorize when it comes to sanctions is simple: the higher the dependability on the sanctioning country, the more compliance of the sanctioned country will be had. This observable implication will be tested on each case. Miller's main argument is that "rational leaders [will] consider the risk of sanctions before initiating a nuclear weapons program"[103], therefore deterrence can happen through the selection effect before any threats are articulated. As already explored in the previous chapter, Solingen argues that are inward-looking regimes more likely to proliferate than outward-looking ones due to the political and economic ramifications. This is done not only through the use of sanctions but also the norms and the nuclear taboo that have played a role throughout the Cold War period and early 2000s. Solingen also notes that there exists a systemic bias towards positive and negative inducements when it comes to nuclear proliferation. She also notes that positive inducement and its use has shifted increasingly since the 1990s and instead of new sanctions, old sanction were simply extended.[104]

Both Miller and Solingen highlight the level of dependency between the state that applies sanctions and the nuclear proliferation state. This thesis will take

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[102] Nicholas L. Miller. *Stopping the Bomb: The Sources and Effectiveness of US Nonproliferation Policy*. Ithaca; London: Cornell University Press, 2018. 36-37.
[103]Miller, 'The Secret Success of Nonproliferation Sanctions'. 916.
[104] Etel Solingen, *Sanctions, Statecraft, and Nuclear Proliferation* (Cambridge: Cambridge University Press, 2012), https://doi.org/10.1017/CBO9780511862380. Anne Harrington and Jeffrey W Knopf, *Behavioral Economics and Nuclear Weapons*, 2019. 121.

this observation one step further and while testing the implication made by Solingen and Miller, while also taking a closer look at the regime-type of the sanctioned country and its observable implications.

While sanctions are often political, they can also be observed in the economic sphere. Using a rationalist framework, sanctions often have an impact on several spheres not only on the domestic security side, but also on the international economical side. While outward-looking regimes seem to respond better through a more vertical proliferation posture, it does not seem to hold with inward looking regimes, such as North Korea. It is clear that sanctions are a valuable tool for diplomacy and the compliance of nuclear sanctions will be used as the third independent variable.

Even though the NPT and UN Sanctions were effective in South Africa, this thesis argues that the alliance formation and regime-type are the reasons for the ineffectiveness of nuclear sanctions against North Korea and Iran. The main issues of why it is failing are most likely due to each countries' long history of a dictatorship, as well as the help of powerful allies such as China and Russia that counteract enough of the political and economic sanctions, in order for the individual programs to continue developing. This thesis will first look at the independent variables of regime-type, alliances, and finally sanction compliance for South Africa, Islamic Republic of Iran, and thirdly at the DPRK.

Each of the cases that this thesis has selected have a history of nuclear aspiration and have been privy to being sanctioned by the US and the international community. All three are considered the three biggest violators of the NPT and have all started their nuclear aspirations after the NPT came in effect. In North Korea, these sanctions have been ineffective, yet the same sanctions proved to be effective for Iran. However, in the end both countries have not stopped or, dismantled their nuclear weapons programs. In contrast stands South Africa, which this thesis will use to explain the discrepancy between Iran and North Korea.

South Africa is considered a clear success for the NPT and will serve as a contrasting case to both Iran and North Korea. Iran was chosen due to its changing nature, of both compliance and non-compliance to nuclear sanctions. North Korea is the clear outlier of both the NPT and the nuclear sanctions that have been imposed on it, yet it is still able to function and further develop its program. This thesis will not look at the cases of Pakistan, India, or Israel. While each of these countries have declared nuclear weapon programs, they are not signed partners of the NPT and are unable to join due to the NPT wording. Therefore, while they do have nuclear weapons, they are not breaking the NPT and do not have to abide by the rules laid out by the NPT.

This thesis will also not look at the cases of Belarus, Ukraine, and Kazakhstan since they did not build their existing nuclear weapons themselves, but only had them due to the dissolving of the Soviet Union. Whereas South Africa independently build their nuclear weapons program and had ready to deploy nuclear weapon heads before they disarmed. Another reason why Iran and North

Korea were chosen as case studies are due to the fact that they are very active in their nuclear weapon programs in the last five years. Multiple nuclear sanctions have within the last five years failed. Both countries seem to use nuclear weapons as pillars of their foreign and defence policy against the United States and the rest of the world. Using the NPT as a main IHL marker, allows the thesis to narrow down the focus on case studies that are in direct violation of the NPT and interesting to study for the hypothesis that has arisen from the literature review.

The three hypotheses are:

H1. Sanctioning a nuclear weapon proliferating country will be effective if the country under sanction is positively engaged with the sanctioning country;

H2a. Sanctioning a nuclear weapon proliferating country will be effective if the country under sanction is a democracy, and

H2b. Sanctioning a nuclear weapon proliferating country will be ineffective if the country under sanction is non-democratic.

These hypotheses are very intuitive especially when combined with the chosen case studies. It makes intuitively sense that a non-democratic country is less likely to comply with nuclear sanction as a democratic one, especially when aware of the outcome already. However, while it may seem intuitive, this thesis will use comparative historical analysis for a theoretically grounded approach and not only show why the outcome is intuitive but also show why it matters to the current political climate. Proving the hypotheses in a theoretically grounded approach will not only validate the intuitive assumptions and prove them correct but will also build a framework that can be used both for future research in the area, as well as an explanatory method of why states did or did not proliferate in the past. However, it is important to note that the outcome does depend on the chosen independent variables, and that other variables may lead to a different outcome.

Description of Method

This thesis will employ a comparative historical analysis. Comparative historical analysis (CHA) was used most notably by Theda Skocpol in her book *States and Social Revolutions*. She used this method of combining techniques such as process-tracing and congruence tracing as well as Mill's method of difference in order to look at the three non-related countries of Russia, France, and China in order to explain the common factors of social revolutions[105]. Skocpol explains that

[105] Theda Skocpol, *States and Social Revolutions: A Comparative Analysis of France, Russia and China* (Cambridge: Cambridge University Press, 1979), https://doi.org/10.1017/CBO9780511815805.

CHA has been around for centuries and many historians as well as sociologists have used this method in order to explain revolutions and their causations. CHA combines a historical approach to case studies in that it looks at the many variables that are present and applies them to the few cases in which the dependent and independent variables are similar.

Similar to Mill's method of difference, it allows the scholar to take a broader look at the causal factor of a social phenomenon. By combining the causal explanation with a theoretical argument, it eliminates the tendency of generalizations that can be found in large-n statistical analysis arguments. By mixing both a comparative historical approach with parts of a structured focused comparison, this thesis will lay out the arguments for each of the case studies. This thesis has chosen North Korea, Iran, and South Africa as the cases, as they each share similar variables, yet the outcomes of their nuclear programs differ.

In her book Skocpol outlines the advantages of both Mill's method of agreement and method of difference by combining the two processes in a comparative historical analysis. By taking a phenomenon such as the perceived failure of nuclear sanctions on aspiring nuclear programs, this thesis looks at three different cases and tries to establish not only common causal factors but a direct correlation between them.[106] A direct advantage that the CHA method offers compared to a strict comparative methodology is that it allows in different operative outcomes in each case, as well as the timing in which the events take place. In this thesis the start and end points of analysis for each case will slightly differ yet overlap for several years and decades.

It is important to note that the methodology used is split into two separate components: collections and analysis. The collection part will be done by looking at primarily secondary sources such as peer-reviewed journal articles and books. Whenever possible this will be supported by declassified primary archival sources, main text of treaties and digital evidence, such as videos and tweets. Due to the classified nature of many primary sources, these will pertain mainly earlier decades and not recent events. The analytical part will use a comparative case study, specifically CHA, to support the theoretical argument and support evidence for the causal argument.

Through CHA, this thesis will lay out not only what the NPT is but also its goals, mechanism, signatories and its prohibitions within International Humanitarian Law (IHL). Using South Africa, Iran, and North Korea as case studies, this thesis will explore not only the breaches of protocol but its customary nature and how the law is connected to these incidences. The main analysis will be focused on sanctions, their nature and how they can affect countries economically and politically as well as the overall external and internal stability within the domestic and international realm in the cases of North Korea and Iran. Applying

[106] Ibid. 36.

the theoretical theory of deterrence will help frame the argument for each case study.

While much writing has been done in respect to nuclear deterrence focusing on different great powers, it may be of use to only focus on a smaller country. It could also prove to be of value that further on in the research which one may choose to focus on only sanctions without the added weight of the NPT. Using CHA shows possible relationships between the independent variables in affecting the overall outcome in relation to the dependent variable. It will also explain the effectiveness of nuclear sanctions in other cases such as South Africa.

One popular method of analysis is the process tracing method. Both Miller and Solingen use it in parts throughout their argument around sanctions. Indeed, Tannenwald examines the popularity of process tracing in her 2015 article, arguing that while it can be used effectively and engagingly in security studies. It hinges on the fact that the key tests that are used need to be agreed upon by multiple scholars in order to hold. Another problem that occurs with process tracing is that while it can be used precisely with a singular case, it can quickly become too broad when employing multiple case studies over a longer time period.[107]

Another popular approach of analysis is that through a structured focused comparison. This approach also favours a singular or a two-case study analysis. One of the main issues that can occur in both the analysis and the collection of the data is that due to the pre-determined questions, this can form an inherent bias in the result.[108] In order to avoid these shortcomings, the analysis will be done using CHA in order to show the direct causation and observable implications of the hypotheses. Table 1 is the basic framework for comparison that will guide the collection and analysis of data for this project.

[107]Nina Tannenwald, 'Process Tracing and Security Studies', *Security Studies* 24, no. 2 (3 April 2015): 219–27, https://doi.org/10.1080/09636412.2015.1036614..

[108] Alexander L. George and Andrew Bennett, *Case Studies and Theory Development in the Social Sciences | The MIT Press* (Belfer Center Studies in International Security: MIT Press, 2005), https://mitpress.mit.edu/books/case-studies-and-theory-development-social-sciences.

	Regime-type	Network-Salience	Compliance with Sanctions
South Africa			
Iran			
North Korea			

Table 1: Framework

This chapter laid out the realist argument that power and the balance of power is key to the inherent structure that exists within the international system. This is done effectively through different deterrence strategies such as the use of the NU and MAD. Three main independent variables have emerged that need to be considered when looking at aspiring nuclear programs: regime-type, network-salience, and sanction compliance. These three independent variables will be looked at in combination for each of the three chosen cases, North Korea, Iran, and South Africa in order to test the hypotheses. CHA will be employed to depict an accurate and transparent methodology and to find the similarities between the three cases. Next, this thesis will look at each independent variable in isolation and analyse its actions in regard to the other independent variables for each case study

Chapter 4 – Regime-type

Up to this point, this thesis has argued that there are three main independent variables when it comes to aspiring nuclear weapon programs. These are regime-type, network-salience, and sanction compliance. One of the independent variables that this thesis is looking to assess is regime-type and its impact on the aspiring nuclear weapon programs. To explain if regime-type has an impact, this chapter will first determine the predominant regime-type for each of the countries as part of this case study while they were pursuing a nuclear weapons program. This chapter sets out to define each case as either democratic or non-democratic.

This thesis suggests that sanction compliance is much higher in countries with a long-standing autocratic history and are outward-looking in their foreign and economic policy rather than inward-looking states. This chapter focuses on regime-type as one of the three identified independent variables that have a crucial impact on aspiring nuclear weapon programs. To operationalize regime-type, this chapter will go through each case separately and look at the different governments that were active since the start of their nuclear aspiration until either the denuclearization of the program or until the end of December 2019,[109] whichever came first.

Democracy is widely accepted to be the most favourable of regime types across the world. Its markers include freedom of speech, freedom of the press, upholding human rights, being able to hold free and fair elections without interference from outside, and the idea that it is representing the voice of the people. There are two main databases that measure democracy: Freedom House and the Economist Intelligence Unit. Both use different scales when defining democracy but provide valuable data on each of the chosen case studies. Each case study will be analyzed for the timespan of 1970-2019. This incorporates the start of each nuclear weapon program.

Since 2006, the Economist Intelligence Unit (EIU) has brought out a Global Democracy Index (GDI) that measures democracy across 167 countries worldwide.

In 2019, the EIU identified South Africa as a "flawed democracy", where it placed 40th, and both Iran and North Korea are "authoritarian regimes", placing at 151 and the very last place of 167 respectively[110]. The GDI comprises a scale of 1-167, where countries can fall into one of four regime-types: full democracies, flawed democracies, hybrid regimes, and authoritarian regimes. In the 2019 report, the range was 1-22 full democracies (13.2%), 23-76 flawed democracies (32.3%), 77-114 hybrid regimes (22.2%), and 115-167 authoritarian regimes (32.3%).

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[109] at the time of writing this thesis, this is the best cut-off point in order to gather reliable source material.

[110] 'Democracy Index 2019', accessed 17 February 2020, http://www.eiu.com/Handlers/WhitepaperHandler.ashx?fi=Democracy-Index-2019.pdf&mode=wp&campaignid=democracyindex2019.

Interestingly, there is an equal amount of flawed democracies as to authoritarian regimes, and full democracies are significantly the fewest regime-type that occurred in this study of 167 countries[111].

These categories are separated depended on the index score that each country receives once its political system has been run-through the methodology used by the EIU. The overall GDI is calculated as the average on a scale of 0-10 from each of the five assessed categories: "electoral process and pluralism; civil liberties; functioning of government; political participation; and political culture"[112]. The tie-breaker categories are: "whether national elections are free and fair, the security of voters, the influence of foreign powers on government, [and] the capability of the civil service to implemented policies"[113]. Another category used by the EIU is the feature of a public opinion survey that asks diverse questions regarding the feature of democracy, which are also calculated into a countries GDI score. The average of the four measured categories makes up the GDI score, which is averaged on a scale from 0-10. This scale determines which regime-type a country is classified. Full democracies are from 8-10, flawed democracies from 6-8, hybrid regimes from 4-6, and everything below 4 are deemed an authoritarian regime[114].

Another popular database for assessing democracies is Freedom House, an American organization that has measured countries' status from 1972. Not only do they collate a yearly report on the status of global freedom each year but are supporters of American leadership and champions of democracies around the world[115]. The significant difference between the data from Freedom House to the EIU data is that Freedom House gives countries not a designation of regime type but instead states countries are either free, partly free, or not free. This categorization is not ideal for determining whether a country can be deemed democratic or non-democratic. Freedom House data will be used from 1975 to 2006 to determine an overall trend of the democratic history of a specific country. The three main categories that will be looked at are Political Rights (PR) score, Civil Liberties (CL) score both are on a scale from 1-7(1 being the highest and 7 the lowest), and overall status [free (1), partly free (2), not free (3)]. EIU data will take precedence from 2006 onwards as it has clear designated regime-type categories.

As highlighted by the data provided by the EIU regime-type is often seen as a spectrum and hard to define into a particular category. As a result, this thesis will operationalize regime-type by saying it is either democratic or non-democratic. A democratic state must have free and reliable elections, freedom of speech, and

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[111] 'Democracy Index 2019'. 3. Table 1.
[112] Ibid. 52.
[113] 'Democracy Index 2019', http://www.eiu.com/Handlers/WhitepaperHandler.ashx?fi=Democracy-Index-2019.pdf&mode=wp&campaignid=democracyindex2019. 52.
[114] Democracy Index. EIU. 53.
[115] 'About Us', Freedom House, accessed 19 April 2020, https://freedomhouse.org/about-us.

uphold human rights. A long-standing history of democracy will be determined by the number of democratic administrations in place and the overall time in which democratic vs. non-democratic administrations have been in power. Therefore, if a country is deemed a full or flawed democracy, it can be seen as democratic, whereas hybrid and authoritarian regimes are deemed non-democratic. This chapter will first look at the case of South Africa, followed by Iran, and then the DPRK.

