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## **Sanctioning the Bomb: The Influence of Economic Sanctions on the Support for Nuclear Negotiations**

Saischek, Anna

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**Sanctioning the Bomb:  
The Influence of Economic Sanctions on the Support for Nuclear Negotiations**

Anna Saischek

Thesis supervisor: Michael Sampson

Second reader: Siniša Vuković

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## SANCTIONING THE BOMB

### **Abstract**

Milestones such as the conclusion of the JCPOA (Joint Comprehensive Plan of Action) in 2015 and its very public demise in 2018 bring public attention to a prevailing fact: While mostly everyone agrees that nuclear weapons are “bad,” not having them in a world with several nuclear powers is unsettling. Therefore, it is imperative to fully understand how a point of ripeness for negotiations concerning nuclear non-proliferation can be attained. Sanctions have become more and more popular as such a mechanism but have had differing degrees of success. This depends in part on the type of sanction imposed but little has been written about the particular shift from targeted sanctions to comprehensive ones in the case of nuclear negotiations. So as to investigate this research gap, this analysis uses the case study of Iran between 2006 to 2015 to answer the question how comprehensive sanctions in favor of targeted sanctions affect the proliferating nation’s support of a nuclear agreement. A special focus is given to the context in which such sanctions are communicated to identify if a shift to the imposition of comprehensive sanctions can be linked to conflict transformation. So as to investigate these links, eighty interviews by Iranian political leaders were collected and analyzed through several methods of quantitative text analysis. The results indicate a significant positive relationship between the imposition of comprehensive sanctions and increased support for nuclear agreements. Furthermore, a structural topic analysis illustrates a positive shift in the conflict context corresponding to with the timing of the imposition of comprehensive sanctions. The findings therefore suggest that imposing comprehensive sanctions instead of targeted ones in nuclear negotiations is likely to increase support for nuclear agreements by proliferating states and can be related to positive conflict transformation.

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## I. Introduction

While it is easy to think of discussions regarding nuclear weapons as a relic of a Cold War past, negotiations around the topic have by no means faded from the international political agenda. In fact, milestones such as the conclusion of the JCPOA (Joint Comprehensive Plan of Action) in 2015 and its very public demise in 2018 bring public attention to a prevailing fact: While mostly everyone agrees that nuclear weapons are “bad,” not having them in a world with several nuclear powers is unsettling (Erlanger, 2021). As such, it is imperative to understand the particular nature of nuclear negotiations and influencing factors, raising the question how a point of negotiation ripeness (Zartman, 1985) for a sustainable nuclear agreement can be achieved. In the nuclear context, finding means to deter proliferation and create leverage to pressure potential proliferators to the negotiation table, have been of crucial importance to the international community. One development of this kind in nuclear negotiations is the increasing popularity of imposing economic sanctions on potential nuclear proliferators (Hufbauer & Jung, 2020, p. 3). The general assumption is that this puts pressure on the proliferating government to give in to demands of its negotiating partner, as the price of (threatened) proliferation no longer exceeds the one paid domestically due to sanctions. Through this study, however, I am going to test this assumption so as to answer the following research question as well as the following related sub-question:

*R<sub>1</sub>: How does the type of sanction imposed on alleged nuclear proliferators affect support for nuclear agreement by the proliferator?*

*R<sub>1a</sub>: Does the type of sanction imposed influence the context in which a reaction to sanctions is communicated?*

This study will consider the research questions by examining Iran as a case study of the imposition of comprehensive sanctions in response to suspected nuclear negotiations. The focus within the analysis will be on the support for nuclear agreements by the political elite. Looking at the elite makes sense as Iran is an essentially authoritarian government and political decisions are therefore made by those in political offices. As Slovik emphasizes, the lack of popular consent is inherent in any political system where a few govern over the many and it is in some ways the “original sin of dictatorships” (2012, p. 10). Therefore, focusing on elite support for nuclear agreements makes sense as public opinion’s direct influence, at least in theory, is minimal.

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In this context it is important to stress that the analysis' emphasis will lie with the imposition of *comprehensive* sanctions after a bout of targeted sanctions. Michelle Avallon defines the two types of sanctions as follows,

“Comprehensive sanctions prohibit transactions with a country’s government and virtually all other transactions, including exports/imports, involving the sanctioned country. Targeted sanctions prohibit transactions with specified industries, entities, or individuals” (n.d.).

The discourse around targeted sanctions versus comprehensive ones suggests that both types differ in the justifiability of their implementation as well as their impact. Based on this principle, the case study of Iran will focus not only on the impact of economic sanctions on support for nuclear agreements but in particular on the imposition of comprehensive ones in favor of their targeted counterpart. The comparison made in this analysis will be on the period before June 2010 and after, as it was then that more stringent comprehensive sanctions were put in place by the United States as well as the European Union (Jaeger, 2018, p. 208). However, targeted sanctions on Iran had already been in place since 2006 (Fayazmanesh, 2008, p. 205). Therefore, the results of this research will not consider the impact of sanctions overall on the support for nuclear agreements but instead of comprehensive ones in particular. As result, this study will not only suggest inferences on the sociological effect of sanctions in general on position formation within negotiations but also on the effectiveness of comprehensive sanctions over targeted ones in particular.

In order to provide this particular insight, support for nuclear agreements will be conceptualized as “elite support,” communicated through a total of eighty interviews and statements of Iranian politicians and authority figures. The analysis will consider these texts in two phases: First, it will compare sentiment of the statements before and after 2010<sup>1</sup> as well as the frequency of sanction terminology as focus of these statements. Through a multiple linear regression model with the scores generated from this analysis, I will test for significant differences between the two eras so as to gage if comprehensive economic sanctions impact the sentiment of Iranian authorities in

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<sup>1</sup> Interviews and statements from the time before comprehensive sanctions were imposed range from 2005 to June 2010 while the statements after the imposition of comprehensive sanctions have been sourced from July 2010 to 2015.

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respect to the negotiations. The second phase will contain a more exploratory analysis using topic modelling to gauge what topics were most relevant in each era. This way an insight into the causal mechanism suggested by Jaeger's theory on issue versus identity-related interpretation of sanction communication (2018) can be attempted. In this context, topics for each era will be compared and categorized for either dimension.

The combined results of both analyses will allow us to answer the central research questions contained within this analysis such as if comprehensive economic sanctions significantly impact support for nuclear agreements as well as if this effect is in favor or damaging to potential nuclear agreements. Additionally, it should yield grounds for inferences regarding the importance of the context in which sanctions are issued in anticipation of nuclear weapons negotiations. This study will therefore provide new insights and opportunities for further studies on the intersection of nuclear weapon negotiations, nuclear policies, and economic sanctions. However, its contributions are not exclusively of academic nature. First and foremost, its intention is to aid policy makers in the quest to eliminate the threat of nuclear weapons overall. Therefore, the findings aim to assist future negotiators in incorporating a particular set of sanctions as strategic consideration so as to hopefully attain more successful and long-term non-proliferation agreements.

In the following paragraphs, I will outline significant previous research in nuclear negotiations as well as the intersection of negotiations and sanctions. Thereafter, a deeper dive into Iran's extensive nuclear and sanction-related history will provide important context for the following analysis. This will be followed by an outline of my hypothesis as well as the theoretical framework which explores an integration of Spaniel's Butter-for-Bombs bargaining theory (2019) and Jaeger's insights on the sociological effect of coercive sanctions. Subsequently, the operationalization of the relevant variables will be discussed before transitioning to the two phases (Section VI & VII) into which this analysis will be split. Section XI will highlight the methodology, results, and discussion of a sentiment analysis the gathered interviews as well as a sanction terminology related dictionary method. Both methods will be combined through a multiple regression analysis aiming to investigate a potential (statistically relevant) relationship between the imposition of comprehensive sanctions and sentiment of the political elite of Iran. Phase two of the analysis (section VII) will take a more exploratory angle to examine potential links between the imposition of comprehensive sanctions and the conflict context by applying structural topic

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modeling to the statements of the political elite of Iran. Finally, section VIII discusses the overall take-aways from this study, while section IX details several constraints and limitations of the study.

### **II. Understanding nuclear negotiations and economic sanctions**

In the context of this analysis there are three major concepts which warrant further discussion: The role of political elite decision-making and messaging of positions, the field of nuclear negotiations and non-proliferation and finally the field of sanctions. Although there is much existing literature in all three fields, the following literature review identifies a gap located within the intersection of the three concepts. Therefore, it highlights the lack of consensus of how comprehensive sanctions in particular affect the process of position formation during negotiations and the fabrication of a point of ripeness for negotiations.

#### *a. Communication and decision-making in negotiations*

So as to gain a good insight into negotiations and elements affecting them, starting with a good understanding of the structural circumstances in which they occur is necessary. As such, who makes decisions and how are they communicated are crucial questions.

Decision-making models including several game theories map out various factors and scenarios which might influence negotiating parties. However, the perhaps most well-known approach is the conceptualization of the negotiation process through Robert Putnam's two-level game (1988), which integrates domestic as well as elite opinions into its model. This theory highlights that the formation of a win-set for negotiation is a balance between the domestic level, on which the government interacts and seeks support from its constituents, and the international level, on which governments negotiate among each other (1998, p. 431). Therefore, for any agreement to be successful the domestic population needs to either be apathetic toward it or support it.

However, although the simplicity of Putnam's theory invites for broad applications, this very simplicity has also been rightfully criticized for overlooking transnational, cross-boundary connections as well as neglecting the influence of allied nations (Knopf, 1993, p. 600). This cross-boundary influence is particularly important in the context of economic sanctions, as these cannot be "filtered" through the government to the domestic audience. Just how powerful the influence of the public's opinion is, varies from negotiation to negotiation but can generally be traced back



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to two main characteristics. Trumbore (1998) argues that the impact is dependent on the power of the public to take part in the ratification process as well as the intensity issue. The “intensity issue” addresses instances where the public might not have ratification powers which is the case in many nuclear arms agreements. It argues that some sanctions inevitably increase the intensity of the issue by decreasing the living standards, thereby affects the entire nation and not just the upper class and consequently leading to a higher potential for internal conflicts (Trumbore, 1998, p. 545).

As aforementioned, however, autocratic regimes fall into a special consideration of this two-level game. In such regimes, lack of popular consent is inherent to the “original sin” of dictatorships (Slovik, 2012, p. 10). Although this implies a near lack of a domestic level in negotiations, Putnam argues that the authoritarian characteristic is still crucial in determining the win-set dimensions of the country in question. He argues that “the greater the autonomy of central decision-makers from their Level II constituents, the larger their win-set and thus the greater the likelihood of achieving international agreement” (Putnam, 1988, p. 449). However, this comes at the trade-off of a weakening in the relative bargaining position internationally, meaning that claiming constraints imposed on the regime in its bargaining by the public to evade disadvantageous deals is not really credible (Putnam, 1988, p. 499). Still, though the autocratic nature of Iran curbs the influence of public opinions on negotiation positions, it is imperative to remember for replication of the methods used in the context of this study that public opinion might have a larger influence.

Finally, another important facet of communication and decision-making in nuclear negotiations is considering the actual role of public statements during the pre-negotiation and negotiation phase. Levenotoğlu and Tarar (2005) illustrate the dynamic created through such statements as a prisoner’s game. They argue that while bargaining, negotiators might make public statements in front of their constituents, thereby committing themselves to obtaining certain benefits. This then creates constraints for the negotiations as opportunities can be backed away from, on the basis that they come at a domestic political cost (Levenotoğlu & Tarar, 2005, p. 419). Although the literature review illustrated earlier that autocratic states face less repercussions from breaking with their previous public statements, they still might face internal legitimacy problems. In Iran, for example, the theocratic electoral authoritarianism suggests two domestic constraints that inform this domestic commitment. For one, as the head of state, the Supreme Leader, whose tenure is indefinite, and his cabinet have considerable influence on government decisions, in particular veto-

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power. Secondly, although elections are less than free as parties are tightly controlled by the state, a domestic opposition does exist, which can therefore campaign on broken promises in case of breach with the strategy that was indicated in a public statement of the ruling party (Ghobadzadeh & Rahim, 2016, p. 454). The results of an invigorated opposition in Iran played out in June 2009 after the contested presidential election. Following, the election masses of Iranians led by the opposition joined the largest public protest since the Islamic Revolution in 1979. The protests resulted in several casualties and a generally harsh government response (Fathi, 2009). Although the protests failed to replace Ahmadinejad as president, they managed to irreparably damage his administration's legitimacy. This effectively resulted in internal fighting among political elite as well as the replacement of the administration by the next election cycle, therefore also significantly affecting Iran's foreign policy (Dehghan, 2013).

### *b. Non-proliferation and nuclear negotiations*

The question why and when states sit down at the negotiation table instead of escalating a conflict is widely discussed and theorized in negotiation literature. Among existing theories to date, William Zartman's ripeness theory (1985) qualifies as a central and extensively discussed concept. A point of negotiation ripeness conceptualizes the moment in a conflict when the parties involved can be persuaded to settle conflicts through negotiations. As elaborated on in Zartman's later works, this point centers around the perception of a mutually hurting stalemate (MHS) and a way out (WO) of both/all parties (2008, p. 232). While the MHS describes a moment in which the status quo of a conflict is increasingly painful to both parties and escalation does not promise success, the WO provides a solution through negotiation. Together, both forces create a push-and-pull system that can lead to negotiations in which the MHS needs to be maintained whereas the WO is ideally supposed to be transformed into an agreement ensuring mutually enticing opportunities (MEO) (Zartman, 2008, p. 232). Vuković details that MEOs should be formulated along four basic qualities: Mutuality, exclusivity, cooperation, and interdependency (2022, p. 195). This is a particularly interesting dynamic to consider in the context of applying sanctions to force nuclear negotiations as sanctions by nature do not imply mutuality nor cooperation in particular.

Significantly, Martha Mutisi (2011) challenges the underlying rationalist assumptions of ripeness theory. She points out that ripeness theory would suggest that even if a negative factor intentionally increased the MHS, it would enhance the potential push towards negotiations.

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However, this is not always true as Mutisi writes that “in some conflicts, increased pain may actual embolden parties to continue with escalation and hardliner stances” (2011, p. 67). This significantly affects the thinking about sanctions in the context of ripeness theory. Initially, one could assume that sanctions can be used as a tool to increase the MHS, therefore, positively affecting the probability of a negotiation outcome. However, considering Mutisi’s injunction the reaction to a negative incentive like sanctions might backfire.

Moreover, while ripeness theory is highly popular in negotiation literature, the fact remains that it finds its roots in the resolution of violent conflicts and peace negotiations. Therefore, in order to apply the concept to nuclear arms negotiations, several details warrant explicit attention. First and foremost, nuclear arms negotiations exist in several forms such as multilateral and international treaty negotiations, bilateral agreements between nuclear states as well as bilateral/multilateral agreements between nuclear and non-nuclear states. While an investigation into all types of such treaties should be conducted, only the latter – negotiations between nuclear and non-nuclear (proliferating) states – will be of discussion in this study as they are arguably more frequent as the number of nuclear weapon states is relatively small. Additionally, negotiations between a proliferated and a proliferating country imply that international law has been violated, therefore making them more likely to rather be disputes than treaties between proliferated nations<sup>2</sup>. The creation of a MHS in their context is particularly interesting, as the asymmetric power relationship initially might appear as if the nuclear state should easily be able to “bully” a proliferating state into concessions. LaMar, however, argues that asymmetric relationships naturally create a collaborative environment as there is no immediate security threat (2016, p. 163).

However, the most helpful contribution to conceptualizing a MHS in nuclear non-proliferation negotiations is the Butter-for-Bombs theory, largely advanced by William Spaniel (2019). According to him, the initial bargaining advantage lies with potential nuclear proliferators as the threat of nuclear proliferation in and of itself creates pressure on the anti-proliferation states. Therefore, anti-proliferators generally get the best results in nuclear negotiations if they offer

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<sup>2</sup> Violation of international law is only applicable if the nations in question are signatories of the Non-Proliferation Treaty (NPT). This therefore excludes India, Pakistan, Israel and South Sudan. North Korea presents a grey area as they have announced their withdrawal from the NPT even though there are no provisions in the treaty for such a move. Negotiations between proliferated countries are less likely to escalate as both nations have acquired mutual deterrence. Additionally, such discussions are more likely to concern nuclear disarmament, nuclear safety, and nuclear regulations (Spaniel, 2019, pp. 6-7).

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concessions which make the cost of proliferation for the proliferating state higher than the benefit of nuclear weapons (Spaniel, 2019, p. 7). Consequently, sanctions in this context might be able to provide the counterweight to the threat of nuclear proliferation. Still, Mutisi's injunction also holds weight in this case. While rationally sanctions raise the cost of proliferation such negative incentives also have the potential to escalate the situation.

As such, to investigate not only previous research on negotiations and nuclear arms settlements but also the nature of sanctions. First and foremost, some literature refers to positive and negative sanctions (Newnham, 2021, p. 14). However, in the course of this research I will refer only to negative sanctions as sanctions, while positive sanctions will be referred to as incentives hereafter. Typically, studies in this field focus on two main questions: Why countries impose sanctions and if or when economic sanctions work (Peksen, 2019a, p. 636).

While my research question already implies the answer to the first question – the imposition of sanctions due to nuclear proliferation attempts – it is worth mentioning that the “naming and shaming” function of sanctions also plays a role and contributes to the added costs of proliferation (Biersteker, 2015, p. 165).

### *c. Sanctions, sanction success and its sociological impact*

The second question on the other hand is of more central importance to this research as it explores the success of economic sanctions. Already the general question of clarifying what “success” of sanctions connotes, raises discussions. Overall, conservative estimates, which consider success an absolute acceptance of all terms attached to sanctions, find that sanctions are successful less than 10 percent of the time (Pape, 1997). Contrastingly, those estimations which consider partial acceptances or compromises as successful sanctions argue that sanctions are successful around 35 percent of the time (Hufbauer et al., 2007; Bapat, Heinrich, Kobayashi & Clifton, 2013).

However, not all sanctions are created equal, and it would be a gross generalization to assume that they would all have the same effect on support for nuclear agreements. While some scholars make the distinction between positive sanctions, which can be defined as actual or promised rewards to the sanctioned entity, and negative sanctions, specified as actual or threatened punishment (Baldwin, 1971, p. 23), this analysis will focus mainly on negative sanctions which will hereafter be referred to merely as sanctions. Jaeger adds to this dynamic by further defining sanctions as coercive if they represent a “means of enforcing a decision in international conflict” (2018, p. 43).

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Additionally, understanding and consideration of the distinction between targeted and comprehensive sanctions in particular is therefore imperative for any analysis in field. The post-Cold War era has seen an increased use of targeted sanctions in favor of comprehensive/conventional sanctions (Peksen, 2019c, p. 279). Targeted sanctions or “smart sanctions” are conceptualized to minimize humanitarian costs and prefer to focus on financial sanctions, arms embargoes or restrictions on travel and aviation in general aimed at specific entities and/or individuals (Heine-Ellison, 2001, p. 91). Meanwhile, comprehensive sanctions have the effect of prohibiting participation in most transactions and activities with a particular country (Cortright, 2010).

There is substantial disagreement on the effectiveness of one over the other as well as around the ethical justifications of either.

Additionally, experts generally agree that the more major damage results from sanctions on the national/local economy, the more successful sanctions are. This is largely due to the immediate legitimacy problem of leaders in times of economic crises of the nation’s own making. Still, the success rate is even expected to rise from there if sanctions manage to target ruling party assets rather than equally targeting the opposition. This dynamic is most likely to result in a regime change in favor of the sanction-sending party (Dashti-Gibson, Davis, & Radcliff, 1997, p. 616). Moreover, although the powerful role of sanctions has yet to be brought into the context of negotiation ripeness and contemporary nuclear sanction success, Nicholas Miller (2014) kicked off this topic by analyzing the success of sanctions from 1950 to 2000. His assessment resulted in the conclusion that while sanctions at the time were less effective on powers who already had nuclear weapons, they were rather successful on potential proliferators (Miller, 2014, p. 913).

However, this outlook on the success of sanctions is heavily result-oriented (negotiation outcome or economic results) and arguably neglects the discussion of process-focused impact. Although sanctions might have the desired effect economically, not all sanctions yield immediate success. For example, sanctions on Yugoslavia were imposed in the early 1990s and accounted for about USD 4 Billion in lost GNP per year during 1991 – 1998. Still, however, cooperation in the country only came after 1999, almost a decade after the initial imposition of sanctions (p. Garfield, 2001, p. 27). Mark Daniel Jaeger (2018) offers a process-oriented explanation to this phenomenon by highlighting the sociology of sanctions and their role in conflict communication and

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transformation. He conceptualizes sanctions as “as communicated actions constructed as decisions in mutual conflict” (Jaeger, 2018, p. 48). As such, sanctions pose a communicative paradox as they suggest both, the offering of a choice to the addressee as well as the imposition of the sanctioning party’s decision on a conflict (Jaeger, 2018, p. 48).