South Africa

There is clear evidence that South Africa was interested in nuclear energy as early on as 1948[116]. Several documents depict the interest surrounding nuclear energy and an active exchange of uranium enrichment techniques and bilateral trade agreements with Israel starting from the 1950s[117]. However, for this thesis, the start of its nuclear weapons program will be set in 1975, as this was when the need for a South African nuclear weapons program was expressed in clear writing by the department of defence[118]. While there have been allegations made by both the United Nations and the United States of America regarding a South African nuclear weapons program during the 1960s,[119] there is a distinct lack of evidence suggesting that a nuclear weapons program had existed this early on.

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[116] "Delegation of the Union of South Africa to the United Nations, 'Statement of Mr. W. C. du Plessis, Leader of the South African Delegation'," October 01, 1956, History and Public Policy Program Digital Archive, South African Foreign Affairs Archives, Atomic Research Union of South Africa.137.11.23.Vol. 1.Atomic Energy.3.5.56-1.6.57. Obtained and contributed by Anna-Mart van Wyk, Monash South Africa. https://digitalarchive.wilsoncenter.org/document/116046

[117] "South African Cabinet Memorandum, Research in the Field of Nuclear Energy and Exchanging Information with Friendly Nations," 1956, History and Public Policy Program Digital Archive, South African Foreign Affairs Archives, Atomic Research Union of South Africa.137.11.23.Vol. 1.Atomic Energy.3.5.56-1.6.57. Obtained and contributed by Anna-Mart van Wyk, Monash South Africa. https://digitalarchive.wilsoncenter.org/document/116048; "Draft Agreement Between South Africa and Israel on the Application of Safeguards to the Sale of Uranium," February 01, 1965, History and Public Policy Program Digital Archive, South African National Archive, URU vol. 4835 ref. 134, 39-44. Obtained and contributed by Sasha Polakow-Suransky. https://digitalarchive.wilsoncenter.org/document/116590

[118] "Memorandum, Lt-General Raymond Fullarton Armstrong, US Department of Defense, Israel-South Africa," March, 1975, History and Public Policy Program Digital Archive, South African History Archive, The Freedom of Information Programme Collection, Nuclear Weapons History, Department of Defence. Obtained and contributed by Anna-Mart van Wyk, Monash South Africa. https://digitalarchive.wilsoncenter.org/document/114145

[119] "Twentieth Session of the United Nations General Assembly, 'Agenda Items Related to Disarmament'," 1964, History and Public Policy Program Digital Archive, South African Foreign Affairs Archives, Armaments, Disarmament, File 32,3, Vol. 1, 16.2.62-20.9.66. Obtained and contributed by Anna-Mart van Wyk, Monash South Africa. https://digitalarchive.wilsoncenter.org/document/116053; "South African Department of Foreign Affairs, 'Nuclear Proliferation Problem'," March 18, 1967, History and Public Policy Program Digital Archive, South African Foreign Affairs Archives, Brand Fourie, Nuclear Proliferation Problems, F194, 18 May 1967. Obtained and contributed by Anna-Mart van Wyk, Monash South Africa. https://digitalarchive.wilsoncenter.org/document/114139

Peter Liberman discusses this lack of an exact starting point in his article "The Rise and Fall of the South African Bomb", stating that a lack of clear evidence from the top political leaders regarding building a weapon program is to blame. He also highlights the role that the South African Atomic Energy Board (AEB) has had to play in developing a nuclear weapons program that emerged from its existing Peaceful Nuclear Energy (PNE) program in place from the 1950s onwards[120]. While the AEB was a strong driving force in the nuclear program of South Africa, particularly in the shift from its PNE program to becoming a NWS[121], this chapter will look at the governmental structure and policy that was in place at the time of nuclear proliferation. Due to the lack of a precise start date, this thesis will use 1975 as the South African nuclear weapons program's official start.

In 1975, Prime Minister John Vorster was in power, from 1966-78, as prime minister and then served until 1979 as the State President of South Africa. He was a staunch supporter of the apartheid policy, and the nuclear weapons program of South Africa started to gain a foothold during his time in office. Before looking further into how his policy was advantageous to the nuclear weapon program, it is essential to explain the South African government's set-up.

South Africa gained independence from the British Empire in 1934 and is now recognized as a sovereign state, yet it is still part of the British Commonwealth. In 1948 the National Party of South Africa adopted the policy of apartheid. This policy was made up of different acts that worked together. The two most prominent ones were the Prohibition of Mixed Marriages Act in 1949 and the Population Registration Act in 1950. This policy separated the population by race into Blacks, Whites, Coloured and Indian, effectively favouring whites in all public areas. Nelson Mandela, who was an active member of the African National Congress political party, whose goal was to unify the population of South Africa, led not only civil disobedience campaigns but also sabotage campaigns for which he was imprisoned in 1964.[122] Apartheid prohibited all non-whites in public offices, and Freedom House notes a significant difference in civil liberties and political rights between whites and blacks during the apartheid years[123]. President FW de Klerk repealed apartheid in 1991[124]. Due to racial segregation only whites had the privilege to vote in elections[125], and the integrity of the democratic practices are labelled as partly-free.

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[120] Liberman, Peter. "The Rise and Fall of the South African Bomb." *International Security* 26, no. 2 (2001): 45-86. Accessed April 29, 2019. www.jstor.org/stable/3092122.

[121] Zondi Masiza, 'A Chronology of South Africa's Nuclear Program', *The Nonproliferation Review* 1, no. 1 (September 1993): 34–53, https://doi.org/10.1080/10736709308436523.

[122] 'South Africa Profile', *BBC News*, 4 April 2018, sec. Africa, https://www.bbc.com/news/world-africa-14094918.

[123] 'Country and territory Ratings and Statuses, 1973-2020', Freedom House, accessed 19 April 2020, https://freedomhouse.org/report/freedom-world.

[124] 'South Africa Profile'.

[125] Sisonke Msimang, 'All Is Not Forgiven', 15 August 2019, https://www.foreignaffairs.com/articles/south-africa/2017-12-12/all-not-forgiven.

It wasn't until 1994, when South Africa held its first free election, in which the entire population was able to vote, in which Nelson Mandela became President, following his release from prison in 1990. It adopted a new constitution in 1996.[126] In Figure 1, it is easy to see that South Africa had a distinct turn in its democratic index after 1994. The data pulled from the Freedom House reports[127] indicated two scales for whites and non-whites, which have been averaged, for political rights (figure 2) and civil liberties (figure 3). They also noted that during apartheid, the white population was deemed as free, whereas the non-white population was deemed not-free. Today, South Africa is set up in a three-level constitutional system that divides government on a local, provincial, and national level alongside an independent judiciary. The parliament, which is the prime legislative authority, is made up of a national assembly alongside the provinces' national council.[128] The government's highest authority is the President, who appoints the Deputy President, ministers and deputy ministers[129]. While the people elect the President, the rest of the executive structure is appointed by the President, leaving this position vulnerable to corruption and easily swayed towards a non-democratic direction.

In 1961 when South Africa became a republic, it first had a parliamentary system in deference to the Westminster system, the British Monarch, Queen Elizabeth II as President, and the prime minister's office. In 1983 through the South African Constitution Act, President Pieter Willem Botha abolished the prime minister's office and shifted towards a presidential system where the President held supreme power as head of government and head of state[130]. Interestingly when looking at the data in Figure 1, the constitution act seems to coincide with a drop in the GDI of South Africa. Due to the lack of free and fair election and the lack of civil liberties and political rights as shown by the data in Figures 1-3, this thesis deems South Africa as a non-democratic country from 1975-1994 from 1994-present a democratic country. However, as Table 2, Figures 4 and 5 show, even within the last 14 years, South Africa has been struggling with its democratic status and slowly decreasing each year since 2006. [131]

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[126] 'South Africa Profile'.
[127] 'Freedom in the World'.
[128] 'Structure and Functions of the South African Government | South African Government', accessed 24 April 2020, https://www.gov.za/node/537988.
[129] 'Executive Authority (President, Cabinet and Deputy Ministers) | South African Government', accessed 24 April 2020, https://www.gov.za/about-government/government-system/executive-authority-president-cabinet-and-deputy-ministers.
[130] 'Republic of South Africa Constitution Act 110 of 1983 | South African Government', accessed 25 April 2020, https://www.gov.za/documents/constitution/republic-south-africa-constitution-act-110-1983.
[131] All figures are created by the author unless otherwise noted.

Figure 1: Democratic Status of 5 Nuclear Weapon Programs 1970-2019

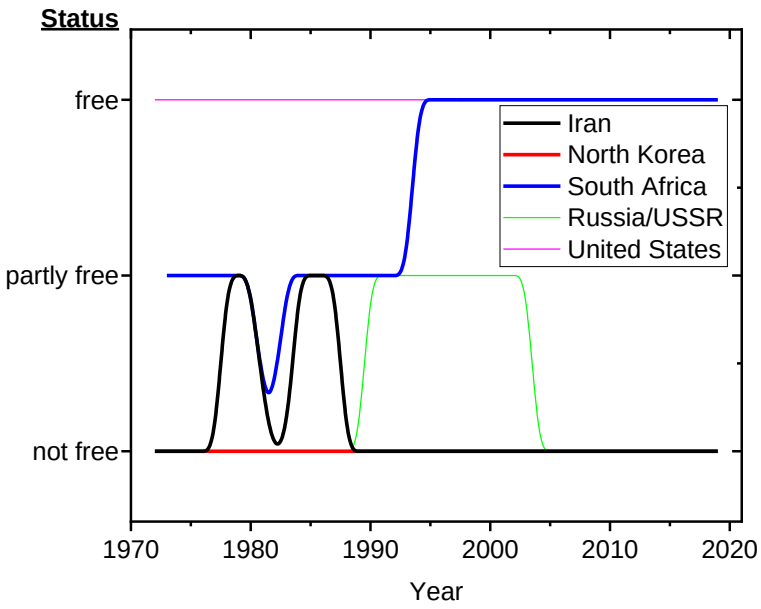


Figure 2: Political Rights Score of 5 Nuclear Weapon Programmes 1970-2019

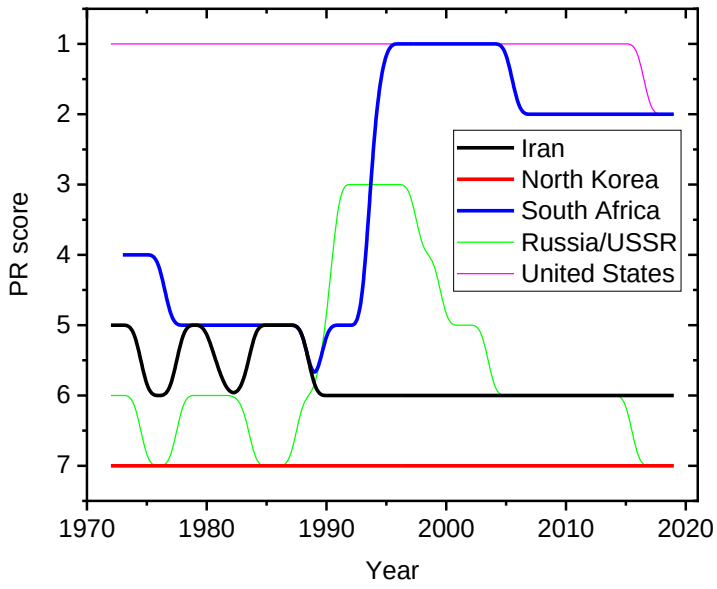
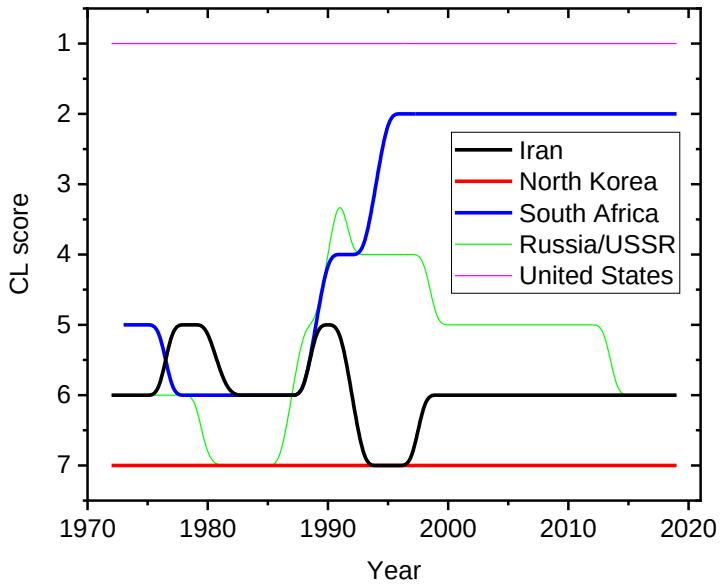


Figure 3: Civil Liberties Score of 5 Nuclear Weapon Programmes 1970-2019



[132]	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2008	2006
South Africa	7.24	7.24	7.24	7.41	7.56	7.82	7.90	7.79	7.79	7.79	7.91	7.91
Iran	2.38	2.45	2.45	2.34	2.16	1.98	1.98	1.98	1.98	1.94	2.83	2.93
DPRK	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	0.86	1.03

Table 2: Global Democracy Index of South Africa, Iran, and the DPRK 2006-2019

[132] Democracy index 2019. table 3

Figure 4: Global Democracy Index of South Africa, Iran, and the DPRK 2006-2019

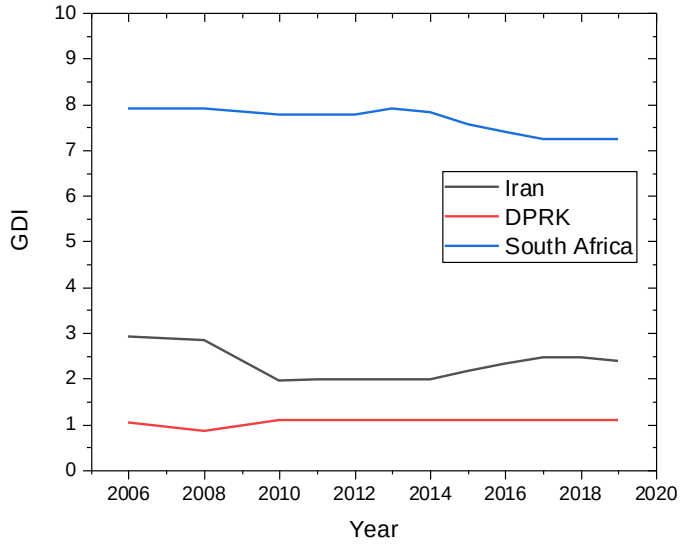
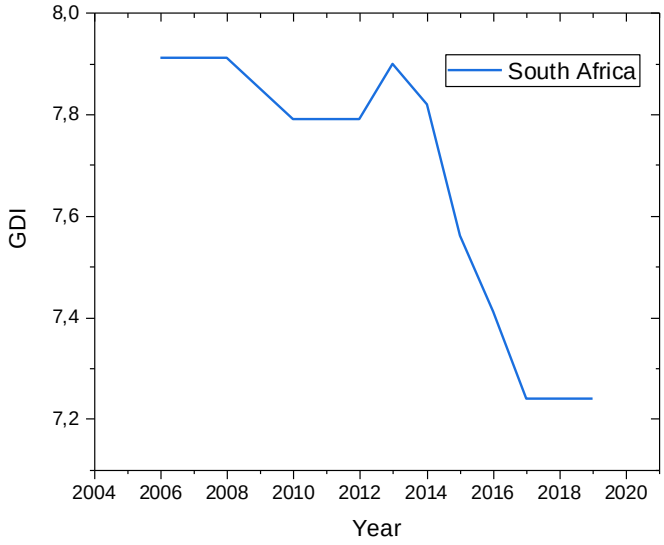


Figure 5: Global Democracy Index of South Africa 2006-2019



Due to the government system that South Africa had in place up until 1993, it was much easier for the heads of state to decide on a course of policy regarding the nuclear program without significant pushback from the population as only a small percentage was allowed to vote in general elections, and only the parliamentary house of whites was able to vote on foreign policy issues. In a 1975 US Department of Defence memorandum, there is the first note that South Africa is determined to build and extend its nuclear program beyond purely energy concerns to deal with regional[133] and global threats.[134] While South African President F.W. de Klerk did state later on that the shift in nuclear policy was made by Prime Minister John Vorster as early as 1974, others such as Dr. Waldo Stumpf, the former head of the AEB, stated that the objective of the PNE of South Africa did not change to a more military purpose until 1977/1978. Once P.W. Botha became the new Prime Minister of South Africa after previously having served as the Minister of Defence.[135] When looking at archival documents, it is clear that in 1977, South Africa had built an effective nuclear program, yet they denied this charge at that time[136]. While they were not signed onto the NPT at that time, major nuclear players such as the Soviet Union and the US[137] started to worry about the potential threat from a nuclear weaponized South Africa[138]. Liberman suggests that the nuclear program's initial militarization was driven from above though this was done without a specific strategy despite the threat that other NWS's presented[139].