Jaeger argues that this paradox gains influence on the negotiation and conflict process once conflicts are securitized and an issue conflict transforms into an identity conflict. Issue conflicts connote a disagreement on a particular issue on which one can potentially “agree to disagree” while identity conflicts extend to deeper incompatibilities (Jaeger 2018, p. 61). In such a case, although those imposing sanctions view their actions under a utility rationale – an action that influences the cost/benefit calculations in their favor – this is not the case for the sanctioned country. Imposing sanctions implies agency which in turn indicates an active decision that might influence a future outcome (Messmer, 2016, p. 285). Therefore, the calculation behind this action is one of risk. However, for the entity against which sanctions were imposed future losses are not seen as consequences of decisions but rather attributed to external forces. As such, the calculation is one of danger and power-asymmetry (Jaeger, 2018, p. 54). These perceptions therefore influence negotiation behavior adversely as it suggests that cooperation is more unlikely, even if the economic impact is present.

### **III. Nuclear activity and sanctions in Iran**

Although the discussion of Iran’s nuclear activities and sanctions on Iran have been increasingly well publicized after the turn of the century, the Islamic Republic of Iran has a long history with both preceding more recent developments. The origins of Iran’s nuclear program date all the way back to 1957. The then ruler and last monarch of Iran, Mohammad Reza Shah Pahlavi, collaborated with the United States’ “Atoms for Peace program,” laying the foundation for Iran’s peaceful activities in the nuclear field. In 1968, recognizing the dangers that result from nuclear weapons, Iran became a signatory of the Non-Proliferation Treaty monitored by the International Atomic Energy Agency (IAEA) after a little over 10 years of the founding of Iran’s program. In 1974, as part of a rather paradoxical development, Iran entered an agreement with the IAEA in the course of which it allowed the agency access to its facilities for the sake of assessment of the safeguards of its peaceful nuclear activities. In the same year, however, the Shah expressed

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intentions for the republic to build nuclear weapons. Before any such plans could materialize however, the Islamic Revolution in 1979 led to drastic political changes as well as an almost decade-long abandonment of the country's nuclear program as a whole (Bazoobandi, 2019, p. 69-70).

Iran's relationship with sanctions, United States sanctions in particular, finds its roots around this time as well, beginning with sanctions in response to the 1979 Iran hostage crisis. The revolution itself, though not entirely echoing anti-U.S./anti-Western sentiments, was based on creating an Iranian way of independent political, security and economic strategy which inevitably would contradict U.S. hegemonic aims in the Middle East (Barzegar, 2014, p. 2). Anti-Western sentiments did, however, escalate when on November 4, 1979 Iranian students took 52 American hostages in the United States embassy in Tehran, which they held for 444 days. In response, the United States seized diplomatic relations with Iran, froze government assets of Iran in the United States and effectively denied Iran the usage of over \$12 billion of its assets. This event started a long succession of sanctions which were inadvertently loosened and tightened over the next thirty years, often in the context of Iran's involvement with sponsoring of terrorist groups abroad (Aghazadeh, 2013, p. 140).

It was not until the 1990s that Iran restarted its nuclear activities. After the commencement of the Iran-Iraq War, the Islamic Republic looked towards European countries, among them Germany and France, for assistance in transferring peaceful nuclear technology. Actions resulting from this request, however, never materialized due in part to United States pressure (Bazoobandi, 2019, p. 70).

While most of Iran's current nuclear plants and research was built in the 1990s, their nuclear program only started raising significant concerns for the wider public in 2002. During a press conference in Washington, D.C. a member of an Iranian opposition group revealed the existence of nuclear facilities currently under construction which the international community was not aware of (Langenegger & Hipel, 2019, p. 436). Iranian government officials thereafter confirmed the statement, arguing that despite the secrecy, the nation had not violated its commitment to the NPT as activities in these plants were for peaceful use (Bazoobandi, 2019, p. 70). These iterations, however, did not alleviate growing concerns about the program's potential military dimension. As Iranian officials emphasized the singularly peaceful and civil nature of their nuclear activities, the

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nation continued to expand its program and in particular enhanced its enrichment capacities (Langenegger & Hipel, 2019, p. 436).

In July 2006, the United Nations Security Council passed Resolution 1696, setting a deadline for Iran to agree to and conduct talks aimed at halting their nuclear program before October or else sanctions would be considered. Although the E3 (France, Germany, and Italy) successfully negotiated a tentative agreement with Ali Larijani, Iran's chief negotiator, the deal ultimately failed after Larijani was unsuccessful in gaining the approval of Supreme Leader Khamenei. As the previously set deadline elapsed, the UNSC implemented its first set of sanctions against Iran through Resolution 1737. However, the sanctions were in total much weaker than countries such as the United States had hoped and targeted a number of Iranian entities tied to the nuclear program as well as it implemented a ban on many forms of civilian nuclear and ballistic-missile cooperation. These sanctions were expanded in February 2007 through UNSC resolution 1747 which extended financial sanctions to more Iranian entities linked to the nuclear program. It also put a ban on Iranian arms exports. Iran itself responded to both sanction packages by limiting IAEA access to its facilities as well as further expanding its nuclear activities (Reardon, 2012, p. 17-18).

Although the Bush administration pushed for more coercive sanctions, the release of the 2007 National Intelligence Estimate (NIE) in December impeded these plans. The report suggested that while Iran had a nuclear weapons program until fall 2003, this work was likely discontinued. As a result, international push for further sanctions became less urgent. However, release of U.S. intelligence findings on Iranian nuclear weaponization reignited the discussion again in 2008, leading to a third set of UNSC sanctions in March 2008. Resolution 1803 once again expanded the list of sanctioned Iranian entities, authorized the inspection of Iranian cargo, and banned the trade of more dual-use technologies, doing, however, little to slow Iranian progress (Reardon, 2012, p. 22).

In 2009, Iran crossed the threshold of stockpiling enough 3.5% LEU (Low Enriched Uranium) for a nuclear bomb and also announced its acquisition of the entire nuclear fuel cycle. Following this and revelations of further Iranian nuclear plants, talks in Geneva presented a "fuel-swap" proposal. As Iran was low on 20 percent LEU for its Tehran reactor, used to produce medical isotopes, it turned to the IAEA for procuring replacement fuel in exchange for halting its own production. However, after internal Iranian resistance as well as lack of response from its European



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counterparts, the state announced its intention to begin enriching its 3.5 percent LEU stocks to 20 percent to provide its own fuel in 2010 (Reardon, 2012, p. 23-24).

This information triggered both the United States as well as the EU to impose drastically more far-reaching measures. Instead of targeting individuals and entities alone or banning arms, these sanctions limited Iran's core economy (Karacasulu & Karakir, 2014, p. 380). The United States' Comprehensive Iran Sanctions, Accountability and Divestment Act of 2010 (CISADA) provided sanctions against banks and foreign financial institutions that engage in transactions with Iran while the first comprehensive EU sanctions in July 2010 prohibited investment in the Iranian oil and gas sector (Schott, 2012, p. 190), targeting for the energy sector as well as the financial one directly for the first time (Schott, 2012, p. 191). This marks a significant escalation in the sanction behavior as it details coordinated efforts between the sanctioning nations with repercussions extending beyond targeted individuals to the everyday Iranian.

In December 2011 the United States extended its sanctions to non-U.S. financial institutions engaged in transactions with the Central Bank of Iran as well as other Iranian banks, effectively denying them access to the United States' financial system through foreign firms (Reardon, 2012, p. 25). Further sanctions such as the exclusion of Iran in SWIFT in 2012 as well as a European embargo on import, purchase and transport of Iranian oil compounded the coercive actions on Iran (Schott, 2012, p. 190). These sanctions had significant negative effects on Iran's economy. By 2013, the sanctions had heavily affected the Iranian economy, with a 5 percent drop in GDP in 2013, a rise in unemployment by 20 percent, the failure of many businesses. Combined with a declining currency and inflation, the sanctions started to affect the Iranian population much more directly. Only after the conclusion of the Joint Comprehensive Plan of Action (JCPOA) between the United States, China, Russia, France, the United Kingdom, Germany, and Iran, were sanctions lifted in 2015 (Stevens, 2014, p. 124).

Due to these experiences, Iran lends itself well as a case study to investigate economic sanctions in response to proliferation efforts. While previous literature on economic sanctions suggests that they are less impactful in authoritarian nations (Peksen, 2019b), as which Iran is classified, the example of the JCOPA has been heralded as a success of sanctions and supposedly illustrates the power of economic sanctions (Schott, 2012). Due to its landmark nature and the great visibility

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the conclusion of the JCPOA has enjoyed, this case study provides enough speeches and interviews for the conduction of a text analysis.

### **IV. Theoretical framework**

The theoretical framework within which this analysis will operate is an adaptation of Spaniel's Butter-for-Bombs bargaining theory (2019) which will be refined through Jaeger's sociological theory on coercive sanctions (2018).

Spaniel's bargaining theory employs game theoretical insights in order to map the nuclearization interactions between a nuclear power and a non-nuclear power. The central concept to this approach is what he calls "the shift." This concept marks the non-nuclear nation's decision to build its nuclear capabilities given the status quo, therefore, shifting the international power dynamics.

In total, the conceptualization of the game begins with the pre-shift bargaining phase<sup>3</sup>. In this phase, one of three scenarios can arise. The first is that the potential of the shift is "too hot," meaning the threat of war initiated by the nuclear power as a consequence of proliferation is credible, usually due to a large shift in international power dynamics resulting from nuclear proliferation. In the second scenario, the shift is "too cold" indicating that the costs – reputational and/or financial - incurred by the non-nuclear country through proliferation are too high. Both of these scenarios manage to forego actual bargaining as the positions generally discourage non-nuclear countries from ever attempting nuclear proliferation (Spaniel, 2019, pp. 35-38).

However, in cases where sanctions have been issued, the assumption can be made that without them the cost of building and investment must not have been high enough to deter nuclear proliferation as per the "too cold" scenario. Similarly, sanctions also do not communicate a greater commitment to war in response to proliferation by the nuclear nation as the "too hot" scenario necessitates. Being such a case, the example of Iran and its alleged nuclear development demonstrates that although sanctions have been issued, no war has broken out between the first

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<sup>3</sup> The theory defines four phases in total – pre-shift bargaining, post-shift bargaining, pre-shift war and post-shift war. The latter of two of the four, are game-ending scenarios as they end in an escalation of the conflict. However, they are also the most unlikely scenarios to occur. In this analysis, we will focus on the pre-shift bargaining phase as Iran as of now has yet to fully develop its nuclear capabilities (Jaeger, 2018, p. 30).

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sanctions in 2006 and the signing of the JCPOA in 2015, therefore, supporting this assumption (Van de Graaf, 2013).