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[133] Bill Keller, 'South Africa Says It Built 6 Atom Bombs', *The New York Times*, 25 March 1993, sec. World, https://www.nytimes.com/1993/03/25/world/south-africa-says-it-built-6-atom-bombs.html.
[134] "Memorandum, Lt-General Raymond Fullarton Armstrong, US Department of Defense, Israel-South Africa," March, 1975, History and Public Policy Program Digital Archive, South African History Archive, The Freedom of Information Programme Collection, Nuclear Weapons History, Department of Defence. Obtained and contributed by Anna-Mart van Wyk, Monash South Africa. https://digitalarchive.wilsoncenter.org/document/114145
[135] 'South Africa | Countries | NTI', accessed 25 April 2020, https://www.nti.org/learn/countries/south-africa/nuclear/.
[136] "Cable, South African Department of Foreign Affairs, 'South Africa: Nuclear Bomb Charges'," August 26, 1977, History and Public Policy Program Digital Archive, South African Foreign Affairs Archives, Brand Fourie, Atomic Energy, File 2/5/2/1, Vol 1, Vol 2. Obtained and contributed by Anna-Mart van Wyk, Monash South Africa. https://digitalarchive.wilsoncenter.org/document/114180
[137] Sarah Bidgood, 'The 1977 South Africa Nuclear Crisis', *Adelphi Series* 56, no. 464–465 (1 November 2016): 55–78, https://doi.org/10.1080/19445571.2016.1494248.
[138] "Letter, Warren Christopher to William Hyland, 'Response to Soviet Message on South Africa'," August 10, 1977, History and Public Policy Program Digital Archive, National Archives, Record Group 59, Department of State Records, Records of Warren Christopher, box 16, Memos to White House 1977. Obtained and contributed by William Burr for NPIHP Research Update No. 25. https://digitalarchive.wilsoncenter.org/document/119249; "Restricted Teleletter from J.E. Holmes, UK Embassy in Moscow, to R.B. Bone, 'South African Nuclear Intentions'," October 31, 1977, History and Public Policy Program Digital Archive, UK National Archives, FCO45-2131. Obtained and contributed by Anna-Mart van Wyk. https://digitalarchive.wilsoncenter.org/document/116653
[139] Peter Liberman, 'The Rise and Fall of the South African Bomb', *International Security* 26, no. 2 (2001): 45–86.

Both Liberman and Miller suggest that one of the main reasons for South Africa's nuclear ambition was due to the security climate that surrounded its country during apartheid. To secure South Africa's political standing with the countries around it, nuclear weapons would help ensure that South Africa remained a vital and robust player at the table, not only in regional conflicts but also on an international level. Nevertheless, while this may have been the intention, its policy of apartheid left South Africa very isolated. President de Klerk used its nuclear weapon program's disarmament as another step forward to move the country away from apartheid to a more democratic system.[140] Figure 1 shows the exact effect that the end of the nuclear weapons program and the end of apartheid had on the democratic status of South Africa. Within only a couple of years, it went from being partly free in 1994 to free in 1995. Figures 4 and 5 show the democratic trend of South Africa over the last 13 years. While there is a slight downward trend of democratic status, and some describe it as a flawed democracy, South Africa successfully shifted its political system from a non-democratic one to a democratic one. Therefore, for the case of South Africa, Hypothesis 2a is supported.

Iran

Looking at Table 2 and Figure 6, it is interesting that Iran showed a significant loss of democracy during President Obama's administration, which started to rise once President Trump came into office. Whereas the opposite is true for South Africa, since Trump came into office, its democracy has lost points.

The current Islamic Republic of Iran was previously a monarchy headed by Shah Mohammad Reza Pahlavi from 16 September 1941 until the Iranian Revolution overthrew him and his family on 11 February 1979. Much political unrest led to the Iranian revolution, which ended with Iran being declared a republic by the newly elected Supreme Leader Ayatollah Khomeini. Following his death in 1989, Khomeini was succeeded by Supreme Leader Ali Khamenei, who is currently in power. The Supreme Leader is the head of state, and while technically, it is a position that is elected, the complicated government structure that is in place prevents political change, as illustrated in Figure 8. Looking at the data from Freedom House and EIU the political rights have fluctuated over time. Though due to the way the political system is set up, it cannot be ever a true democracy unless the election judiciary and the guardian council, along with the other appointed offices, change to elected offices that are elected by the people of Iran.

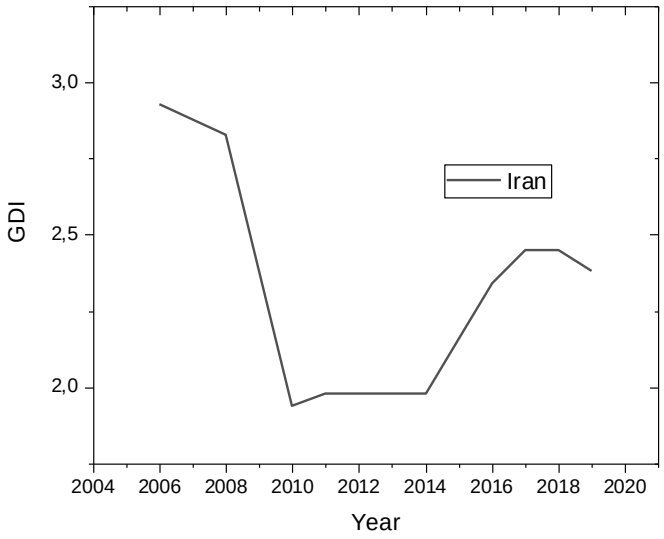
Miller states that the nuclear program in Iran was first started in 1974, under the Shah. Supreme Leader Khomeini effectively used the already initiated plans to continue and further the Iranian nuclear weapon program, especially once Iraq Leader Saddam Hussein invaded in 1980. Though one interesting thing that can be seen is that Iran experienced two spikes of more democratic power, as seen in

[140] Liberman. 83-84.

Figure 7. The first spike in 1979 coincides with the Iranian Revolution, yet the second spike was in 1985. This second spike is interesting yet a clear reason why Freedom House coded this year as partly free is unavailable. One reason could be the Iran-Contra affair. However, that was not a singular event, and similar to the Iran-Iraq war spanned for most of the 1980s. According to Miller, the second interesting thing that happened in 1985 was that the enrichment of uranium was officially started in 1984[141].

In his book, Miller suggests two main reasons why Iran sought out nuclear weapons. First, under the Shah, he states that one of the main reasons why Iran began its nuclear weapon program seemed to be the lack of a distinct US nuclear policy coupled with the fact that nuclear weapons would be strategically a sound move as it would secure Iran's position in the region. Second, under Khamenei, again, the perceived threat coming from the United States supports the need for the existence of a nuclear weapon program, especially once Iran was named within the "Axis of Evil" and continued tensions with Iraq.[142] Similarly to South Africa, the perceived threat of security and state stability within the region and globally impacts the state leader and the decision to pursue a nuclear weapons program.

Figure 6: Global Democratic Index of Iran 2006-2019



[141] Miller, 'The Iranian Nuclear Program (1974–2015)'.
[142] Miller.

Figure 7: Democratic Status of Iran 1970-2019

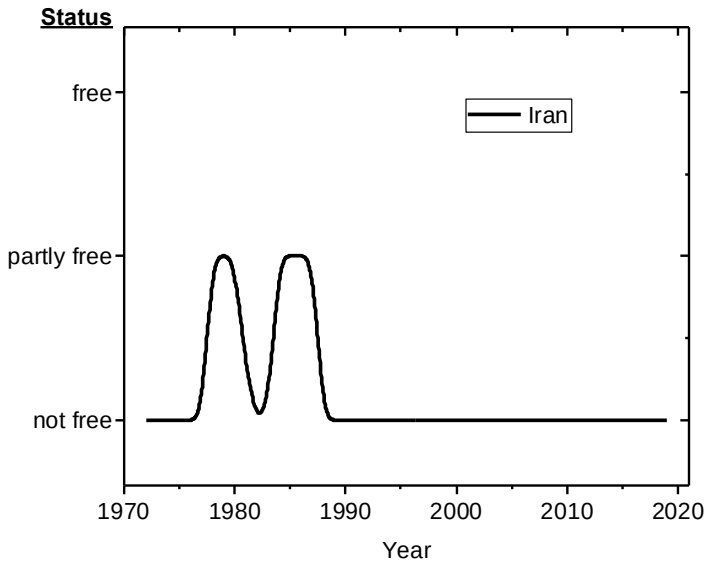
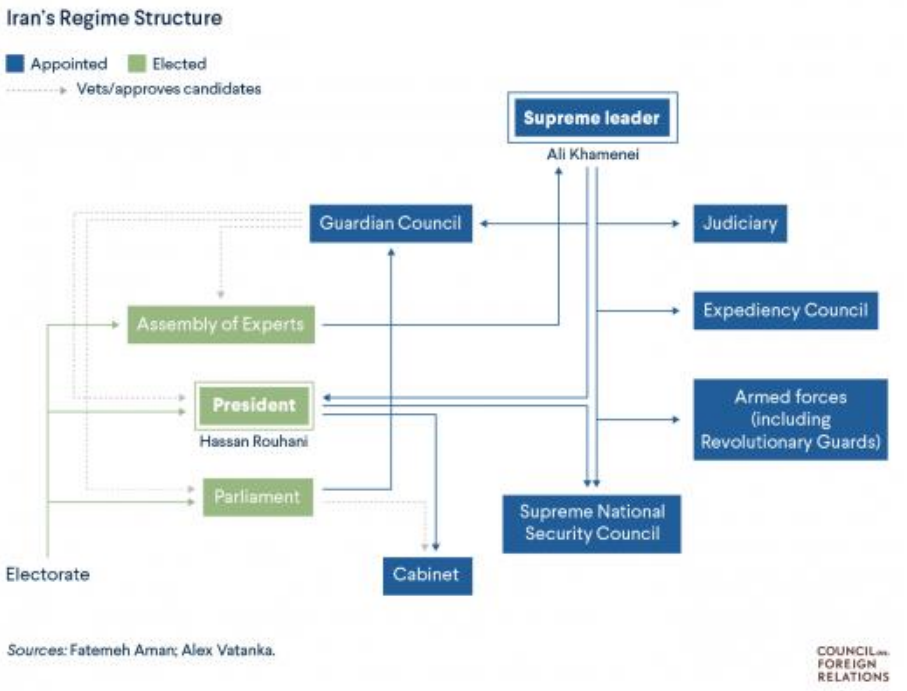


Figure 8[143]: Iran's Regime Structure



DPRK

The DPRK has long been a dictatorship run by the Kim dynasty. As the figures (9 and 10) show very clearly, it has no history of being democratic since the 1970s and earlier. Because of the consolidation of power through the dictator, it is much easier to stick to one policy, especially when it is of military nature. Programs such as nuclear weapon programs do not develop quickly, and most democracies have an electoral cycle of four years, meaning that the top leadership and the decision power changes often, and different leaders have different policy goals. This is easily seen in the South African program. However, the opposite is true for the DPRK because of the stability of the dictatorial power. The nuclear weapons program has slowly but steadily developed and is now operationally ready, as shown through the multiple missile tests that Pyongyang has been conducting since 2006.

The DPRK nuclear weapons program dates back to 1980 when Pyongyang started to build its second uranium enrichment facility. While they were long

[143] 'The Islamic Republic's Power Centers | Council on Foreign Relations', Council of Foreign Relations, 25 February 2020, https://www.cfr.org/article/islamic-republics-power-centers.

suspected of having nuclear weapons, the first nuclear missile test was carried out in 2006. In 1980, dictator and state founder Kim Il-Sung was in power, from 1948 to the country's establishment, until his death in 1994 when he was succeeded by his eldest son Kim Jong-Il. Under Kim Jong-Il's leadership, the first missile test was carried out, though Kim Il-sung was the leader who started the nuclear weapon program. The first mention of its nuclear weapon program and its operational readiness comes from a report in November 1992 that details that while North Korea did sign the NPT in 1985, it has developed a nuclear weapon program on its own. However, it is essential to note that they have continuously sought out training and developing aid from countries such as the Soviet Union, Israel, and even South Africa as early as the 1970s.[144]

Nevertheless, today, they have achieved a fully self-sufficient program that has gained visibility and is no longer seen as a mere paper tiger due to the increase of nuclear mid- and long-range missile tests[145]. Political Scientists Dr. Michael Paul and Elisabeth Suh from the *Deutsche Institut für Internationale Politik und Sicherheit* write that the primary goal of the DPRK under Kim Jong-un has been not only to strengthen the nuclear program, as it is tied to the country's economic well-being, but also to strengthen and secure the Kim Dynasty that has been in place since 1980.[146] The desire to further strengthen and secure the Kim Dynasty would also explain the slight dip in democratic values that can be seen in the data around 2008, which would coincide with shifting the power from Kim Jong-Il to his son Kim Jong-un[147]. While the formal succession was not until 2011 upon Kim Jong-Il's death, the power transition had, at that point, already been secured for several years. As the data and figures, 9 and 10 clearly show, the DPRK is a non-democratic state.

One way of demonstrating this is the increase of nuclear missile tests conducted from 2011 to the present. This not only demonstrates strong leadership to the North Korean people, but it also sends a signal to the global society and other NWS's that North Korea is determined to be a nuclear player on a global scale. Whereas democratic countries have to be careful in their nuclear strategy

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[144] *Defense Intelligence Assessment, US Defense Intelligence Agency, DST-1540Z-509-92-SI, 'Nuclear Proliferation Data Sheets'* (History and Public Policy Program Digital Archive, 1992), https://digitalarchive.wilsoncenter.org/document/119222.; "Memorandum, Hungarian Foreign Ministry," February 16, 1976, History and Public Policy Program Digital Archive, MOL, XIX-J-1-j Korea, 1976, 83. doboz, 6, 002134/1976. Obtained and translated for NKIDP by Balazs Szalontai. https://digitalarchive.wilsoncenter.org/document/111471

[145] Siegfried S. Hecker, 'What We Really Know About North Korea's Nuclear Weapons', 1 May 2020, https://www.foreignaffairs.com/articles/north-korea/2017-12-04/what-we-really-know-about-north-koreas-nuclear-weapons.

[146] Michael Paul and Elisabeth Suh, 'Nordkoreas Atomraketen. Handlungsoptionen der USA und ihrer Verbündeten', *Stiftung Wissenschaft und Politik, Deutsches Institut für Internationale Politik und Sicherheit* SWP-Aktuell 58 (2017): 8.

[147] 'N Korea Holds Parliamentary Poll', 8 March 2009, http://news.bbc.co.uk/2/hi/asia-pacific/7930775.stm.

depending on when elections are held, true dictatorships such as the DPRK have the distinct advantage of implementing more extended strategies without much immediate backlash. Even though Iran has elections, its citizens have so little actual and effective electoral voting power that their Supreme Leader is protected from being voted out of power.

Figure 9: Democratic Status of North Korea 1970-2019

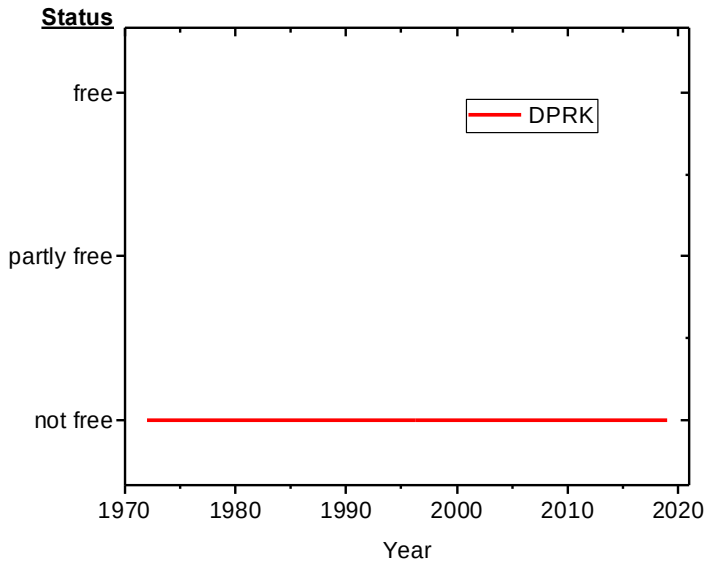
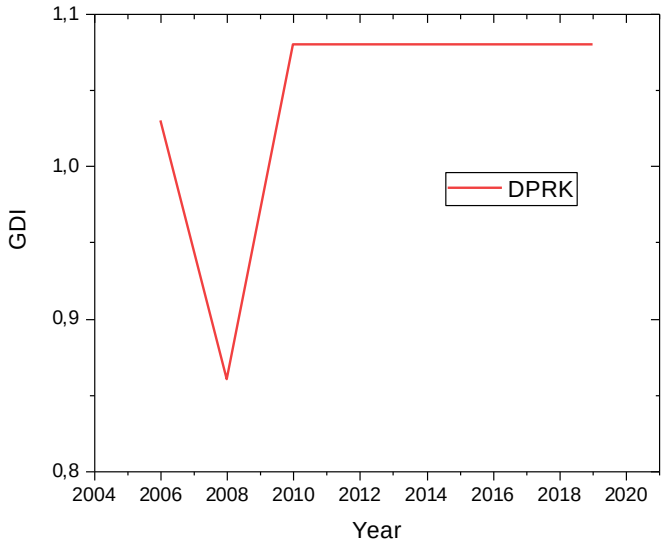


Figure 10: Global Democratic Index of North Korea 2006-2019



	Regime-type	Network-Salience	Compliance with Sanctions
South Africa	Non-democratic (1975-1994), democratic (1995-2019)		
Iran	Non-democratic (1925-2019)		
North Korea	Non-democratic (1948-2019)		

Table 1: Framework

In conclusion, this chapter looked in-depth at the independent variable of democratic history and the status of a country and its potential impact on their aspiring nuclear weapon program. All three states have been established as non-democratic during the initial phase of their program's nuclear aspiration and implementation. One of the common motivations behind choosing a nuclear weapons arsenal was a realist view that having nuclear weapons is often seen as a guarantor of defence to secure the state's power both domestically and regionally and internationally. As Table 1 shows, all three states were non-democratic when they started their nuclear weapons program. Therefore, this chapter has supported hypothesis H2b because sanctioning a nuclear weapon proliferating country will be ineffective if the country under sanction is non-democratic.

Chapter 5 – Network-Salience

Realist theory relies on several fundamental principles. First, the international system is an anarchical one, and second, states act in their self-interest to ensure their security. While these principles may seem to clash when it comes to alliances and alliance–building, it is often the best way for smaller states to secure themselves against more powerful states should it come to a conflict. In the previous chapter, this thesis identified that states such as Iran and South Africa built and started to pursue nuclear weapon programs to strengthen their security. Nevertheless, with the implementation of sanctions, this sense of security was also undermined.

This chapter will look at each state and the different networks it has in place that has helped them pursue or develop their nuclear weapons program that can act as a deterrent against both internal and external security threats. Establishing which alliances are or were in place will also help determine if there is a relationship between existing alliances and sanction compliance. Traditionally an alliance has been defined as a defined, mainly written treaty between two parties, in this case states. In this thesis, the transfer of technology and other cooperation's between two countries is also defined as having an alliance in place, no matter if there was a formal treaty in place to go with those actions. While simple cooperation in form of technology transfer may be more of an informal alliance, it is one nonetheless, and very important when it comes to dealing with nuclear weapon programs. In order to include both formal and informal alliances, this thesis will combine them under the term of network-salience.

One alternative approach to building their nuclear weapon program is to take advantage of existing military and diplomatic alliances between different states. Many states are engaged in multilateral alliances that offer extended deterrence with major nuclear powers. One of those is the member states of NATO. Seeing as three nuclear powers are part of NATO, its member states do benefit from extended deterrence when it comes to potential nuclear threats. However, the most effective nuclear deterrence approach other than building a nuclear weapon program is to actively engage in a NU with a significant nuclear power such as the US. South Korea, for example, is a prime candidate for the US NU. The NU functions as a catch-all without investing any of the cost in building and developing a nuclear weapon program and breaking IHL. State A, a nuclear power, engages with State B in a positive political and economic alliance that is mutually beneficial for both. State B can be secure in not building their own nuclear weapons, knowing that State A will engage their own arsenal in defence to State B at any time.

South Korea is currently under the US NU. This allows South Korea to be safe in knowing that the US will defend South Korea should the DPRK or a different power such as Russia or even China choose to attack South Korea. This alliance is also beneficial for the United States as it allows them to not only keep an eye on the frontline of North Korea, but it also gives them an active standpoint

and surveillance on the Asian continent. As previously mentioned in the literature review, this also brings the issue of trust with it. The nuclear umbrella can only function when both states actively trust one another and honour the deal on both sides; otherwise, it is not mutually beneficial. The nuclear umbrella should be seen as an extremely attractive option to smaller and less developed states that cannot support their extensive military capabilities and can, through the NU strengthen their security.

South Africa

Previously, this thesis established that South Africa was non-democratic throughout the nuclear weapons program. This chapter will examine the variable of network-salience and their impact on sanction compliance.

Throughout its nuclear weapons pursuit, South Africa received help from multiple allies. Not only was it engaged in a technology transfer with the Soviet Union and Israel, but it also tried to become a formal ally with the United States in order to benefit from their nuclear umbrella and most likely the access to oil at reduced prices as an alternative from the Middle Eastern oil[148].

South Africa mainly pursued nuclear weapons to strengthen its foreign security presence and strengthen their position within the African continent.[149] Tensions were high in the 1970s as the world was in the middle of the Cold War, and South Africa was placed conveniently in the middle between the two superpowers. It received technological assistance from both the United States and the Soviet Union and resources from Israel,[150] which itself was closely tied towards the Soviet regime. Yet once President de Klerk came to power, the emphasis shifted away from the pursuit of nuclear weapons. Rather than boost security through nuclear weapons, de Klerk saw a path to improved security by ending apartheid. By complying with the American demands of disarming and dismantling their nuclear program, South Africa signalled it was willing to cooperate and tie itself closer in an alliance with the United States, not only to benefit from it nuclear

[148] Warren Christopher 1925-2011, 'Letter, Warren Christopher to William Hyland, "Response to Soviet Message on South Africa"' (10 August 1977), National Archives, Record Group 59, Department of State Records, Records of Warren Christopher, box 16, Memos to White House 1977. Obtained and contributed by William Burr for NPIHP Research Update No. 25., History and Public Policy Program Digital Archive, https://digitalarchive.wilsoncenter.org/document/119249.

[149] B. J. (Balthazar Johannes) Vorster 1915-1983, 'South African Department of Foreign Affairs, Announcement by South African Prime Minister Vorster' (20 July 1970), South African Foreign Affairs Archives, Brand Fourie, Atomic Energy, File 2/5/2/1, Vol 1, Vol 2. Obtained and contributed by Anna-Mart van Wyk, Monash South Africa., History and Public Policy Program Digital Archive, https://digitalarchive.wilsoncenter.org/document/114143.

[150] Shimon Peres 1923- and P. W. (Pieter Willem) Botha, 'Israel-South Africa Agreement (ISSA)' (3 April 1975), South African History Archive, The Freedom of Information Programme Collection, Nuclear Weapons History, Department of Defence. Obtained and contributed by Anna-Mart van Wyk, Monash South Africa., History and Public Policy Program Digital Archive, https://digitalarchive.wilsoncenter.org/document/114147.

umbrella but also to benefit from its economic and military aid, as civil war broke out in Rwanda and the African continent once again was in turmoil.

By tying itself closer towards the United States, South Africa also cut ties with Israel when it came to the nuclear question, as Israel had already rejected US diplomatic proposals and urged to stop Israel's nuclear weapon program.

In the case of South Africa, Hypothesis 1 appears to be supported. Sanctioning a nuclear weapon proliferating country will be effective if the country under sanction is positively engaged with the sanctioning country.

Iran

Throughout its nuclear weapon pursuit, Iran has had many unilateral and multilateral sanctions applied to them. Often with the United States being the main leader of the sanction implementation. The JCPOA has been the most effective agreement and sanction mechanism for deterring Iran from building its nuclear arsenal. Yet with President Trump withdrawing from the deal, Iran's willingness to comply has seemingly vanished overnight, although the JCPOA is a treaty between the P5+1, the UN, and Iran. So why does the withdrawal from the US out of the deal spark so much resistance to comply? Is the US seen as more powerful than the Eastern powers of Russia and China? Or is it the opposite, and both Russia and China are on more friendly terms with Iran than previously acknowledged?

In his book, Nicholas Miller goes into extreme detail about how Iran's nuclear program came into existence. He theorizes that the higher the dependency of the new pursuing nuclear weapon state on the United States is, the higher is the likelihood of the state complying with guidelines and sanctions. He starts his analysis by going back to 1975 when General Ford became President, and Henry Kissinger, then the Secretary of State, visited Tehran. Even then, Iran expressed the desire to pursue a nuclear weapons program. However, the Shah did not phrase it as a desire for a nuclear weapons program, but rather as a peaceful nuclear energy (PNE) program. While the US was probably worried that Iran would use the technology for military purposes, it also had a relatively good relationship with the Shah at that point. The overarching belief was that the stronger one's alliance was with one another; it would be easier for the US to control and limit the nuclear program that Iran wanted to build.

At the same time, Egypt and Israel signalled that they would not cooperate on nuclear issues with the United States of America, thereby making North Africa and the Middle East an unstable geographical hotspot for emerging nuclear programs. Miller's argument is sound, and he effectively shows a direct correlation between the speed of development of the Iranian nuclear program and its dependence on US aid. He argues that when the US sanctions Iran, both on a unilateral and a multilateral level, and was more dependent on the US for military

and economic aid, the more likely it was to comply with sanctions placed upon them.[151]

Miller argues that when the US did not supply Iran with economic and military aid, Iran was less likely to comply with US-led sanctions as it was not dependent on the US for its security and economic well-being. This relationship has changed drastically since the beginning of the program in 1975. Iran has gone through periods of high dependency and low dependency with the United States, usually within the rhythm of 5-10 years, roughly corresponding with the American presidential election cycle.

Early on in the process, the US even was willing to cooperate on developing Iran's nuclear program provided it would be for peaceful use only. The technology and the knowledge that the US scientists could bring on plutonium disposition and how to enrich uranium would be used to win energy, which is highly useful for Iran. Even early on, there were discussions between several departments in the United States regarding Iran's nuclear ambitions.

The State Department was only in agreement if strict limitations would be placed on Iran from the get-go. Then-Ambassador to Iran, Richard Helms, advocated building a strong relationship with Iran. Helms argued such an arrangement would help Washington later on if it would have to place sanctions or restrictions on Iran and limit its nuclear supply.[152]

This is a very interesting argument. Why would a state agree to supply another state with nuclear weapons technology knowing it could take this knowledge to pursue and develop their nuclear arsenal and help it develop a deterrent? Put simply, why would the US seek to strengthen a potential enemy?

In his paper, Scott Helfstein argues that the relationship between military punishment as a deterrent against nuclear weapon states is not as effective when weighing it against the value that nuclear weapons bring as a way to secure the state on a domestic and global scale. He states that: "Military punishment is only an effective means of ensuring non-proliferation if the desire for nuclear weapons is independent of the additional threats stemming from military punishment."[153]

Both Helfstein's argument and Miller's argument support this thesis' argument that sanction compliance and the existing alliances directly correlated in a country's decision if the benefit of building a nuclear weapons arsenal outweighs the costs of having sanctions applied to it. It also reveals that it matters what

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[151] Nicholas L. Miller, 'The Iranian Nuclear Program (1974–2015)', in *Stopping the Bomb*, The Sources and Effectiveness of US Nonproliferation Policy (Cornell University Press, 2018), 217–43, 219 https://www.jstor.org/stable/10.7591/j.ctt1w1vkd5.14.

[152] Miller.222

[153] "the higher the likelihood or costs of expected punishment, the greater the incentive to acquire nuclear weapons in the hopes of deterring the use of force. Military punishment is only an effective means of ensuring non-proliferation if the desire for nuclear weapons is independent of the additional threats stemming from military punishment. In other words, military punishment must be exogenous to perceived threats if this punishment strategy is to deter proliferation or convince proliferators to abandon their weapons programs."HELFSTEIN, 'Friends Don't Let Friends Proliferate'. 287.

alliances are in place. In the past, Iran has been more likely to comply with sanctions when they came from the US, and it was highly reliant on the US for economic and political aid. However, when its ties to China and Russia are closer, the Iranian regime has shown that it is much more willing to defy sanctions, even big multilateral sanction packages as the JCPOA. Therefore, Hypothesis 1 is supported by Iran under the JCPOA only. Throughout its historical engagements with the US since the early 1970s, Iran has often been much more compliant with the sanctions that have been imposed on it, when it was more closely tied towards the US, then when it was not. This was also seen with the JCPOA. Iran complied with the terms of the JCPOA that were laid out by the US, Russia, China, and the European powers up until the moment that the US decided to abandon the deal under the Trump Administration. These findings also support Miller's argument about state dependency being a factor in nuclear proliferation; Hypothesis 2b is supported throughout.

DPRK

The DPRK has long bathed itself behind mirrors and smoke. So much so that often scholars are unsure what exactly is going on and whether or not it is able to trust any information that comes out of that country. North Korea's nuclear ambition started similarly to the other two cases in the 1970s and started to take off under Kim Jong-Il's reign. His son and successor, Kim Jong-Un, took it even further and pursued a nuclear capability much more than ever before. Throughout history, there has been evidence that the DPRK received technical aid from both China and the Soviet Union in aiding North Korea to develop its nuclear weapon program.