Cases in which sanctions have been issued will consequently fall into the third scenario called “just right.” This third scenario in Spaniel’s bargaining theory argues when a shift is neither “too hot” nor “too cold” for a potential proliferator, in order to avoid further proliferation or even escalation, negotiations occur. In cases, in which these negotiations are successful, butter-for bomb agreements are generally concluded, where somewhat counterintuitively, nuclear powers tend to make larger concessions than their non-nuclear counterparts. In the pre-shift bargaining phase of a “just right” scenario, the nuclear power tends to make concessions in response to which the non-nuclear power either accepts, rejects them, or starts to build its capacities (Spaniel, 2019, p. 38).

I argue that in these “just right” scenarios, sanctions act as a way to increase the costs incurred by the non-nuclear power should it continue to pursue proliferation, therefore acting as a deterrent. Once these sanctions sufficiently affect the costs incurred by the proliferator, the nuclear power can inversely use sanction relief as “artificial butter.” This implies that concessions that did not exist prior to the bargaining phase are used to convince the non-nuclear nation to abandon its plans for nuclear proliferation and accept the offer of the nuclear power.

However, within this conceptualization every sanction implemented should yield the same or similar results. In practice, the example of Iran suggests that this is not the case as sanctions were implemented as early as 2006 but, although “the shift” was avoided, negotiations did not conclude until 2015. How, then, do sanctions sometimes tilt cost/benefit calculations into the acceptable scenario for proliferating countries and sometimes not? Jaeger’s sociological take on coercive sanctions (2018) gives some insight into these dynamics. Jaeger argues that sanctions are social facts constructed in conflict communication. As such, sanctions are, for one, inherently relational phenomena owing to a tension in their potential meaning in conflict communication (Jaeger, 2018, p. 43). He argues that sanctions can be perceived from a cost/benefit calculation, through which the sanctioner offers the sanctionee a choice for them to make in response. This, therefore, falls in line with a utilitarian rationale. However, sanctioning can also be perceived through a power rationale where the sanctioner appears to have made the decision for the sanctionee as communicated through sanctions. Comparing one and the other comes back to a perception of

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agency of the sanctionee where the costs incurred are then either understood as risks (due one making their own choice) or dangers (due to being imposed on them) (Jaeger, 2018, p. 43).

Jaeger goes on to argue that the context in which sanctions are being issued is important to understand why a nation would interpret sanctions one way or the other. As such, an issue-based conflict, founded on opposing views/interests on a matter, are more susceptible to the utility-rationale while an identity-based conflict invites a power rationale perception. This is a result of agents attributing responsibility, blame and causality while simultaneously questioning legitimacy (Jaeger, 2018, pp. 43-44). The transition between these conflict contexts is therefore decisive for the potential of cooperation in sanction conflicts and therefore conflict transformation (Jaeger, 2018, p. 58).

Through the following research, I will identify the role of sanctions within these frameworks. First, I will investigate how the comprehensive sanctions imposed after June 2010 affect the cost of proliferation as opposed to the targeted sanctions imposed on Iran since 2006 enough to change bargaining behavior. The hypothesis for the main research question is therefore as follows:

*H<sub>1</sub>: Comprehensive economic sanctions increase support for nuclear agreements significantly<sup>4</sup>.*

This hypothesis is based on the fact that comprehensive sanctions should raise the cost of proliferation. Potentially, they might do so to the extent in which nuclear proliferation no longer brings in the benefits necessary to outweigh these costs.

The second phase of this research will aim to provide insight in the interrelated research question R<sub>1a</sub> investigating the relation between sanction type and context to see if conflict transformation has occurred. Basing this on the previous hypothesis and Jaeger's insights suggests the following second hypothesis:

*H<sub>1a</sub>: A change in the type of sanction from targeted to comprehensive can change the conflict context from an identity-based conflict to an issue-based one.*

Although further analysis will be needed to investigate in detail the causal mechanism behind this hypothesized conflict transformation, within the discussion following the analyses' results I will

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<sup>4</sup> Significant in the case of this study signifies statistical significance of exceeding a p-value of 1.96.

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propose potential factors that could explain the causal link between sanctions and conflict transformation. Ideally, this will then offer points of departure for future research.

### **V. Concept operationalizations**

In the context of this research, *economic sanctions* will be defined as an activity resulting in the “withdrawal of customary trade and financial relations for foreign- and security policy purposes” (Masters, 2019). As the focus within the research questions is on different types of sanctions, these will be defined as either targeted or comprehensive sanctions. The former will be specified as sanctions addressed to specific individuals and entities while the latter have the effect of prohibiting participation in most transactions and activities with a particular country (Cortright, 2010). As such, I have chosen June 24, 2010<sup>5</sup>, as a dividing date between two significant periods in this nuclear discussion. The choice results from the key shift between mostly targeted sanctions toward coordinated comprehensive sanctions which more directly affect the general population (Van de Graaf, 2013), therefore effectively operationalizing the *types of sanctions* dimension.

Although section III already elaborated on the case selection of Iran, it is important to point out that this case was chosen to operationalize the *nuclear proliferator* variable despite its claims of the contrary. Despite Iran’s nuclear weapon proliferation remaining alleged and continuously denied by the Islamic Republic, Iran has been chosen as a nuclear proliferator as sanctioning nations have understood and treated it as such. This is based on Wendt’s argument that threat perception is dependent on interactions between states that they will then interpret and respond to (1999, p. 327). Therefore, if nuclear proliferation or its intent actually occurred is, for the purposes of this study, irrelevant as they were perceived to have happened by sanctioning countries, resulting in their actions.

To effectively operationalize elite support for nuclear agreements, a corpus of secondary data containing eighty interviews, statements and speeches by Iranian politicians and negotiators working directly on the JCPOA negotiations has been compiled. The collected statements range

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<sup>5</sup> On June 4, 2010, the United States concluded its Comprehensive Iran Sanctions, Accountability and Divestment Act, thereby beginning a shift in sanctions to target the core economy of Iran and thereby affecting the Iranian population. This initiative was followed only a month later by EU specific sanctions in “the areas of trade, financial services, energy, [and] transport, as well as additional designations for [a] visa ban and asset freeze” (Davenport, 2022). Throughout 2012, they continued to intensify and focus on the core economy.

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from 2005 to 2015 with forty of them having occurred before the cutoff point of June 2010 and the remaining forty from July 201 onwards. Using g-power, an a priori assessment of the necessary sample size for a linear multiple regression model concluded that to ensure at least a standard 95 percent chance of correctly rejecting the null-hypothesis at a significance threshold of 0.05 and medium effect size  $f^2$  of 0.17, the size of each sample would have to exceed at least 79 (Faul, Erdfelder, Buchner, & Lang, 2009). For the sake of comparison, forty of the gathered texts will predate June 2010 while the other half will have occurred after.

As aforementioned, phase one will investigate the impact of the type of sanction imposed on alleged nuclear proliferators. The focus of this analysis will be on how this affects the support for nuclear agreements by the proliferator through conducting a textual analysis utilizing sentiment as well as a self-created dictionary of sanction terminology followed by a keyness analysis of the texts. Phase two will highlight the context in which reactions to sanctions are communicated by first identifying issue-based conflict and identity-based conflict topics through a brief survey of literature on the Iran nuclear negotiations. Thereafter, a return to the corpus of eighty interviews will allow for topic modeling which can enable the identification of topics in the texts. These can then be compared to the previously identified conflict topics to see if the two eras (before or after June 2010) fall into similar or different categories.

### **VI. Phase One – Examining the intersection of sanctions and sentiment**

Although, as previously detailed, public opinion offers certain constraints to negotiations, the opinion of the political elites is of centrality. This results from individuals of this group generally being close to the policy-making process and being actively involved in the concrete bargaining phase. Consequently, elite support for nuclear negotiations will focus on the opinion and statements of individuals fulfilling the following conditions: These individuals are working in a government capacity at the time of their statements or interviews and they are part of the negotiation process on the international level. To employ this concept effectively, a text analysis will be conducted of speeches and interviews by such officials. Focusing on elite support for such agreements is particularly important in Iran due to its hybrid regime. Although a political opposition exists that could potentially gain momentum through public dissatisfaction, therefore pressuring the current government's position on the issue, this effect does not extend to nuclear

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negotiations. As the example of June 2009 and the protests following the allegedly rigged elections show, due to all parties, no matter if ruling or opposition, have to be approved by and cooperate with the Supreme Leader and the clergy, the magnitude of the impact of public opinion remains restrained. After all, how much constraints can be offered from public opinion in a nation where all actual state opposition is outlawed by the ruling elite (Klein, 2010, p. 4)?

So as to comprehensively answer my research question, I will first give a brief overview over the data and methodology used in this first phase. Thereafter, the analysis will focus on descriptive statistics followed by the results of first the sentiment and dictionary-based analyses. The results of these analyses will be integrated through a multiple regression model thereafter and will be supported by the examination of results a keyness analysis. Finally, the discussion section will offer insights on potential conclusions or links identified during the analyses.

### *a. Data and methods description*

To effectively operationalize elite support for nuclear agreements, a corpus of secondary data containing eighty interviews, statements and speeches by Iranian politicians and negotiators working directly on the JCPOA negotiations has been compiled. The politicians whose interviews/statements have been included in this analysis are two Iranian presidents at the time of statement, Mahmoud Ahmadinejad (2005-2013) and Hassan Rouhani (2013-2021) and three Iranian foreign ministers, Manouchehr Mottaki (2005-2010), Ali Akbar Salehi (2010-2013) and Mohammad Javad Zarif (2013-2021). Further statements included were made by two chief negotiators for the Iran Nuclear Deal as well as secretaries of the Supreme National Security Council, Ali Larijani (2005-2007) and Saeed Jalili (2007-2013). More infrequent contributions were provided by Ali Asghar Soltanieh (2006-2013), Iran's ambassador to the International Atomic Energy Agency in Vienna, Gholam Reza Aghazadeh (1997-2009), former Minister of Petroleum of the Islamic Republic of Iran as well as Seyed Abbas Araghchi (2013), an Iranian diplomat and previous spokesperson for the Ministry of Foreign Affairs of Iran.

A total number of eighty texts were identified, half of which were recorded in the time period between 2005 and June 2010, while the other half stems from July 2010 to September 2015. As such, I have chosen June 24, 2010, as a dividing date between two significant periods in this nuclear discussion. The choice results from the key shift between mostly targeted sanctions toward coordinated comprehensive sanctions which more directly affect the general population (Van de

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Graaf, 2013). The choice to collect interviews until 2015 was made in accordance with the conclusion of the JCOPA, whereafter several sanctions were lifted or were at least promised to be lifted (Batmanghelidj & Rouhi, 2021, p. 184).