Throughout its pursuit of nuclear weapons, North Korea has remained stubbornly immune to any applied sanctions, partly due to the vague wording of the sanctions and the interpretation that its main allies China and Russia have taken when it comes to applying said sanctions. North Korea has always had a very antagonistic relationship with its neighbour South Korea and the United States. Despite President Trump's tweet when it comes to getting North Korea to the negotiation table surrounding the disarmament of its nuclear program, this relationship has not improved. Kim Jong-Un has given no signals that he is remotely interested in disarming. Quite the opposite, he has accelerated the speed of his program in the last five years.

While both US-led and UNSC resolutions and sanctions seem to have no impact on the DPRK, this is most likely due to its long-reaching ties with Russia and particularly China. It is in the interest of North Korea to keep its nuclear arsenal as a deterrence factor and security threat towards Western powers, as it is economically weak and while China and Russia could include North Korea in their

nuclear umbrella, the benefit of owning an arsenal far outweighs the cost of disarming its complete program.[154]

In the case of North Korea, Hypothesis 1 is supported since North Korea does not positively engage with the United States and is, therefore, less likely to comply with sanctions that are predominately US-led.

	Regime-type	Network-Salience	Compliance with Sanctions
South Africa	Non-democratic (1975-1994), democratic (1995-2019)	US, Israel, USSR before 1970	
Iran	Non-democratic (1925-2019)	USSR/Russia, US, China,	
North Korea	Non-democratic (1948-2019)	USSR/Russia, China, GDR	

Table 1: Framework

For all three case studies, the independent variable of network-salience formation, specifically an alliance with the United States, appeared to be of high value. For both South Africa and Iran, the more they are dependent and closely aligned with the US, the better their state security and position on an international scale seemed to be. From the beginning, North Korea has chosen to align itself closer to Russia and China rather than the United States. Geography most likely also had a hand in this.

A thread that can be seen throughout all three case studies is that the Soviet Union played an integral part in helping develop and giving access to the right knowledge and technology in the pursuit of nuclear weapons. For South Africa, the USSR acted as a sounding board and as a way to engage scientists and build an alliance with Israel. For Iran, both the USSR and the Russian Federation supplied the regime with scientists and the knowledge on how to enrich and store uranium

[154] Eleanor Albert, 'Understanding the China-North Korea Relationship', Council on Foreign Relations, 25 June 2019, https://www.cfr.org/backgrounder/china-north-korea-relationship.

and give military aid when it comes to its war against Iran's neighbour Iraq in defying the United States of America. For North Korea, the alliance with the USSR and the Russian Federation not only helped pursue and develop a nuclear weapon program but also by having close economic and political ties, that help not only secure the DPRK's state interest on a domestic scale but much more important on a global scale against the USA. Table 3 shows that both South Africa and Iran were supported by the US and the USSR during their nuclear weapons pursuit.

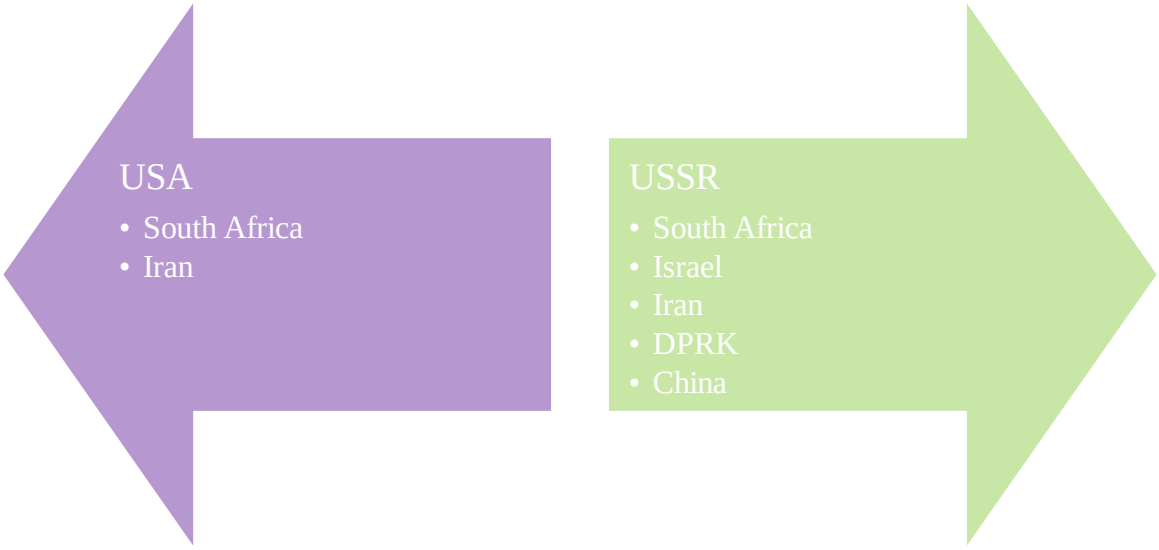

Table 3: Major Alliances

Table 3 also clearly shows that the USSR is common denominator in helping the three case studies pursue their own nuclear weapon program. This alliance is a factor in why specifically US-led sanctions are ineffective against the three countries, as they are still receiving various levels of support from the USSR/Russian Federation. By entering into an alliance with both the USSR and the US, South Africa is benefitting from extended deterrence of both countries. This is a very smart foreign policy, seeing as both major nuclear powers of that time engaged positively with South Africa, this allowed South Africa a certain security on its defence policy. Yet because the USSR was directly and indirectly supporting so many aspiring nuclear regimes, such as Israel, Iran, and the DPRK. It also weakens the extended deterrence that each country receives. In summary, it is clear

that alliances are a significant factor in the pursuit and development of a nuclear weapon program.

One other common thread present in both Iran and the North Korea case studies is the involvement of Pakistani nuclear scientist Abdul Qadeer (A.Q.) Khan. Khan, who was born in 1936 in British India, was educated in Belgium and the Netherlands. He quickly began his work in uranium enrichment, and his interest in nuclear weapons started.[155]

Previously, this chapter has looked at state alliances to the individual nuclear weapon programs. While it may look superfluous to say that one person could have had such a significant impact on the nuclear weapon community, this one did. Nuclear scientists are easy to be overlooked, yet the scientific community has many ties that cross national borders, and many collaborate actively on projects, as did A.Q. Khan in regard to building and developing nuclear weapon programs for his own Pakistan and Iran, Iraq[156], and North Korea. While this thesis is primarily concerned about the state-to-state alliances in this chapter, it is essential to note that A.Q. Khan had considerable influence on the Pakistani government and its willingness to cooperate with other aspiring nuclear programs. Being the lead scientist for Pakistan's own nuclear weapons development gave him the influence to request information outside of his country. While he was eventually arrested on January 31, 2004, he had a vast network of information and potentially nuclear weapons buyers. Scholar Molly MacCalman depicts the timeline and breadth of Khan's network in her article "A.Q.Khan Nuclear Smuggling Network." She notes that not only did Khan work and provide aid to Iran and North Korea, but his influence had a most likely impact on a multitude of nuclear weapon programs.[157]

While his network and influence are impressive alone, the most significant impact is that Khan is a singular scientist. Previously states have always operated on a state-to-state basis, and international sanctions and arms embargos also function on a state-to-state level. However, through the discovery of Khan's network, he proved that non-state actors could impact proliferating states just as much as state actors.

In conclusion, this chapter has proven that Hypothesis 1is supported by South Africa and the DPRK throughout. For Iran, it is supported under the JCPOA

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155 Michael Laufer, 'A. Q. Khan Nuclear Chronology', Carnegie Endowment for International Peace, 7 September 2005, https://carnegieendowment.org/2005/09/07/a.-q.-khan-nuclear-chronology-pub-17420.

156 A. Q. (Abdul Qadeer) Khan 1936-, 'Correspondence between the MIC and the Petro Chemical Group Regarding a Letter from A.Q. Khan Offering Assistance in Developing Iraq's Nuclear Weapons Program' (6 October 1990), Obtained and translated by the Conflict Records Research Center, National Defense University, SH-MICN-D-000-741., History and Public Policy Program Digital Archive, https://digitalarchive.wilsoncenter.org/document/116989.

157 Molly MacCalman, 'A.Q. Khan Nuclear Smuggling Network', *Journal of Strategic Security* 9, no. 1 (2016): 104–18.

only. Otherwise, Hypothesis 2b is supported. Not only do networks play a significant factor in the pursuit of aspiring nuclear weapon programs, but the correct alliance's importance is also highlighted. All programmes have had contact and received support through the USSR/Russia at some point of their nuclear journey and non-state actors such as Pakistani nuclear scientist A.Q. Khan plays a factor in whether or not an alliance will be formed and supported.

Chapter 6 – Sanction Compliance

As previously explored in the historical background and in the literature review, sanction compliance is a key element surrounding the nuclear proliferation debate. This chapter will explore each state's sanction compliance in-depth and try to assess the pattern between the states and the individual sanctions to see if one is more effective when it comes to aspiring nuclear weapon programs than others. It is important to note that when this chapter refers to sanction compliance, it specifically refers to nuclear sanctions. Economic, and political sanctions are not looked at in this thesis in order to focus on specifically the impact of nuclear sanctions on each case study. However, each case study had been under various political, economic, and nuclear sanction to various degrees during the given time period. This thesis uses nuclear sanctions as a mechanism to analyse and explain the outcome of each case study. Looking at the impact that sanctions have on each case on a political, economic, and nuclear level will not be discussed in this thesis, but is an interesting area where further research is possible.

This chapter will survey the degree of sanction compliance among South Africa, Iran, and the DPRK through an examination of both primary and secondary source material. Rather than a detailed accounting of the sanctions themselves, however, this chapter seeks out any possible patterns that may emerge in terms of regime behaviour during the periods under sanction.

Previously this thesis established the theory that both Miller and Solingen suggest that the higher the dependence on the sanctioning country, the more compliance of the sanctioned country will be had. However, while both suggest that multilateral action can often be more effective than unilateral ones, it has not explored the correlation between regime-type, alliances, and the willingness to comply with sanctions. This chapter sheds some light on all three case studies and how each has dealt with the sanctions imposed, threatened and implemented upon each state to determine if Hypothesis 1, 2a and 2b can be supported. This chapter will look at each case individually, looking first into the case of South Africa, then the DPRK, and finally, the complicated case of Iran.

South Africa

South Africa is often hailed as the success story for sanction compliance and the impact that sanctions have on effectively stopping the pursuit of a nuclear weapon program, as it is the only country to date that has effectively completely disarmed, in 1994, after it gained nuclear weapons. Figure 11 (below) combines data taken from both Freedom House and the work of Miller[158]. It shows the direct

[158] Miller, Nicholas L. "The Effectiveness of US Nonproliferation Policy." In *Stopping the Bomb: The Sources and Effectiveness of US Nonproliferation Policy*, 123-47. Ithaca; London: Cornell University Press, 2018. 135. Table 5.7

relationship that the imposition of sanctions has on the democratic status of a country. The black vertical lines represent the start and finish of its nuclear weapon program, and the purple lines represent the sanctions that were imposed. In this graph, the sanctions that were imposed in 1977 and 1982 are represented. Miller coded the first sanction as a unilateral type of sanction with a failed outcome, and the second as a multilateral type of sanction with a successful outcome. He states that to be unilateral, it is only a sanction imposed by the United States and multilateral if an international organization such as the United Nations was part of the sanctioning actor.

What is visible on the graph is that the first imposed sanction had no impact on the democratic status of South Africa. However, the second sanction, which was multilateral, clearly affected the democratic status of South Africa and pushed it towards the non-democratic end of the scale rather than the democratic end. This may be due to the government restricting political and civil rights towards their citizens due to economic and political sanctions against them from other countries.

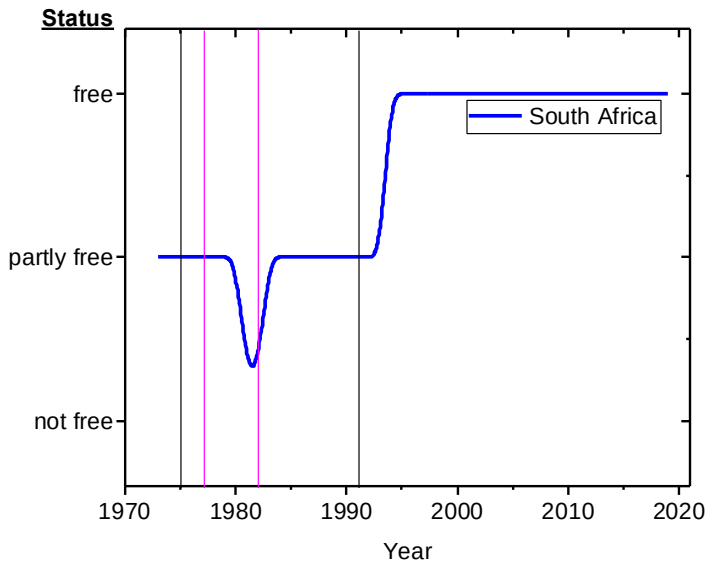
This holds with Solingen's theory that outward-looking regimes are more receptive to sanctions as they depend economically on their allies and that if the sanction is hard enough, the economic well-being takes precedence over the innate security need a state has. Yet, the publicly stated ownership of nuclear weapons is a form of tool in-and-itself to bolster state security through the threat of nuclear weapon use while simultaneously deterring potential threats, both domestically and internationally.

However, despite the imposed sanctions, South Africa went on to acquire and possess nuclear weapons by 1979. It was not until President F.W. de Klerk started his term and actively tried to end apartheid to disarm and disassemble the nuclear weapon program from 1991 onwards, achieving complete disarmament in 1994.

Complete disarmament is arguably the primary goal of the NPT. To date, South Africa is one of four states to have achieved this goal. However, despite the Ukraine, Belarus, and Kazakhstan disarming their soviet nuclear weapons, South Africa is the only state to have indigenously build and disarmed their nuclear weapon program. Indeed South Africa gave up its nuclear weapons and, therefore, a key deterrent in their foreign and defence policy. Since then, they have often been protected in the form of the United States nuclear umbrella (NU) and kept Africa free of nuclear weapons. South Africa went on to sign and ratify the NPT in 1991 yet did not officially disarm until 1994. There is a direct correlation between the complete disarmament of South Africa as a nuclear weapon state (NWS) and its democratic status. South Africa's decision to disarm holds within a realist understanding of deterrence. While it is beneficial to secure one's security through nuclear weapons ownership, it is economically better for South Africa to be underneath the US NU. By gaining the help and favour of the United States through the long process of ending apartheid and domestic political change,

President de Klerk was able to secure his country's standing internationally and, therefore, no longer needed the help of nuclear weapons to act as a deterrent on a global scale[159]. Therefore, Hypothesis H1 has been supported. Yet when it comes to Hypothesis 2, only H2b applies, seeing as the sanctions were applied when South Africa was still non-democratic. The first sanction applied was unilateral in nature directly from the US as the main source of sanctions that ended up failing. The second set of sanctions was not implemented until later on as the Cold War was already in its final years, and both the United States and the Soviet Union started to apply pressure for South Africa to disarm and comply with the signed and ratified NPT.

Figure 11: Relationship of Sanctions and Democratic Status in South Africa 1970-2019



DPRK

When it comes to sanction compliance in the case of North Korea, it seems very straightforward. Simply put, none of the sanctions have worked, no matter whether the United States of America has applied sanctions or an international body like the United Nations Security Council or the European Nuclear Powers combined applied sanctions towards North Korea. Neither unilateral nor multilateral sanctions

[159] Liberman, 'The Rise and Fall of the South African Bomb'. 48.

have worked. In the last several years, nuclear tests have dramatically increased, and sanctions seem to be the last thing that will work. Since the inauguration of Donald Trump as President of the United States, there has been a clear escalation of diplomatic relations between North Korea and the United States of America surrounding the nuclear weapon debate.