The texts themselves range from broadcast interviews to speeches or press conferences. This is important to note because speeches have been excluded from pre-analysis adjustments while interview texts were modified before the analysis. Modification of interviews was limited to the exclusion of interviewer's questions as well as the elimination of answers to questions unrelated to the nuclear issue. This decision was taken to avoid any distortion of end results as the objective of the research question is to explicitly examine support for *nuclear negotiations* rather than general foreign policy. Part of the limitations, however, is the fact that the same approach could not be taken with speeches or statements as delineations between several policy issues were not as clear as with interviews and could potentially alter the purpose of the statement altogether.

Regarding research methods applied in this analysis, a sentiment analysis and dictionary-based text analysis are conducted, coupled with single and multiple linear regression models. This is then followed by a keyness analysis for further contextualization. Keyness describes a method "based on identifying significant differences between the usage frequencies of grammatical features in two groups of texts" (Lin, 2015, p. 54).

For the sentiment analysis, the 2015 LexiCoder Sentiment Dictionary will be used due to its usefulness in contexts of political communication as well as its capabilities of picking up on negations (Young & Soroka, 2012). As the number of words for either sentiment (negative or positive) is tallied up, resulting in a continuous output variable, OLS regression will be performed to investigate sentiments before and after the drastic intensification of sanctions in order to detect potential statistically significant differences. So as to be able to tie potential change in sentiment to sanctions in particular, I will also use a self-coded sanction dictionary which includes common terminology related to sanctions and the fear thereof. For the sanction dictionary, terminology included was taken from the Threat and Imposition of Economic Sanctions (TIES) dataset (Morgan, Bapat & Kobayashi, 2014) as well as general related terms found through the Cambridge dictionary (n.d.) and the Comprehensive Iran Sanctions, Accountability, and Divestment Act (U.S. State Department) (see list of terms included in the **Annex**). Only one word was added outside of these constraints – "pressure" – as a preliminary reading of the interview identified this as a term



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often used in place of “sanctions” by Iranian officials. Adding the layer of the dictionary-method to the base sentiment analysis will allow me to direct the expectations of the sentiment analysis.

The keyness (or relative frequency) analysis similarly serves more of an exploratory purpose to indicate if along with the sentiment, the direction of discussions and key topics have also changed with the implementation of sanctions.

For all analyses, the corpus had to undergo several preprocessing procedures. For all three types of analysis, symbols, punctuation, hyphens, numbers and stop words were removed from the corpus. Additionally, any features appearing in less than 7.5 percent of the document as well as those appearing in more than 90% of the documents are removed, in order to eliminate words that would interfere with the analysis due to either being too common, similar to stop words, or too specific. For the sentiment analysis a few further preprocessing steps were taken by adjusting for negations through the `LSDprep_negation` function proposed by Emily Luxon (Young & Soroka, 2012).

### *b. Descriptive statistics and preprocessing*

Variable	Obs	Mean	St. Dev.	Min	Max
Negative sentiment	80	32.237	38.410	0	152
Positive sentiment	80	60.312	65.448	0	298
Sentiment	80	28.075	34.782	-12	146
Sanction terminology	80	2.388	4.527	0	22
Comprehensive sanctions dummy	80	0.5	0.503	0	1
Speech or interview	80	1.350	0.480	1	2

**Table 1** Statistic summary of variables

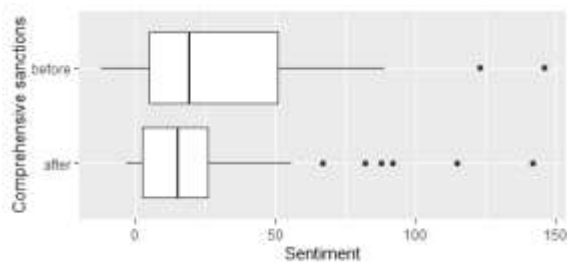
Computing a summary of the text analysis data (**table 1**), already gives interesting preliminary insights. The variable *comprehensive sanctions* denotes a dummy variable that codes texts and statements as either “before”

or “after” [the comprehensive sanctions from June 2010]. The distribution of this variable is equal, containing forty observations each. Meanwhile, as the name suggests, the *speech or interview* variable designates the form of each text as either an interview (1) or a speech (2). As the mean in table X suggests, the corpus contains more interviews than speeches. An inference that can be made here is that this makes the results of this study more accurate as interviews only include nuclear related content while speeches can cover more topics.

The variables *negative sentiment*, *positive sentiment* and *sentiment* are a result from the sentiment analysis. As the name suggests, *positive sentiment* indicates the number of times a word conveying positive emotions has been mentioned while *negative sentiment* counts its counterparts. The

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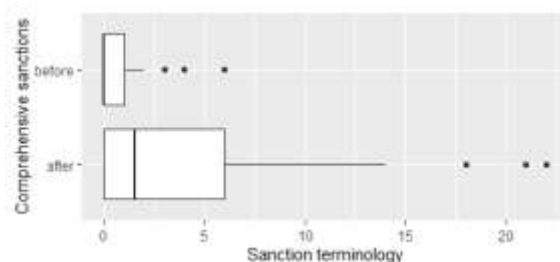
*sentiment* variable combines the two by subtracting the amount of *negative* sentiment from *positive*. Therefore, if the number resulting from this is negative, it can be concluded that the overall sentiment of the text is more negative than positive and vice versa. As such, comparing the mean as well as the maximum number of *negative sentiment* to those of *positive sentiment* suggests that texts are in general more positive than negative. This is corroborated by the positive mean for the *sentiment* variable implying that in general the texts contain more positive rather than negative sentiment. Further investigation reveals that only six out of the eighty statements and interviews have an overall negative sentiment score, the lowest sentiment score provided by Iranian Parliament Speaker Ali Larijani in 2009 as he talked about nuclear proliferation and relations with the West.



**Figure 1** Boxplot of sentiment score per statement separated by time period (before/after comprehensive sanctions)

By creating a boxplot of the observations recorded, more robust measurements such as the

median and the interquartile range can be examined. As **figure 1** demonstrates, both distributions are right skewed with a similar median while the spread of the observations is larger before comprehensive sanctions than after. It is, moreover, possible to say that around 75 percent of all observations before comprehensive sanctions score below 50 on the sentiment scale, while the same number of observations after comprehensive sanction score twenty-five or lower. The most glaring observation, however, is that several outliers are identified. As outliers have the potential to skew the results of linear regressions, Cook's distance, which measures how much the entire regression function changes when each variable is deleted (Stanford University, n.d.), will be calculated following the regression. If those values exceed 0.5, then the particular variable will be classified as an influential variable skewing the results significantly (Pennsylvania State University, n.d.).



**Figure 2** Boxplot of sanction-related terminology score per statement separated by time period (before/after comprehensive sanctions)

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Finally, the variable *sanction terminology* is a result of the dictionary-method analysis of sanctions and represents the number of times sanction-related terminology was invoked in each text. Similar to the boxplots for sentiment scores, the boxplot graphs of sanction terminology (**figure 2**) indicate that this distribution is also skewed right with several outliers that will have to be checked through Cook's distance calculations. The graphs also indicate that half of all observations for the texts before June 2010 have no mention of sanction terminology.

### *c. Sentiment analysis & Dictionary analysis*

So as to investigate the link between sanctions and support for nuclear agreements, this analysis utilizes sentiment analysis as a proxy for support while a topic dictionary analysis based on sanction terminology models the influence of sanctions. For both of these dimensions an OLS regression will be performed to investigate the relationship between the implementation of comprehensive sanctions and sentiment and thereafter the relationship between sanction terminology and the implementation of comprehensive sanctions. This OLS regression therefore compares both dimensions before and after June 2010.

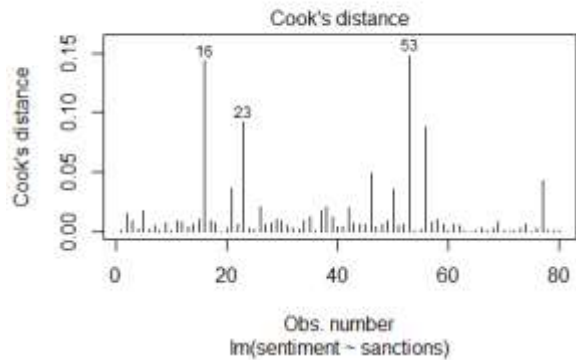
The result of the linear regression regarding sentiment (see model 2 in **table 2**) indicates that the relationship between the intensified sanctions and sentiment is not statistically significant as the t-value does not exceed 1.96. By gathering the y-intercept to be at 31.025, it can be gathered that the relationship, though not significant, in this case is negative. This also allows the estimation of the simple linear OLS regression prediction equation as follows:

$$\hat{y} = 31.025 - 5.900x_1$$

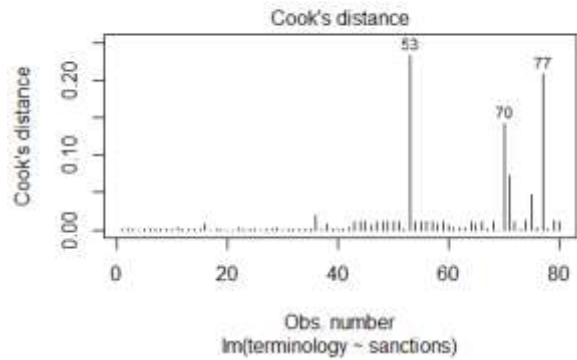
Much more interesting in this regard are the results from the linear regression concerning the use of the sanction dictionary (see model 1 in **table 2**). The resulting linear regression model for sanctions-related terminology before and after the intensified sanctions demonstrates a statistically significant increase as the t-value at |-2.196| exceeds 1.96. Moreover, this relationship is positive, indicating that as comprehensive sanctions were imposed in favor of targeted sanctions, sanctions also became a larger topic of discussion for the Iranian political elite. The OLS regression prediction equation is as follows:

$$\hat{y} = 0.875 + 3.025x_1$$

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**Figure 1** Visualization of Cook's Distance for the relationship between sentiment and the imposition of comprehensive sanctions



**Figure 2** Visualization of Cook's Distance for the relationship between sanction-related terminology and the imposition of comprehensive sanctions

Returning to a point made earlier, as both sentiment scores as well as sanction terminology counts have contained several outliers (see **figure 1** and **figure 2**), a computation of Cook's distance is necessary to find out if any of the outliers could have acted as influential points in the OLS regressions. However, an examination of Cook's distance of all variables for each dimension suggests that none of the outliers significantly affect the relationship investigated. Regarding the linear regression for sentiment scores, the most significant measurements of Cook's distance find themselves in two interviews with former Iranian president Ahmadinejad (texts 16, 2007a; text 23, 2008a) as well as an interview with Hossein Mousavian, an Iranian diplomat involved in the nuclear negotiations (text 53, Bali, 2012) (see **figure 3**). As two of the significant texts are speeches, the centrality of the earlier consideration of controlling for the source of the format is reaffirmed. Since speeches were not edited for pure nuclear related content, this could be an explanation for the higher level of impact they have on skewing regression results. The most significant measurements of Cook's distance for sanction terminology are once again the aforementioned interview by Mousavian (text 53, Bali, 2012) as well as one interview with Zarif (text 70, Heilbrunn, 2014) and one speech by former president Rouhani (text 77, 2015a) (see **figure 4**).

However, to fully interlink the two dimensions of sentiment and sanction terminology as well as to account for omitted variable bias, a multiple linear regression has been added in which the outcome (sentiment) and explanatory variable (intensified sanctions) are compounded by relevant control variables such as the increased use of sanction-related terminology but also the interview

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versus speech variable. The outcome of the multiple linear regression is best demonstrated in the regression table below (**table 2**) through model 3.

Assessing model 3, it becomes quite clear that the control variables have quite an extensive moderating effect on the relationship between the main variables. At 2.360 the p-value exceeds the necessary threshold for statistical significance with a level of significance of 0.05, suggesting there is only a five percent chance that this finding could not be statistically significant after all. Moreover, the relationship detected between the implementation of comprehensive sanctions and the sentiment of the Iranian political elite if accounted for the use of sanction-related terminology and text format is significant and positive. Due to the results listed in Model 2, the following prediction equation can be determined:

$$\hat{y} = -5.465 + 17.403x_1 + 2.940x_2 + 26.091x_3$$

<b>Regression Table</b>			
	Sanction Terminology		Sentiment
	Model 1	Model 2	Model 3
Sentiment after sanctions		-5.900 (-0.757)	17.403 (2.360**)
Sanctions mentioned in text	3.025 (3.153***)		2.940 (3.604***)
Speech vs. Interview			26.091 (3.580***)
Constant	0.875 (1.296)	31.025 (5.626***)	-5.465 (0.509)
N	80	80	80
R-squared	0.113	0.007	0.245
Adj. R-squared	0.102	-0.005	0.215
Residual Std. Error	4.291 (df = 78)	34.876 (df = 78)	30.819 (df = 76)
F Statistic	9.941 ***(df = 1;78)	0.572 (df = 1;78)	8.207*** (df = 3;76)

\*\*\*p < .01; \*\*p < .05; \*p < .1

**Table 2** Regression table of linear regression concerning sentiment and sanction-related terminology and multiple regression integrating the two

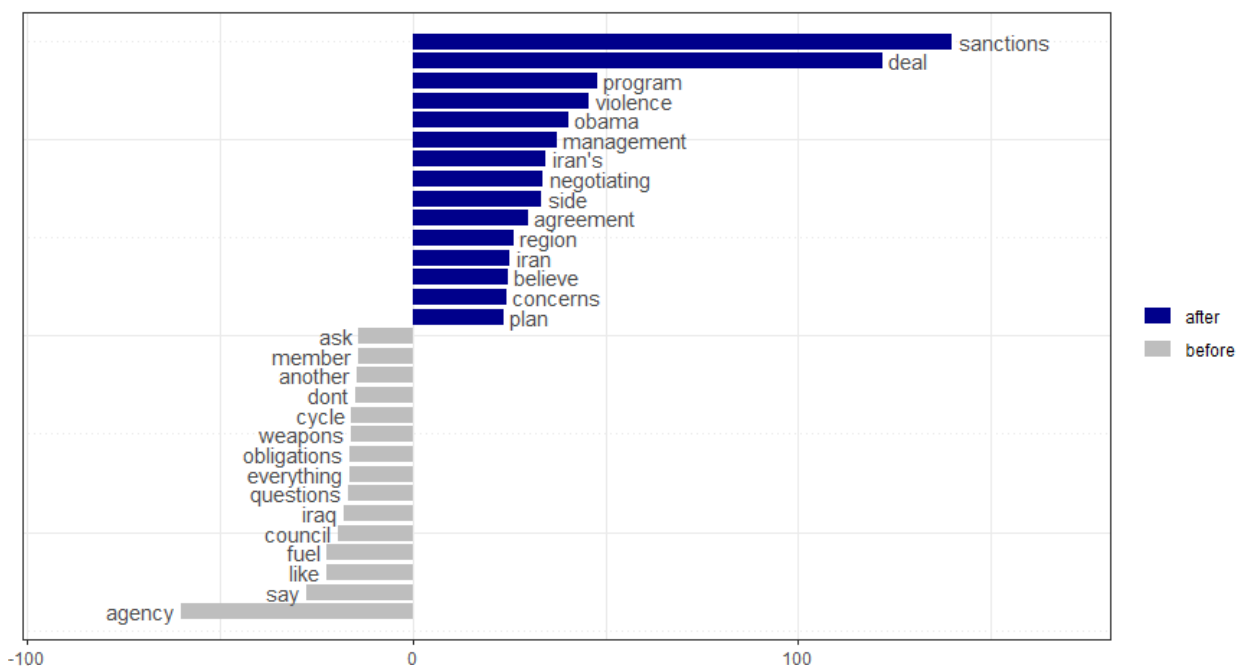
The value for the adjusted R-squared at 21.5% suggests that the prediction equation, I will shortly describe in more detail, is a better estimate of the predicted variable sentiment after the imposition of comprehensive sanctions, than the single linear regression model. In fact, the comparison of the

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adjusted R-squared of the single and multiple regression model suggests that the latter predicts values about twenty-two percentage points better.

### *d. Keynes analysis*

Although the sentiment analysis, dictionary-method analysis and following regression analyses aided in establishing a relationship between sanction terminology and sentiment by extension therefore support for nuclear agreements, it is a keyness analysis of the corpus that will aim to provide a big picture view of the prominence of sanctions in statements by the Iran's political elite. Despite sentiment being a good indication of positive feeling in the context of negotiations, this might not translate directly into cooperation or an increased willingness to negotiate. By performing a keyness analysis, a corpus of text can be compared to a reference corpus. The resulting chi-values for each word within the corpus represent how much difference exists between the observed presence of the word in the text versus the expected presence as indicated by the reference corpus. This value is then classified as positive if the target exceeds its expected value and negative if the target falls under the expected value (Quanteda, n.d.). In the case of this analysis, the reference corpus will be the forty interviews and statements made before comprehensive sanctions were implemented, which will be contrasted with the remaining forty statements after the implementation of sanctions in June 2010.



**Figure 3** Visualization of keyness analysis of statements and interview before/after comprehensive sanctions

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As can be seen in the visualization of the keyness analysis (**figure 5**), the term that has most drastically increased in use compared to the reference corpus is “sanctions.” This reinforces the proposition from the regression analyses that although targeted sanctions were in use before June 2010, it was only with the shift to comprehensive sanctions that they became a larger topic of discussion for the political elite.

However, there are further significant patterns to be detected within the keywords listed in **figure 5**. Although the pre-2010 period does not necessarily suggest any obvious pattern, a general observation is a higher focus on seemingly formal institutions as indicated by terms such as “member,” “agency,” “obligations,” and “council.” Another interesting feature within the keyness analysis for texts preceding comprehensive sanction is the higher use of “fuel,” “cycle,” and “weapons.” These terms likely reflect the Iranian intent to develop its nuclear capabilities, although within the constraints set by the NPT. These explanations more often than not were accompanied by reiterations that nuclear weapons did not fall within this scope nor the intent of the Iranian government.

In contrast, the corpus reflecting statements made after the implementation of comprehensive sanctions shows a much more cohesive pattern. The relative frequency analysis suggests that several words whose frequency increased most relative to the reference text are in some way related to cooperation. This is suggested by the increased use of terms such as “deal,” “program,” “management,” “negotiating,” “agreement,” and “plan.” Here it is important to point out that it is not just that these terms appear frequently in the texts after June 2010 but that they do so disproportionately often in comparison to the period pre-comprehensive sanctions. These insights, alongside the fact that “sanctions” is by far the most relatively frequent word/talking point used by Iranian officials, suggest a change in orientation towards a level of support for nuclear negotiations that was not present prior to the intensification of sanctions. This is based on the assumption that an increased frequency of mentioning negotiation-related terminology suggests a more public commitment to considering negotiations. Therefore, this increases the level of support for negotiations from a non-issue to an issue discussed at the very least.

### *e. Discussion*

Several major inferences can be drawn from the previous analyses. For one, we saw that, if all other things are equal, the relationship between sentiment and the eras before and after June 2010

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is actually not statistically significant. A potential hypothesis for this is that the general relationship between the main negotiating parties, the United States and the Islamic Republic of Iran, has had tensions for more than 40 years now. These continuing underlying attitudes will have likely prevailed and might have kept the sentiment more stagnant. Another such hypothesis is that as all of these interviews and speeches were given by government officials, diplomatic etiquette will have kept the conversations more restrained than they would have been behind closed doors (Oglesby, 2016, p. 7).

However, interestingly and relevant for this analysis, the period after June 2010 marked a significant spike in sanction-related terminology being used during these interviews and speeches. Although this might appear self-evident, it leads to two important inferences. For one, while the “obvious conclusion” could be attributed to the fact that sanctions had been intensified, it is important to remember that several sanctions had already been in place since 2006. However, these sanctions were targeted and did not impact the core economy as directly. It is this insight that would present an interesting point of departure for further study of the type of economic sanctions that work most effectively to produce an artificial MHS as constructed in the theoretical framework. For the purposes of this study, this conclusion is confirmation that the cutoff date chosen was significant, therefore justifying the methodological choice.

Furthermore, once sentiment, sanction-related terminology, and the format in which the text was produced were all considered within the same regression, a significant positive relationship could be detected. This indicates that although sentiment in general might not have changed significantly between the two periods of relevance, once this is brought in connection with the increasing mention of sanctions and related terminology as confounding variable, sentiment does change significantly, and it does so in a positive manner. As was indicated earlier, this was the outcome anticipated by the applied theoretical framework as sentiment in this case is the variable reflective of support for nuclear agreements.

Additionally, not only did the mention of sanction-related terms rise in general but the keyness analysis suggests that “sanctions” was the term that in relation to all other terms in the text increased in frequency in the transition from the period before to after comprehensive sanctions the most. This indicates the centrality of the issue. Alongside this, the keyness analysis suggests that terminology related to cooperation increased in relation to the before-period as well. This



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could indicate a transition to higher willingness to negotiate compared to before the intensified sanctions.