In 2018 it looked as if the world was heading towards a conflict with the DPRK that threatened to drag in the People's Republic of China. Heated words were exchanged on both sides, and many diplomatic meetings and discussions were held on both sides surrounding North Korea's nuclear weapon program and the potential disarmament of its program. Pyongyang signalled that it is not willing to comply, and it has absolutely no interest in disarmament at all.

North Korea does not need to use nuclear weapons as a deterrent factor internally as it has a very strong propaganda regime set up, and the North Korean government has an oppressive hold on its citizens. It faces very little internal threats, and its regime is securely in power. The only threats it faces are from external actors. The main motivation for North Korea in building its nuclear weapons program must be an external motivator, most likely directed at the United States being a primary aggressor towards its state and state security. Despite many sanctions being threatened and applied by both the United States and mandated by the United Nations Security Council, which impacts both the political and economic sphere, North Korea does not need to bend to the sanctions' will. This suggests that North Korea has a very strong alliance with, most likely, China and Russia.

Mark Haichin argues that the low cost of building and possessing nuclear weapons as a deterrent and foreign security tool is a very effective and desired motivation for the DPRK. Pursuing and acquiring a nuclear weapons program is much more cost-effective for the state than updating its outdated military material and feeding its starving soldiers. Despite the international sanctions that have been implemented by the international community against North Korea, its people and leader are fully invested in its nuclear weapon program, especially once Kim Jong-Il implemented the Songun, military-first policy in 1999[160]. This way of thinking follows very much alongside realist thinking in that security of the state is of the highest order and that, as Waltz argues, nuclear weapons are the perfect deterrent in order to achieve this. This is especially important as North Korea has been in hostile conflicts with its neighbour South Korea and the United States throughout the majority of the 20th and 21st century. Despite this, it has had long-time allies in both China and the former Soviet Union, making both economic and political, unilateral and multilateral sanctions more bearable[161]. It seems to be that the long-standing nationalist foreign policy of North Korea has helped them rather than

[160] Mark Haichin, 'Pragmatic, Not Mad: The Rationality of North Korea's Nuclear Weapons Program', *Journal of Military and Strategic Studies* 18, no. 1 (2017): 1–24. 6-10. ; Jonathon D. Pollack. *No Exit: North Korea, Nuclear Weapons, and International Security*. London:International Institute for Strategic Studies, 2011.
[161] Haichin. 11.

hindered the state, despite the weak economy, widespread famine, and disregard for human and civil rights of its population[162].

The ineffectiveness of sanctions can be seen when looking at the timeline and the relationship between the DPRK's nuclear tests and US's and UNSC's corresponding sanctions that almost always follow either directly before or after each test. Figure 12 depicts each major UNSC implemented sanction. The purple vertical lines are the individual sanctions, and the black line is the start of the nuclear weapons program in relation to the democratic status. As the graph clearly shows, sanctions had no impact on the regime-type in North Korea. The sanctions that are represented are those from 1985 when North Korea signed the NPT, the nuclear crisis in 1994, as well as the UNSC efforts from 2003, 2005, and 2009. It is important to note that the DPRK's first nuclear test happened in 2006. Since Kim Jong-Un's time as dictator in 2011, there has been a significant increase in nuclear tests.

Noland argues in his article that the vagueness of the language surrounding the implementation of sanctions targeting economic and military trade is part of the reason why sanctions seem to have little impact on North Korea at all. He suggests that the regime calculated that the benefit of having nuclear weapons simply outweighs the cost of being heavily sanctioned. However, it is still unclear how long North Korea will find this strategy sustainable in the long-term.[163]

Similarly, Bo Kwon argues that the effectiveness of sanctions hinges upon the resolution of the country being sanctioned most of the time. This would explain the non-impact that sanctions are having on Kim Jong Un's regime. He is unwilling to stray from his path towards nuclear proliferation, and due to him being the sole decision-maker at the top, this is easy to achieve in a dictatorship, unlike the state in South Africa, which, while non-democratic, faced a lot more internal debate from different corners within the government when it came to their plan of nuclear proliferation. [164]

Rather, Haichin argues that regime-type has an impact on sanctions instead. Due to the fact that there is no room for dissonance to grow within the North Korean population, the government can use the implementation of sanctions against their implementors as a propaganda tool to show its superiority against the West[165]. This is a unique point of view, yet the logic is compelling. However, North Korea is not the first government to demand and execute complete control over its citizens. Stalin's government used similar tactics in the Soviet Union as

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[162] Ju-min Park and James Pearson, 'North Korea Overcomes Poverty, Sanctions with Cut-Price Nukes', *Reuters*, 11 January 2016, https://www.reuters.com/article/us-northkorea-nuclear-money-idUSKCN0UP1G820160111.

[163] Noland, 'The (Non-) Impact of UN Sanctions on North Korea'.

[164] Kwon, 'The Conditions for Sanctions Success: A Comparison of the Iranian and North Korean Cases'.

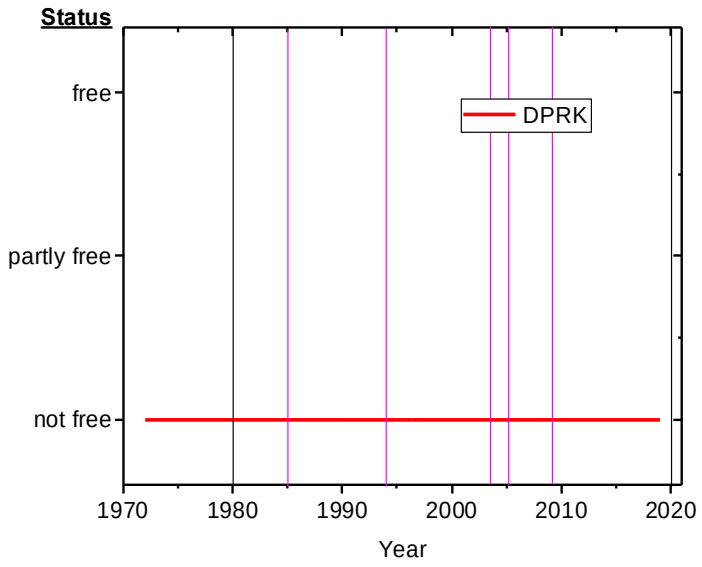
[165] Haichin, 'Pragmatic, Not Mad: The Rationality of North Korea's Nuclear Weapons Program'.16-18.

well as the German Democratic Republic's (GDR) government through the office of the Ministry State Security (Stasi).

While the DPRK has been more willing to come to the negotiating table in recent years when it comes to discussing the lifting of different sanctions and disarming their nuclear weapons program, there is absolutely no success rate in adhering to promises. When a state consistently breaks these seemingly successful negotiations, it questions whether or not they wanted to negotiate in the first place. Indeed, was it simply humouring the opponent to have them drop the sanctions against North Korea?

Therefore, in terms of the hypothesis for this thesis, the DPRK seems to support Hypothesis 2a in that a country is unlikely to comply with sanctions when it is non-democratic.

Figure 12: Relationship of Sanctions and Democratic Status in DPRK 1970-2019



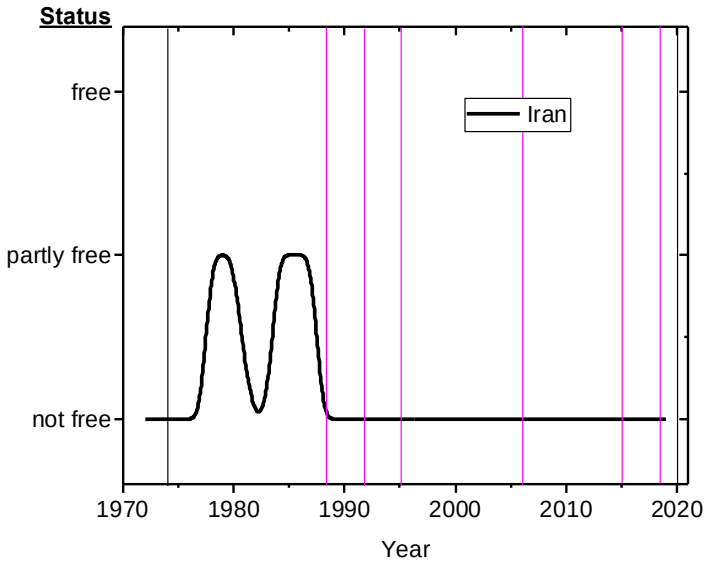
Iran

In recent years, the most well-known nuclear sanction package is the JCPOA, short for Joint Comprehensive Plan of Action. Iran was one of the earlier countries to not only sign but also ratify the NPT in 1970. Yet Iran has a long history of sanction compliance and sanction defiance when it comes to imposed sanctions and sanction compliance regarding their pursuit of nuclear weapons. Since the program was started in 1974 under the last Shah's leadership, Iran has denied that it even has a program, yet experts have been quite firm in their belief

that a nuclear weapon program not only exists but is most likely functioning as well.

Figure 13 depicts the relationship between regime-type and sanctions. The black line represents the determined start of Iran's nuclear weapon program in 1974, and the purple lines are the sanctions that have been implemented since then, most of them being predominantly US-led. Lines are drawn for sanctions from 1992, 1995, 2006, 2015, 2018, and 2019. One of them was the JCPOA, a series of sanctions that have been enforced from 2006 up until 2015 with an increase in severity that started when President Obama came into power. Sanction data has been accumulated and accrued through source material from archival documents, UNSC Resolutions, and the work of Miller. Once again, Figure 13 shows very clearly that despite the implementation of sanctions, both unilateral and multilateral, this did not affect the regime-type as has also been demonstrated in the cases of South Africa and North Korea.

Figure 13: Relationship of Sanctions and Democratic Status in Iran 1970-2019



The first sanction towards Iran was implemented in 1992, the second one in 1995. Interestingly, it brackets right about the nuclear crisis that happened between the United States and North Korea in 1993-1994. When it was highly likely that a nuclear test would happen from the North Korean side, interestingly, this also coincides with the 1990-91 Persian Gulf war between a broad-based coalition led by the United States and Iraq. This conflict was a major concern to Iran due to Iran's geographical location being very close and having just come out of their war between

Iran and Iraq themselves in the 1980s. More recently, the United States identified Iran and Iraq as part of the proverbial "axis of evil" which cooled diplomatic relations even further. The United States started to implement sanctions on Iran as it was beginning to suspect that uranium enrichment was happening to build nuclear weapons rather than produce peaceful nuclear energy. Between 1975 and 1989, Iran had three political heads of states, each following the same line of thinking towards developing a nuclear weapons program. The Shah initially worked towards developing a nuclear weapons program in the 70s to build a strategically safe environment specifically because Iran has been historically at war with Iraq. In his book, Miller also notes that the Shah wanted to pursue nuclear technology in order as well for peaceful uses, mainly energy. In addition to its oil revenues, this would allow Iran to be included in cooperation agreements between the United States and European powers, such as West Germany. He also notes that the United States tried to influence Iran towards a more peaceful nuclear energy program through general persuasion and diplomatic tools. When that failed, the United States implemented its first sanction in 1992.

Miller theorizes that sanction compliance is directly correlated to the level of dependency that the country under sanction (in this case, Iran) has on the country that is sanctioning (again, in this case, the United States). In this case, if Iran is highly dependent on the United States, it is less likely to nuclearize when it is not dependent at all. Miller showcases this very nicely in his book by tracking the percentage of US trade as percent of Iran's GDP[166]. This percentage is clearly on the rise between 1968 to 1978, which overlaps with the time period when the last Shah was in power. This thesis makes a similar argument in that it hypothesizes that 1) sanctioning a nuclear weapon proliferating country will be effective if the country under sanction is positively engaged with the sanctioning country, and 2) that sanctioning a nuclear weapon proliferating country will be effective if the country under sanction is a democracy.

In this case, H2b rings true for Iran as it is a non-democratic country throughout its pursuit of nuclear weapons; therefore, sanctioning Iran will be ineffective as the country under sanction is non-democratic. This also stands with the realist theoretical framework that this thesis established earlier that countries are more likely to nuclearize to strengthen and enhance their national security rather than depending on an allies' nuclear umbrella.

Miller notes in his book one very interesting fact that under the Shah and Ayatollah Khomeini, Iran most likely developed or pursued nuclear weapons in order to keep up with the security dilemma that they now faced toward Iraq and their pursuit of unconventional weapons of mass destruction including as well, biological, and chemical weapons. However, since 2003 when the United States achieved a regime change in Iraq, Iran's ambitions may have changed as part of the 9/11 wars. Miller argues that since 2003 and the United States' proclamation that Iran is part of

[166] Miller, 'The Iranian Nuclear Program (1974–2015)'. Table 9.1 pg 219.

the axis of evil with Iraq and North Korea, one of the drivers for Iran's nuclear program is the threat that comes from the United States and the American nuclear weapon program.

It is important to note that up until 2003, Iran pursued and developed its nuclear program and its nuclear weapons program in secret. As a watchdog of sorts, the IAEA did not confirm that enrichment facilities for nuclear technology existed in Iran until 2003. Even then, the IAEA could not confirm if the enrichment facilities were used for peaceful nuclear energy or the building of uranium enriched warheads. After the confirmation of the enrichment facilities, the United States implemented another round of sanctions, which were mainly political and economical in size such as large tariffs on import goods like oil, but also encouraging other American allies such as members of the EU and the UN to also sanction Iran in order to persuade them away from developing nuclear weapons.

Despite the IAEA having access to the enrichment facilities in Iran and being able to assess the development of the enriching of uranium, many experts suspect and speculate that Iran is not showing its true nuclear face to the world and that it has secret enrichment facilities that the IAEA does not have access to.

Throughout the 2000s and 2010s, the UNSC has often spoken out and written different resolutions against the development of nuclear weapon states such as Iran and North Korea. Often, the UNSC demanded a halt to existing and developing nuclear weapon programs yet, one of the major issues with the UNSC resolutions is that the UN lacks an enforcement mechanism. It is up to the individual member nations to implement and enforce these sanctions. Whereas earlier in the 1990s, and early 2000s, the United States was the major contributor and the clear leader in pursuing and implementing sanctions against the developing Iranian nuclear program, they were often unilateral. The biggest multilateral sanction package put in place is colloquially known as the "Iran deal", or more formally as the Joint Comprehension Plan of Action (JCPOA), which was ratified and implemented in 2015 between Iran and the P5+1[167]. The JCPOA limits the amount of uranium that is being enriched and mandates that Iran complies about providing information on their past nuclear behaviour, access to production facilities and mines, and the dismantling and restrictions on ballistic missiles. It lays out what should be achieved within the next eight to ten years by parties such as the UN, EU, and the US. What is missing is sanctions imposed by Russia and China or even a commitment from both Russia and China to help keep Iran on track to fulfill the JCPOA. Because enforcement is left to countries themselves to implement, any defection – or indeed lack of agreement – around UNSC resolutions render them little more than political statements.

[167] Kelsey Davenport, 'The Joint Comprehensive Plan of Action (JCPOA) at a Glance | Arms Control Association', think tank, Arms Control Association, May 2018, https://www.armscontrol.org/factsheets/JCPOA-at-a-glance.

The BBC[168] has put together a useful timeline that follows every single sanction that has been implemented in Iran. This timeline is very easy to follow, and despite multiple sanctions being applied to Iran, it shows that sanctions have little to no effect on their nuclear weapons program and the enrichment facilities. This begs the question, why? Why is it that some sanctions lack the enforcement mechanism, or does Iran have a powerful enough ally that it can safely ignore the sanctions and go ahead with its enrichment plans? While the JCPOA had a clear effect on the Iranian economy and crippled most of their trade and alliances[169] if it did not stop their nuclear weapon program, the decision taken by President Trump to pull out of the Iran deal has undone all the progress that President Obama achieved in brokering the Iran deal in the first place.

Since the implementation of the JCPOA, Iran has complied with all the sections that were laid out within the deal. Since President Trump threatened to pull out of the deal and then actually did in May of 2018, Iran has countered by saying they will stop complying with the deal as well. Interestingly, even though the JCPOA is a multilateral deal, having sections with US-led, UN-led, and EU-led sanctions, the threat of the lead negotiator pulling out of the deal has let Iran also take back its willingness to comply with it. Even though it was signed between all five permanent members of the UNSC (who are all NWS) and Germany, one of the biggest European trading countries, the loss of the US and Iran all but cripples the deal.

In South Africa, there was a clear motivation behind building a nuclear weapon program both for internal and external security factors. This clear motivation seems to be lacking in the case of Iran. The main motivation behind Iran's nuclear program seems to be at first glance to be purely based on external security threats. Specifically looking at other nuclear weapon programs in the area such as Israel and Pakistan being geographically close and the constant threat of Iraq. This motivation is a very realist way of thinking in that it is the best way to deter against an external threat by having nuclear weapons rather than hoping that one of the Allies will help defend you.

Another explanation is that the Iranian regime is not as stable as it seems to be. Iran is often described as a hypo-democratic country. It has many features of full democracy, yet it also has many features of being an authoritarian regime and having some tendencies towards a dictatorship. The election process is not very straightforward, and a very low percentage of the population is allowed to vote. Moreover, the electoral process itself is lacking transparency. As was explored further in the regime-type chapter, Iran has a long history of non-compliance towards

[168] 'Iran Profile - Timeline', *BBC News*, 6 January 2020, sec. Middle East, https://www.bbc.com/news/world-middle-east-14542438.
[169] 'Six Charts That Show How Hard US Sanctions Have Hit Iran', *BBC News*, 9 December 2019, sec. Middle East, https://www.bbc.com/news/world-middle-east-48119109.

sanctions, and this is not impacted by whether or not Iran has been on the democratic side or the non-democratic side of the spectrum.

Interestingly, despite changing leadership since the beginning of Iran's nuclear weapons program in 1974, there is a firm commitment towards the development of uranium enrichment facilities. However, not only for peaceful nuclear energy development and resources but specifically for the armament of missiles and defence purposes. The Western interventions in the region as part of the 9?11 Wars exacerbated this sentiment. This would have been a huge motivation for Iran to build up its nuclear weapons as a deterrent factor against the United States, especially as it had a very rocky relationship with the United States, seeing as they are the predominant leaders in imposing sanctions on Iran.

Despite Iran's rocky relationship with the United States, it does not explain that sometimes sanctions work and sometimes don't. Specifically, while some unilateral sanctions seem to have more of an impact than others, the same is true for multilateral sanctions. Maybe it has to do with the President of the United States who is in power and their relationship with Iran's leader, that they may seem more trustworthy as a head of state than others previously have done. It may also be worth looking into who else is involved in multilateral sanctions, the applications, and which factors of the economy or political sphere they restrict. In comparison with South Africa, Iran seems to sometimes comply with sanctions and others not. South Africa had external pressure applied to by the United States to discontinue its nuclear program, which eventually they did. However, the same strategy that worked in South Africa has failed with Iran. It has also failed in the case of North Korea. However, a differentiating variable between the DPRK and Iran is that North Korea simply refuses to comply with sanctions. Both unilateral and multilateral sanctions have consistently failed, whereas in Iran, they sometimes work and sometimes do not.

Therefore, when looking to assess whether hypothesis 2 is supported, in Iran's case, Hypothesis 2a is indeed supported. Iran does not consistently comply because it is non-democratic. This chapter has looked at sanction compliance and found that both North Korea, and Iran are deemed non-compliant when it comes to nuclear sanctions as they failed to comply with sanctions to an extent that sanctions are no longer necessary, and disarmament has not taken place. Nuclear sanctions, however, did prove to be effective in the case of South Africa from 1994 onwards.

	Regime-type	Network-Salience	Compliance with Sanctions
South Africa	Non-democratic (1975-1994), democratic (1995-2019)	US, Israel, USSR before 1970	Yes: 1994 onwards
Iran	Non-democratic (1925-2019)	USSR/Russia, US, China,	Yes, during 2010-2018, the end of JCPOA ended a willingness to comply with laid out terms Multilateral sanctions more successful than unilateral ones
North Korea	Non-democratic (1948-2019)	USSR/Russia, China, GDR	No

Table 1: Framework

Chapter 7 – Policy Implications and Conclusion

The first chapter outlined the background and emergence of a nuclear weapon within the international system. It established a common ground for the next several chapters and highlighted some of the fault lines within international treaties, specifically the NPT when it comes to non-complying states such as North Korea and Iran. Moreover, it has clearly shown why non-compliance of states such as North Korea and Iran is so problematic and why there is a push for disarmament and the many nuclear proliferation treaties that already exist.

Chapter 2 provided the main overview of the three main trends in the literature surrounding nuclear proliferation. The first theme – deterrence – and whether or not nuclear weapons and the potential use of them are enough of a deterrent factor for horizontal proliferation to take hold or not. The second theme is focused on the interplay between the rule of law and norms of use for nuclear weapons, within that this thesis looked at principles of realist theory, Tannenwald's nuclear taboo, and the use of the nuclear umbrella. Finally, a third theme is focused on the implementation of sanctions towards aspiring nuclear weapon states. The main gap that can be observed in the existing literature is the lack of direct comparison between newly developed and aspiring nuclear states such as South Africa, North Korea, or Iran. All three are states that developed nuclear weapon programs after the NPT was signed and had nuclear sanctions imposed on them with various degrees of success.

Chapter 3 laid out the realist argument that power and the balance of power is key to the inherent structure that exists within the international system. This is done effectively through different deterrence strategies, such as the use of the NU and MAD. Three main independent variables have been presented that need to be considered when looking at aspiring nuclear programs: regime-type, alliances, and sanction compliance. These three independent variables were then examined in the combination of realist theory for each of the three chosen cases of North Korea, Iran, and South Africa to test the hypotheses. Comparative Historical Analysis (CHA) was then employed to find the similarities between the three cases and examine each variable across all three cases.

Chapter 4 looked in-depth at the independent variable of democratic history and the status of a country and its potential impact on their aspiring nuclear weapon program. All three states have been established as non-democratic during the initial phase of their program's nuclear aspiration and implementation. One of the common motivations behind choosing a nuclear weapons arsenal was that having the nuclear missile is often seen as a key strategic defence weapon to secure the state's power both domestically and regionally and on the international stage. As Figure 11 illustrated, all three states were non-democratic when they started their nuclear weapon program. Therefore, this chapter has successfully supported hypothesis H2b, which states that sanctioning a nuclear weapon proliferating country will be ineffective if the country under sanction is non-democratic.

Chapter 5 argued that the independent variable of network-salience, specifically an alliance with the United States, proves to be of high value for all three case studies. For both South Africa and Iran, the higher they are dependent and closely aligned with the US, the better their state security and position on an international scale. From the beginning, North Korea has chosen to align itself closer to Russia and China rather than the United States. Geography most likely also had a play in this.

A thread that can be seen throughout all three case studies is that the Soviet Union played an integral part in helping develop and giving access to the right knowledge and technology in the pursuit of nuclear weapons. For South Africa, the USSR acted as a sounding board and as a way to engage scientists and build an alliance with Israel. For Iran, both the USSR and the Russian Federation supplied the regime with scientists and the knowledge on how to enrich and store uranium and give military aid when it comes to its war against Iran's neighbour Iraq in defying the United States of America. For North Korea, the alliance with the USSR and the Russian Federation not only helped pursue and develop a nuclear weapon program but also by having close economic and political ties, that help not only secure the DPRK's state interest on a domestic scale but much more important on a global scale against the USA.

Chapter 6 has laid out that sanction effectiveness is not clear cut in either they work or do not work. Overall, multilateral sanctions show a greater success rate in deterring the pursuit of nuclear weapons than unilateral sanctions. However, there seems to be a direct correlation between sanction effectiveness and regime-type and alliances that a given state has.

As Table 1 clearly shows, this thesis has not proven anything we did not suspect before. This is that non-democratic states are less likely to follow sanctions that have been imposed upon them by unfriendly states.
This thesis has laid out and proven each of its hypotheses for all three case studies.

H1. Sanctioning a nuclear weapon proliferating country will be effective if the country under sanction is positively engaged with the sanctioning country;

H2a. Sanctioning a nuclear weapon proliferating country will be effective if the country under sanction is a democracy, and

H2b. Sanctioning a nuclear weapon proliferating country will be ineffective if the country under sanction is non-democratic.

Throughout this thesis, it has been clear that multilateral sanctions are more effective than unilateral sanctions, significantly when both the sanctioned country and the enforcing countries benefit from the deal. If one of the parties loses that benefit, the sanction will quickly fail, as shown by the JCPOA. This thesis has

also shown that while broad and multilateral sanctions are effective, they are not infallible, and as a diplomatic tool, it is incredibly hard to enforce them on an international scale. Sanctions are often seen as the best diplomatic tool, yet they only work if both sides cooperate.

	Regime-type	Network-Salience	Compliance with Sanctions
South Africa	Non-democratic (1975-1994), democratic (1995-2019)	US, Israel, USSR before 1970	Yes: 1994 onwards
Iran	Non-democratic (1925-2019)	USSR/Russia, US, China,	Yes, during 2010-2018, the end of JCPOA ended a willingness to comply with laid out terms Multilateral sanctions more successful than unilateral ones
North Korea	Non-democratic (1948-2019)	USSR/Russia, China, GDR	No

Table 1: Framework

This thesis has effectively argued and supported that the independent variables of regime-type, network-salience, and nuclear sanction compliance affect the outcome of whether or not a country proliferates or not. While this thesis focused solely on the impact of nuclear sanctions, it is simply one aspect of a sanction package and often economic and political sanctions work in tandem with nuclear sanctions. This thesis has also not found anything that was not intuitive from the outset of the study, yet through a rigorous theoretically grounded approach it has proven that what was intuitive from the outset, has held against the chosen independent variables. This validates what was already suspected before. It also suggests that this framework could be used to both predict whether or not other states will proliferate as well as looking back to prove why states chose not to proliferate based on the chosen variables.

Further research can easily be done by looking if the type of sanction has a significant impact when applied alone versus in tandem with other sanctions. As well as that sanctions are just one tool that can used to explain this phenomenon. Another variable that could be looked at is the leaders that are in power and the

affect they have or if different agencies could have an impact on the proliferation and non-proliferation of an aspiring nuclear weapons state.

Policy Implications

There are a few policy implications that come to mind when looking ahead into nuclear weapon programs' future.

Firstly, major NWS such as the United States and Russia should adopt a No-First-Use Policy. Currently, both states operate on a first-strike policy, which allows them to use nuclear weapons as a tool for deterrence in a very aggressive manner. A no-First-Use policy would ensure that nuclear weapons are only used when an attack justifies the scale that a nuclear attack would bring with it.

Secondly, while sanctions have been the primary tool of inhibiting aspiring nuclear programs, this has not stopped countries from building them. Aspiring nuclear countries simply say that the cost of building a nuclear weapon program and the impact of sanctions outweigh the security benefits that a nuclear arsenal gives. In their 2020 Yearbook, SIPRI notes that even though nuclear weapon programs are costly, most of the 9 NWS are in the process of modernizing their arsenal and still acts as an essential pillar of their defence and security policies.[170] Therefore instead of implementing sanctions that prohibit certain economic and political goods, it would be better to restrict access to the materials needed to build nuclear weapons. This would be more effective than a blanket embargo on economic trade with a proliferating country.

One of the major issues is that nuclear weapons remain the most destructive weapons states currently possess. During the Cold War, there was a clear bipolarity within the international system, making it easy to deal with upcoming proliferating states. While nuclear weapons lost their status during the 1990s and early 2000s, there has been a distinct upswing and modernization of nuclear arsenal in the last ten years. While all P5 members are also NWS, it is hard for them to agree on a mutually beneficial course of action against upcoming proliferating countries. More research needs to be done on how future policymakers can impact and deal with the shifting policies on nuclear proliferation on both a domestic and international level. For now, the best way forward is to keep honouring the implemented treaties and strive to enforce sanctions while exploring other diplomatic tools. It is clear that nuclear weapons are here to stay, and complete disarmament is not an option but a mere wish.

[170] 'Nuclear Weapon Modernization Continues but the Outlook for Arms Control Is Bleak: New SIPRI Yearbook out Now | SIPRI', think tank, Stockholm International Peace Research Institute, 15 June 2020, https://www.sipri.org/media/press-release/2020/nuclear-weapon-modernization-continues-outlook-arms-control-bleak-new-sipri-yearbook-out-now.

Bibliography

Freedom House. 'About Us'. Accessed 19 April 2020. https://freedomhouse.org/about-us.

Albert, Eleanor. 'Understanding the China-North Korea Relationship'. Council on Foreign Relations, 25 June 2019. https://www.cfr.org/backgrounder/china-north-korea-relationship.

Ansari, Ali M. *Confronting Iran: The Failure of American Foreign Policy and the Roots of Mistrust*. London: C Hurst & Co Publishers Ltd, 2006.

BBC. 'North Korea's Missile and Nuclear Programme'. *BBC News*, 12 October 2020, sec. Asia. https://www.bbc.com/news/world-asia-41174689.

Bechtol, Bruce E. Jr. *North Korea and Regional Security in the Kim Jong-Un Era: A New International Security Dilemma*. Palgrave Macmillan UK, 2014. https://doi.org/10.1057/9781137400079.

Bidgood, Sarah. 'The 1977 South Africa Nuclear Crisis'. *Adelphi Series* 56, no. 464–465 (1 November 2016): 55–78. https://doi.org/10.1080/19445571.2016.1494248.

Choi, Jinwook. 'A GAME CHANGER: NORTH KOREA'S THIRD NUCLEAR TEST AND NORTHEAST ASIAN SECURITY'. *The Journal of East Asian Affairs* 27, no. 1 (2013): 99–125.

Christopher, Warren, 1925-2011. 'Letter, Warren Christopher to William Hyland, "Response to Soviet Message on South Africa"', 10 August 1977. National Archives, Record Group 59, Department of State Records, Records of Warren Christopher, box 16, Memos to White House 1977. Obtained and contributed by William Burr for NPIHP Research Update No. 25. History and Public Policy Program Digital Archive. https://digitalarchive.wilsoncenter.org/document/119249.

Cooke, Steve, and Andrew Futter. 'Democracy versus Deterrence: Nuclear Weapons and Political Integrity': *Politics*, 5 October 2017. https://doi.org/10.1177/0263395717733978.

Davenport, Kelsey. 'The Joint Comprehensive Plan of Action (JCPOA) at a Glance | Arms Control Association'. Think tank. Arms Control Association, May 2018. https://www.armscontrol.org/factsheets/JCPOA-at-a-glance.

Defense Intelligence Assessment, US Defense Intelligence Agency, DST-1540Z-509-92-SI, 'Nuclear Proliferation Data Sheets' History and Public Policy Program Digital Archive, 1992. https://digitalarchive.wilsoncenter.org/document/119222.

'Democracy Index 2019'. Accessed 17 February 2020. http://www.eiu.com/Handlers/WhitepaperHandler.ashx?fi=Democracy-Index-2019.pdf&mode=wp&campaignid=democracyindex2019.

Drezner, Daniel W. 'An Analytically Eclectic Approach to Sanctions and Nonproliferation'. In *Sanctions, Statecraft, and Nuclear Proliferation*, 154–73. New York: Cambridge University Press, 2012.