In total, the inference central to this study that can be drawn is that sanctions, in particular comprehensive sanction targeting the core economy, affect elite support of nuclear negotiations positively, therefore confirming the first hypothesis H<sub>1</sub>. The drastic increase in reiterations of sanction-related terminology as well as the significant positive relationship detected in the multiple linear regression model support the suggestions that the implementation of comprehensive economic sanctions influences elite support of nuclear negotiations.

### **VII. Phase Two – Putting the results in the conflict context**

Although a relationship between sentiment, sanction-related terminology and support for nuclear agreements can be suggested through the results of the first phase of this analysis, no negotiation – nuclear or not – occurs in a vacuum. Through integrating Jaeger’s sociological theory (2018) on coercive sanctions this second phase attempts to bridge a common critique incurred in quantitative studies by reconciling the insights gained through regression analyses with an explorative assessment of the context for which it was performed.

As highlighted in the theoretical framework, Jaeger suggests that in order to understand how coercive sanctions act within conflict communication, it is important to assess the nature of the conflict. He identifies that sanctions issued in an issue conflict are usually more effective as they communicate a utility rationale. In contrast, in identity conflicts sanctions convey a power rationale as they are understood to attribute responsibility (Jaeger, 2018).

In order to gain insight into the particular contexts in which the comprehensive sanctions on Iran were issued, I will first identify what might constitute an identity conflict with Iran by mapping identity formation in the country over the past years. Thereafter, the analysis will focus on issue-specific concerns during and preceding the negotiations. Having therefore established what might constitute an identity conflict and what an issue conflicts, I will once again turn to the eighty interviews and statements gathered and analyzed in the first phase of this analysis. In this section, however, the statements, sorted into the corpus of interviews before June 2010 and those after, will undergo structural topic modeling. The computer-generated topics resulting from each period will then be brought in the earlier identified context of identity or issue conflict. The aim, therefore, is

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to assess if more topics generated fall into one category than the other and if there is a pattern once the topics of both periods are compared.

### *a. Identity conflicts in the Iranian nuclear negotiations*

So as to understand potential topics rooted in identity conflict in the context of the non-proliferation negotiations with Iran, it is important to understand what identity is, what national identity is and how it is formed. Social identity theory defines social identity as “a person’s understanding that he or she belongs to a social category or group and, indeed, a social group is a composed of individuals who share a common social identification” (Seliktar, 2015, p. 42). As such, the formation of an in-group/out-group dynamic is inherent to identity formation.

One special type of such identity formation is moderated by religion, resulting in the cultivation of a religious identity. Some scholars argue that this type of identity might be stronger than most others as they are transcendental and based in long-standing texts and practices (Coleman & Collins, 2017, p. 3). In total, religious identities are rooted in a shared system of beliefs derived from metaphysical and ethical notions embedded in and conveyed through religion. However, membership in a religion does not automatically translate to one’s participation in it, so religious identity is not salient in the same way for every individual (Seliktar, 2015, p. 42).

National identity on the other hand is another form of social identity that is highly relational. In essence, the function of a national identity is to provide a community of history and destiny. It is, as Anthony Smith points out, “to be offered personal renewal and dignity in and through national regeneration. It is to become part of a political ‘super-family’ that will restore to each of its constituent families their birthright and their former noble status, where now each is deprived of power and held in contempt” (1991, p. 161). It includes a broad spectrum of elements such as a shared belief in the legitimacy of one’s nation’s political system, no matter if democratic or authoritarian. National identity is then reflected in laws and institutions that prescribe pervasive instructions such as what will be taught in schools or what language the common should speak. This pervasiveness of national identity is also reflected in values and culture ranging from what events are chosen to be celebrated to what it means to be a valuable part of this society (Fukuyama, 2021, p. 22). From a big picture perspective, however, nations can be conceptualized as an imagined community which contains ideas on the defining elements of its collective unity. This exists to the extent in which individuals identify with it emotionally. All that goes to say, that

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national identity is relational and a product of discourse between the individual, the collective and the external environment containing the Other (Wodak et al., 2009, p. 22).

Although the separation church and state has been a goal within many Western nations in the aftermath of the Enlightenment era, only a few Muslim countries have a viable separation of religion and state. In cases such as Iran, these it is difficult to identify voluntary piety and belonging to a religious identity due to the existence of strict public enforcement (Seliktar, 2015, p. 43).

Religious identity is a very central issue when examining the Iranian national identity. So as to understand the Iranian national identity, it is necessary to revert one's attention back to Iran pre-Islamic revolution. Under the Pahlavi dynasty, Iranian modernization and secularization resulted in better educated, urban sector turning away from traditional Islamic identity. The religious elite at the time, though disapproving of this secularization, did not themselves call for the creation of a theocracy. The trigger instead was what Seliktar calls "Ayatollah Khomeini's Islamist identity project" (Seliktar, 2015, p. 43). The Islamic Revolution in Iran was a manifestation of the struggle between the nation's secular ambitions and religious traditions. The fall of the Pahlavi made way for a reformation of Iran's national identity by the political and religious elites (Merhavy, 2019, p. 149). Even before the events of the Islamic Revolution in Iran, Khomeini, who would end up becoming Iran's first Supreme Leader after the revolution, condemned secularization and imaged a *Homo Islamicus*, the ultimate Islamic person (Seliktar, 2015, p. 43).

Instead of a natural, gradual reshaping of national identity, the Khomeini's Islamic Revolution Party (IRP) reorganized the nation structurally and institutionally to force about this shift away from secularism to a theological basis. While the 1979 Constitution allowed elections, these were heavily controlled by the clerical bodies as was the general political process. Candidates were expected to follow the "Line of the Imam," prove a commitment to Islamic values and ideology and reflect those in their political pursuits (Pargoo & Akbarzadeh, 2021, p. 41). Other areas of life also reflected a shift in Iran's national identity as purging of pre-revolution markers such as the replacement of the traditional sun and lion on the Iranian flag with the Islamic crescent moon, the mandatory teaching of Arabic in schools, expanded gender segregation and restrictive dress codes (Seliktar, 2015, p. 45). Over the years since the revolution the degrees to which the Islamic religious identity overshadows the persistent strains of secularist thought in the nation have alternated. Still, the strong continuing grip of cleric authority figures on the nation is evident in the

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veto power the Supreme Leader still enjoys as well as their influence over the political process and elections (Pargoo & Akbarzadeh, 2021, p. 41).

However, not only did the Iranian Islamic revolution magnify and institutionalize the role of Islam in the political and social identity of the nation but it also exacerbated an “us versus them” mindset, particular against the West. Even toward the end of the Pahlavi dynasty, despite increasing secularization, the state adopted a deeply anti-Western “Westoxification” discourse, delegitimizing democracy and focusing on animosity abroad (Mirsepassi, 2019, p. 27). Khomeini and the reformists of the Islamic Revolution used this sort of discourse to reinforce the antithesis of the “corrupt and materialistic” Western lifestyle to the pious Islamic one (Seliktar, 2015, p. 46). This mindset too became enshrined in the national identity as an emphasis of the Otherness of the West in comparison to Iran as well as the fear of ideological and neo-imperialistic influence from Western countries, in particular the United States. Mehran points out that these beliefs were institutionalized as portrayals of Russians, Americans, and the British as one of constant interference, aggression and plunder aimed to bring about the end of Iran’s independence (2002, p. 143). A further group which is systematically being portrayed as an antagonistic Other are countries that have fought physical wars against Iran such as Israel, Mongolia, or Iraq (Mehran, 2002, p. 143).

Although this is only a brief glimpse into the national identity of Iran, it has synthesized two main themes central to potentially conflicting identities: Religion and Islam as a central part of the state and its identity as well as deeply rooted Anti-Western sentiments. Both of these concepts cannot homogeneously be attributed to all Iranian individuals of course. However, as the Islamic Republic of Iran has institutionalized these elements to a high degree and as it is the Iranian elite this analysis surveys, these two areas provide a good basis for the following analysis.

### *b. Issue conflicts in the Iranian nuclear negotiations*

In contrast to the identity conflicts stand issue related conflicts according to Jaeger (2018). Conflicts of this kind center around incompatible interests that – although incompatible – are characterized by continuous communication of mutual objection to each other’s terms on a specific issue. In other words, in contentions of this kind, opponents try to persuade their counterpart of their particular views. In many cases such situations can be summarized as an issue of agreeing to disagree (Jaeger, 2018, p. 61). In the case of Iran, the issues at hand can be found in the following

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three interrelated elements: Alleged nuclear proliferation, Iranian progress through nuclear energy and lack of transparency.

The issue that sparked negotiations as well as sanctions, first and foremost, is the international community's concern about Iran's potential nuclear proliferation. As detailed in section III, after undisclosed nuclear plants were uncovered in Iran in 2002, the IAEA conducted a three-year long investigation into Iran's nuclear development. However, although the agency was not able to prove that Iran has pursued nuclear weapons, they could similarly not establish that the nuclear program was entirely for peaceful purposes. As a member to the NPT, this development was concerning as this indicated a potential breach of international law alongside the implications the development, if confirmed, could have on the regional security in the Middle East (Kerr, 2014, p. 2).

From an Iranian perspective however the more salient issue concerns also the NPT but in this case not the nation's obligations provided by it but also the rights that come with membership to the NPT. Iranian political elites emphasize that the nuclear program being develop is for peaceful purposes only and will aid in the production of medical isotopes as well as further technological advancement ((Kerr, 2014, p. 2). As such, Iran views its nuclear program as a sort of entrance ticket to the club of scientifically developed nations and therefore emphasizes its rights to develop within the parameters set by the NPT. Although the nation emphasizes that its enrichment of uranium occurs for peaceful purposes, it is this development that marks one of the major concerns of nuclear powers. These powers argue that being able to enrich uranium to twenty percent, enables Iran to proliferate its nuclear capabilities rapidly if they so choose (Seliktar, 2015, p. 52).

Finally, the last topic covered under issues permeating the Iranian nuclear negotiations is the lack of transparency, an issue underlying both previous points. While current IAEA safeguards provide the agency with a wealth of technical data through inspections, intelligence on decisions made on the nuclear process on the highest level, especially if concerning nuclear weapons, is difficult if impossible to obtain by nature (Reardon, 2017, p. 38). Currently, to produce weapons-grade uranium, Iran would have to either enrich in their declared facilities, which are under IAEA supervision, or at undeclared sites. The previous existence of the latter is one factor amplifying the concerns over lacking transparency. As both, Iran's Natanz and Fordow site were known to the United States prior to their official declaration to the IAEA, a breach of transparency measures resulted also in a breach of good faith between Iran and the West (Reardon, 2017, p. 40).