‘Executive Authority (President, Cabinet and Deputy Ministers) | South African Government’. Accessed 24 April 2020. https://www.gov.za/about-government/government-system/executive-authority-president-cabinet-and-deputy-ministers.

Findlay, Trevor. ‘IAEA Noncompliance Reporting And the Iran Case’. *Arms Control Today* 46, no. 1 (2016): 30–35.

Freedman, Lawrence. ‘FT.Com Site: Nuclear Deterrence May Still Have Role’. *FT.Com*, 2006, 1-.

Freedom House. ‘Freedom in the World’. Accessed 19 April 2020. https://freedomhouse.org/report/freedom-world.

Gartzke, Erik, and Matthew Kroenig. ‘Nuclear Posture, Nonproliferation Policy, and the Spread of Nuclear Weapons’. *Journal of Conflict REsolution* 58, no. 3 (6 December 2013): 395–401. https://doi.org/10.1177/0022002713509056.

George, Alexander L., and Andrew Bennett. *Case Studies and Theory Development in the Social Sciences | The MIT Press*. Belfer Center Studies in International Security: MIT Press, 2005. https://mitpress.mit.edu/books/case-studies-and-theory-development-social-sciences.

Haichin, Mark. ‘Pragmatic, Not Mad: The Rationality of North Korea’s Nuclear Weapons Program’. *Journal of Military and Strategic Studies* 18, no. 1 (2017): 1–24.

Harrington, Anne, and Jeffrey W Knopf. *Behavioral Economics and Nuclear Weapons*, 2019.

Hecker, Siegfried S. ‘What We Really Know About North Korea’s Nuclear Weapons’, 1 May 2020. https://www.foreignaffairs.com/articles/north-korea/2017-12-04/what-we-really-know-about-north-koreas-nuclear-weapons.

HELFSTEIN, SCOTT. ‘Friends Don’t Let Friends Proliferate’. *Political Science Quarterly* 125, no. 2 (2010): 281–307.

‘IAEA Safeguards: Stemming the Spread of Nuclear Weapons’. IAEA Bulletin 34. International Atomic Agency, 2001.

Iklé, Fred Charles. ‘Can Nuclear Deterrence Last Out the Century?’, 28 January 2009. https://www.foreignaffairs.com/articles/russian-federation/1973-01-01/can-nuclear-deterrence-last-out-century.

International Atomic Energy Agency. ‘IAEA and DPRK: Chronology of Key Events’. Text. International Atomic Energy Agency. IAEA, 25 July 2014. https://www.iaea.org/newscenter/focus/dprk/chronology-of-key-events.

‘Iran Nuclear Deal: Key Details’. *BBC News*, 11 June 2019, sec. Middle East. https://www.bbc.com/news/world-middle-east-33521655.

‘Iran Profile - Timeline’. *BBC News*, 6 January 2020, sec. Middle East. https://www.bbc.com/news/world-middle-east-14542438.

Jahanpour, Farhang. ‘Iran’s Nuclear Programme and Regional Security’. *The RUSI Journal* 152, no. 3 (1 June 2007): 30–35. https://doi.org/10.1080/03071840701470335.

JERVIS, ROBERT. ‘Hans Morgenthau, Realism, and the Scientific Study of International Politics’. *Social Research* 61, no. 4 (1994): 853–76.

Keller, Bill. ‘South Africa Says It Built 6 Atom Bombs’. *The New York Times*, 25 March 1993, sec. World. https://www.nytimes.com/1993/03/25/world/south-africa-says-it-built-6-atom-bombs.html.

Keneally, Meghan. ‘From “fire and Fury” to “Rocket Man,” the Various Barbs Traded between Trump and Kim Jong Un’. *ABC News*, 12 June 2018. https://abcnews.go.com/International/fire-fury-rocket-man-barbs-traded-trump-kim/story?id=53634996.

Kerr, Paul K. ‘Iran’s Nuclear Program: Status’. CRS Report for Congress. Congressional Research Service, 11 August 2009.

Khan, A. Q. (Abdul Qadeer), 1936-. ‘Correspondence between the MIC and the Petro Chemical Group Regarding a Letter from A.Q. Khan Offering Assistance in Developing Iraq’s Nuclear Weapons Program’, 6 October 1990. Obtained and translated by the Conflict Records Research Center, National Defense University, SH-MICN-D-000-741. History and Public Policy Program Digital Archive. https://digitalarchive.wilsoncenter.org/document/116989.

Kwon, Bo Ram. ‘The Conditions for Sanctions Success: A Comparison of the Iranian and North Korean Cases’. *Korean Journal of Defense Analysis* 28 (1 March 2016): 139–61.

Landler, Mark. ‘Trump Abandons Iran Nuclear Deal He Long Scorned’. *The New York Times*, 8 May 2018, sec. World. https://www.nytimes.com/2018/05/08/world/middleeast/trump-iran-nuclear-deal.html.

Laufer, Michael. ‘A. Q. Khan Nuclear Chronology’. Carnegie Endowment for International Peace, 7 September 2005. https://carnegieendowment.org/2005/09/07/a.-q.-khan-nuclear-chronology-pub-17420.

Lee, Jung-Hyun. ‘The Status of Iran’s Nuclear Program’. In *Assessment of the Nuclear Programs of Iran and North Korea*, edited by Jungmin Kang, 99–111. Springer Netherlands, 2013. https://doi.org/10.1007/978-94-007-6019-6.

Liberman, Peter. ‘The Rise and Fall of the South African Bomb’. *International Security* 26, no. 2 (2001): 45–86.

Lindee, M. Susan. *Suffering Made Real: American Science and the Survivors at Hiroshima, Lindee*. University of Chicago Press Books, 1997. https://press.uchicago.edu/ucp/books/book/chicago/S/bo3634560.html.

MacCalman, Molly. ‘A.Q. Khan Nuclear Smuggling Network’. *Journal of Strategic Security* 9, no. 1 (2016): 104–18.
Masiza, Zondi. ‘A Chronology of South Africa’s Nuclear Program’. *The Nonproliferation Review* 1, no. 1 (September 1993): 34–53. https://doi.org/10.1080/10736709308436523.
Mbanje, Bowden, and Darlington N. Maluku. ‘The Effectiveness of the Nuclear Non-Proliferation Treaty (NPT) in Curbing Iran’s Nuclear Programme: A Critical Analysis’. *Journal of Law and Social Sciences* 1, no. 1 (January 2012): 14–19.
Miller, Nicholas L. ‘The Iranian Nuclear Program (1974–2015)’. In *Stopping the Bomb*, 217–43. The Sources and Effectiveness of US Nonproliferation Policy. Cornell University Press, 2018. https://www.jstor.org/stable/10.7591/j.ctt1w1vkd5.14.
———. ‘The Secret Success of Nonproliferation Sanctions’. *International Organization* 68, no. 4 (2014): 913–44.
———. ‘Theorizing the Sources and Effectiveness of US Nonproliferation Policy’. In *Stopping the Bomb*, 10–39. The Sources and Effectiveness of US Nonproliferation Policy. Cornell University Press, 2018. http://www.jstor.org/stable/10.7591/j.ctt1w1vkd5.6.
Moxley, Charles J Jr., John Burroughs, and Jonathan Granoff. ‘Nuclear Weapons and Compliance with International Humanitarian Law and the Nuclear Non-Proliferation Treaty’. *Fordham International Law Journal* 34, no. 4 (2011): 598-694.
Msimang, Sisonke. ‘All Is Not Forgiven’, 15 August 2019. https://www.foreignaffairs.com/articles/south-africa/2017-12-12/all-not-forgiven.
‘N Korea Holds Parliamentary Poll’, 8 March 2009. http://news.bbc.co.uk/2/hi/asia-pacific/7930775.stm.
NATO. ‘The North Atlantic Treaty’. NATO, 4 April 1949. http://www.nato.int/cps/en/natohq/official_texts_17120.htm.
Noland, Marcus. ‘The (Non-) Impact of UN Sanctions on North Korea’. *Asia Policy*, no. 7 (2009): 61–88.
Norris, Robert S., and Hans M. Kristensen. ‘Global Nuclear Weapons Inventories, 1945–2010’. *Bulletin of the Atomic Scientists* 66, no. 4 (1 July 2010): 77–83. https://doi.org/10.2968/066004008.
Stockholm International Peace Research Institute. ‘Nuclear Weapon Modernization Continues but the Outlook for Arms Control Is Bleak: New SIPRI Yearbook out Now | SIPRI’. Think tank, 15 June 2020. https://www.sipri.org/media/press-release/2020/nuclear-weapon-modernization-continues-outlook-arms-control-bleak-new-sipri-yearbook-out-now.
‘Nuclear Weapons under International Law: An Overview’. Geneva Academy, October 2014. Nuclear Weapons under International Law: An Overview

(October 2014) http://www.geneva-academy.ch/docs/projets/ILPI%20Nuclear%20Weapons%20Under%20International%20Law_An%20Overview.pdf. 6-8.

Park, Ju-min, and James Pearson. 'North Korea Overcomes Poverty, Sanctions with Cut-Price Nukes'. *Reuters*, 11 January 2016. https://www.reuters.com/article/us-northkorea-nuclear-money-idUSKCN0UP1G820160111.

Paul, Michael, and Elisabeth Suh. 'Nordkoreas Atomraketen. Handlungsoptionen der USA und ihrer Verbündeten'. *Stiftung Wissenschaft und Politik, Deutsches Institut für Internationale Politik und Sicherheit* SWP-Aktuell 58 (2017): 8.

Peres, Shimon, 1923-, and P. W. (Pieter Willem) Botha. 'Israel-South Africa Agreement (ISSA)', 3 April 1975. South African History Archive, The Freedom of Information Programme Collection, Nuclear Weapons History, Department of Defence. Obtained and contributed by Anna-Mart van Wyk, Monash South Africa. History and Public Policy Program Digital Archive. https://digitalarchive.wilsoncenter.org/document/114147.

policy, Carol Morello closeCarol MorelloNational reporter focusing on foreign, and State DepartmentEmailEmailBioBioFollowFollow. 'Pompeo Seeks Support from Allies to Monitor Persian Gulf Region amid Tensions with Iran'. Washington Post. Accessed 24 November 2019. https://www.washingtonpost.com/world/national-security/pompeo-seeks-support-from-allies-to-monitor-persian-gulf-amid-tensions-with-iran/2019/06/24/cfa953e0-969e-11e9-8d0a-5edd7e2025b1_story.html.

'Republic of South Africa Constitution Act 110 of 1983 | South African Government'. Accessed 25 April 2020. https://www.gov.za/documents/constitution/republic-south-africa-constitution-act-110-1983.

Reynolds, Celia L, and Wilfred T. Wan. 'Empirical Trends in Sanctions and Positive Inducements in Nonproliferation'. In *Sanctions, Statecraft, and Nuclear Proliferation*, 56–124. New York: Cambridge University Press, 2012.

Roehrig, Terence. *Japan, South Korea, and the United States Nuclear Umbrella*. Columbia University Press, 2017. https://doi.org/10.7312/roeh15798.

Safi, Justin, and Michael McCurry. 'North Korea Claims Successful Hydrogen Bomb Test in "Self-Defence against US"'. *The Guardian*, 6 January 2016, sec. World news. https://www.theguardian.com/world/2016/jan/06/north-korean-nuclear-test-suspected-as-artificial-earthquake-detected.

Sagan, Scott D. 'The Korean Missile Crisis: Why Deterrence Is Still the Best Option'. *Foreign Affairs*, November 2017.

Sagan, Scott D., Scott Sagan, and Kenneth N. Waltz. 'Nuclear Iran, A: Promoting Stability or Courting Disaster?' *Journal of International Affairs* 60 (1 April 2007): 135–50.

Sagan, Scott, and Kenneth N. Waltz. *The Spread of Nuclear Weapons: An Enduring Debate*. 3rd ed. W.W. Norton & Company, 2012. https://politicalscience.stanford.edu/publications/spread-nuclear-weapons-debate-renewed-second-edition.

Sheldon, Jill. 'Nuclear Weapons and the Laws of War: Does Customary International Law Prohibit the Use of Nuclear Weapons in All Circumstances?' *Fordham International Law Journal* 20, no. 1 (1 January 1996): 181.

'Six Charts That Show How Hard US Sanctions Have Hit Iran'. *BBC News*, 9 December 2019, sec. Middle East. https://www.bbc.com/news/world-middle-east-48119109.

Skocpol, Theda. *States and Social Revolutions: A Comparative Analysis of France, Russia and China*. Cambridge: Cambridge University Press, 1979. https://doi.org/10.1017/CBO9780511815805.

Solingen, Etel. 'Ten Dilemmas in Nonproliferation Statecraft'. In *Sanctions, Statecraft, and Nuclear Proliferation*, 297–352. New York: Cambridge University Press, 2012.

'South Africa | Countries | NTI'. Accessed 25 April 2020. https://www.nti.org/learn/countries/south-africa/nuclear/.

'South Africa Profile'. *BBC News*, 4 April 2018, sec. Africa. https://www.bbc.com/news/world-africa-14094918.

'Structure and Functions of the South African Government | South African Government'. Accessed 24 April 2020. https://www.gov.za/node/537988.

Tannenwald, Nina. 'Process Tracing and Security Studies'. *Security Studies* 24, no. 2 (3 April 2015): 219–27. https://doi.org/10.1080/09636412.2015.1036614.

———. *The Nuclear Taboo: The United States and the Non-Use of Nuclear Weapons since 1945*. Vol. 87. Cambridge Studies in International Relations. Cambridge: Cambridge University Press, 2007.

———. 'The Nuclear Taboo: The United States and the Normative Basis of Nuclear Non-Use'. *International Organization* 53, no. 3 (1999): 433–68.

———. 'The Vanishing Nuclear Taboo?', 29 January 2019. https://www.foreignaffairs.com/articles/world/2018-10-15/vanishing-nuclear-taboo.

Council on Foreign Relations. 'The Global Nuclear Nonproliferation Regime'. Accessed 10 November 2020. https://www.cfr.org/report/global-nuclear-nonproliferation-regime.

Council of Foreign Relations. 'The Islamic Republic's Power Centers | Council on Foreign Relations', 25 February 2020. https://www.cfr.org/article/islamic-republics-power-centers.

Vorster, B. J. (Balthazar Johannes), 1915-1983. 'South African Department of Foreign Affairs, Announcement by South African Prime Minister Vorster', 20 July 1970. South African Foreign Affairs Archives, Brand Fourie,

Atomic Energy, File 2/5/2/1, Vol 1, Vol 2. Obtained and contributed by Anna-Mart van Wyk, Monash South Africa. History and Public Policy Program Digital Archive. https://digitalarchive.wilsoncenter.org/document/114143.

Weber, Steve. 'Realism, Detente, and Nuclear Weapons'. *International Organization* 44, no. 1 (1990): 55–82.

Treaties:

"Comprehensive Nuclear-Test-Ban Treaty CTBTO" *CTBTO Preparatory Commission*.

INFCIRC 457(November 1994) https://web.archive.org/web/20031217175315/http://www.iaea.org/Publications/Documents/Infcircs/Others/infcirc457.pdf

International Court of Justice. (I.C.J.) *Legality of the Threat or Use of Nuclear Weapons*, 1996

The United Nations Charter. 1945

The United Nations. The Nuclear Proliferation Treaty. 1968, http://www.un.org/disarmament/WMD/Nuclear/NPTtext.shtml

The United Nations Security Council Resolution

"Resolution 2231", (2015)http://www.un.org/en/ga/search/view_doc.asp?symbol=S/RES/2231(2015)

"Resolution adopted by the general assembly:50/245. Comprehensive Nuclear-Test-Ban Treaty". *United Nations*. 17 September 1996.