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Consequently, increasing transparency surrounding Iran's nuclear capabilities is a central issue within the nuclear negotiations.

Once again, although there is quite an accumulation of more detailed issues under discussion in the context of Iran nuclear negotiations, they all fall under the umbrella of one of the three highlighted categories (proliferation concerns, Iran's nuclear progress and lack of transparency).

### *c. Structural Topic Modeling methods description*

As indicated earlier, for this analysis the eighty interviews gathered and utilized in phase one will be used once again. The pre-processing steps used within the first phase have also been mirrored in this analysis. This includes the removal of punctuation, symbol, hyphenation, stop words and word stemming. Furthermore, the corpuses have again been programmed to exclude any words that are included in less than 7.5 percent and more than 90 percent of texts. These preprocessing steps allow for a clearer analysis by removing items that might obscure the analysis.

Once the corpuses have been prepared, a Structural Topic Model is applied to the converted data frame matrixes. Structural Topic Modeling is a generative model of word counts. As Roberts, Stewart and Tingley explain,

“The generative model begins at the top, with document-topic and topic-word distributions generating documents that have metadata associated with them [...]. Within this framework [...] a topic is defined as a mixture over words where each word has a probability of belonging to a topic. And a document is a mixture over topics, meaning that a single document can be composed of multiple topics” (2019, p. 2).

In application, this method then produces a specified number of topics identified across documents. For each topic produced, a number of words will be provided per topic label. Despite four topic labels<sup>6</sup> existing for each topic in total, this analysis will examine the topic labels *Highest prob* as well as *FREX* for each topic. *Highest prob* suggests words within each topic with the highest

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<sup>6</sup> Topic labels in the *stm* package describe ways in which words should represent a topic. This essentially implies choices such as wanting the topic to be represented by the words that have the highest probability of being in the texts (*Highest prob*). In contrast, one could also choose to represent a topic through the words which are both most frequent but also most exclusive to the topic (*FREX*). Next to these two topic labels, *stm* also provides two more such labels (*lift* and *score*) (Roberts, Stewart & Tingley, 2019, p. 2).

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probability as measures through the topic distribution parameter  $\beta$ . In contrast, *FREX* indicates the words that are both frequent yet exclusive. It therefore identifies those terms that distinguish topics by taking the harmonic mean of rank by probability within the topic as well as rank by distribution of the topic given word  $p$  to test exclusivity. In gauging this exclusivity, the algorithm uses a James-Stein type shrinkage estimator of the distribution (Roberts, Stewart & Tingley, 2019, p. 2).

Within this analysis ten topics for either corpus will be generated. Following their calculation, the analysis will take a more qualitative approach by assessing each topic and assigning it a general label/topic name for simplicity. Special consideration will be given to the *FREX*-associated terms, since the general topic for all statements and interviews was fixed at nuclear negotiations, the highest probability words within each topic are anticipated to be somewhat related to one another. These topics will then be considered in the context of the previously identified identity and issue conflict areas and placed within either the identity or issue conflict realm.

### *d. Results*

After conducting the structural topic model for the corpus designating interviews and statements before comprehensive sanctions, ten topics were identified through considering their words of highest probability as well as the *FREX* words as can be seen in **table 3**. Topic 1 was given the title “Religious Iran” as it is the only topic referring to the *Imam* and *lord* as well as *nation*, *Iranian*, *people* and *govern*. The previous investigations of Iran’s political system suggest that references to the religious as well as the nation-state are a reference to the Islamic Republic of Iran in general. As such, it also falls within the identity topics identified earlier.

Both topic 2 and 5, termed “Achieving the nuclear bomb” and “Iran and the NPT safeguards” respectively, concern the central issues of the Iran nuclear negotiations. While the focus of topic two seems to lie with the potential to proliferate (*weapon*, *bomb*, *possess*), the latter emphasizes the connections to the NPT and the IAEA (*agency*, *obligation*, *safeguard*). Similarly, topic 10 “Iran and the IAEA” demonstrates the role of the IAEA as part of the negotiations around the suspension of uranium enrichment (*IAEA*, *enrich*, *suspense start*). Moreover, topic 6 “Nuclear negotiation process” shifts emphasis to the process of getting deal (*talk*, *unite*, *regulations*, *framework*). All in all, these topics focus on the issue of potential proliferation, nuclear development, and negotiations, therefore, falling in issue topics identified for the context of the Iran nuclear negotiations.

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<i>Interviews and statements before comprehensive sanctions</i>	
<b>Topic 1 – Religious Iran</b>	
Highest prob	nation, people, Iranian, know, say, issue, govern
FREX	launch, enemy, imam, lord, age, know, tire
<b>Topic 2 – Achieving the nuclear bomb</b>	
Highest prob	nation, Iranian, weapon, fuel, can, energy, bomb
FREX	field, scientist, energy, possess, bomb, achieve, dominant
<b>Topic 3 – America against Iranian nuclear program</b>	
Highest prob	Iran, country, weapon, agency, right, say, use
FREX	agency, American, thought, respond, far, America, intent
<b>Topic 4 – Iran viewed by in- and out-group</b>	
Highest prob	people, want, think, say, can, question, country
FREX	science, scholar, terrorist, reality, student, read, allow
<b>Topic 5 – Iran and the NPT safeguards</b>	
Highest prob	Iran, agency, country, active, facility, obligation, safeguard
FREX	safeguard, agency, facility, obligation, material, generate, director
<b>Topic 6 – Nuclear negotiation process</b>	
Highest prob	talk, unite, Iran, country, nation, year, people
FREX	framework, unite, talk, regulations, within, package, seem
<b>Topic 7 – Peaceful Iran</b>	
Highest prob	peace, right, weapon, nation, country, justice, Iran
FREX	spiritual, tranquil, equal, common, republic, assembly, interact
<b>Topic 8 – War and peace</b>	
Highest prob	nation, world, human, people, justice, power, secure
FREX	humankind, oppress, love, beauty, reform, occupy, god
<b>Topic 9 – Iran’s position in the world</b>	
Highest prob	country, can, Iran, people, region, world, issue
FREX	region, west, Iraq, U.S., review, Europe, Israel
<b>Topic 10 – Iran and the IAEA</b>	
Highest prob	IAEA, Iran, issue, enrich, us, therefor, year
FREX	site, start, enrich, IAEA, therefor, yes, suspense

**Table 3** List of topics before the implementation of comprehensive sanctions



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In contrast, while topic 3 does contain some issue-related terms such as *weapon* and *agency*, further terms such as *American*, *intent*, *right* and *use* suggests that the topic centers on American interference in Iran's nuclear development. As this is a manifestation of Iran's conflicts with the West, this topic has been categorized as an identity-related conflict rather than an issue-related one. Similarly, topic 9 "Iran's position in the world" seems to thematize the relationship between Iran and the West as suggested by terms like *Iran*, *region*, *West* and *U.S.* However, what firmly cements this issue within the identity related topics category is the mention of *Israel*. As the relationship between Israel and Iran is unrelated to nuclear development but firmly rooted in historically recorded hostilities between the two since the creation of the Israeli state (Goldberg, 2017, p. 3), this topic finds itself among the identity-related topics.

Finally, topics 4, 7 and 8, though with different foci, seem to center on the Iranian identity - at least different perceptions thereof - or the general context in which the negotiations occur. While topic 4 "Iran viewed by in-groups and out-groups" emphasizes different perceptions of Iran (*science*, *scholar*, *terrorist*, *question*), topic 7 "Peaceful Iran" underlines the peaceful intentions of Iran (*spiritual*, *peace*, *right*, *equal*) and topic 8 "War and peace" highlights the major concepts in discussions surrounding the ideal international environment (*justice*, *human*, *power*, *secure*, *beauty*, *love*). All in all, however, none of these topics describe the issues under discussion in the nuclear negotiations but rather concerns abstract conceptualizations of Iran and the world, indicating these as identity-related topics.

After assessing the suggested topics in the period before comprehensive sanction, another ten topics have been generated for the interviews and statements in the period after the intensified sanctions (see **table 4**). The results show that many topics center around nuclear development, negotiations, and weapons in particular. Topics 1, 2, 8 and 9 – all termed "Nuclear negotiations" and "Securing the nuclear deal" – highlight the negotiations around particular nuclear topics as suggested by terminology such as *nuclear*, *negotiate*, *enrich*, *deal*, *P5*, *bomb*, *resolve*, *protocol* and *site*. Likewise, topic 3 "Nuclear enrichment" seems to focus on the issue of enrichment in particular (*enrich*, *Fordow*, *fuel create*) while topic 6 emphasizes the urgency and timeliness of the nuclear negotiations (*negotiate*, *today*, *month*, *day implement*), therefore appropriately termed "Timing of nuclear negotiations." Finally, topic 7 ("Nuclear weapons vs. energy") also shows

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<i>Interviews and statements after comprehensive sanctions</i>	
<b>Topic 1 – Nuclear negotiations</b>	
Highest prob	Iranian, nuclear, negotiate, program, enrich, IAEA, Obama
FREX	Obama, administration, term, engage, American, program, civilian
<b>Topic 2 – Nuclear negotiations</b>	
Highest prob	will, believe, nuclear, issue, need, people, can
FREX	discuss, believe, lot, p5, member, resolve, think
<b>Topic 3 – Nuclear enrichment</b>	
Highest prob	confidence, country, negotiate, therefor, enrich, issue, law
FREX	confidence, law, therefor, provide, Fordow, fuel, create
<b>Topic 4 – Justice and freedom</b>	
Highest prob	nation, world, will, also, govern, justice, Iranian
FREX	regime, justice, freedom, satellite, dignity, join, god
<b>Topic 5 - Terrorism</b>	
Highest prob	region, world, peace, violence, extreme, intern, secure
FREX	violence, extreme, east, middle, terror, fear, violent
<b>Topic 6 - Timing of negotiations</b>	
Highest prob	will, negotiate, deal, today, day, also, nuclear
FREX	day, month, today, joint, deal, lift, implement
<b>Topic 7 – Nuclear weapons vs. energy</b>	
Highest prob	nuclear, country, weapon, issue, one, active, thousand
FREX	thousand, active, weapon, five, energy, nuclear, suffice
<b>Topic 8 – Nuclear negotiations (detailed)</b>	
Highest prob	nuclear, issue, right, us, talk, cooper, one
FREX	defend, addition, purpose, cooper, protocol, site, defense
<b>Topic 9 – Securing the nuclear deal</b>	
Highest prob	nuclear, state, unite, sanction, deal, will, secure
FREX	unite, state, bomb, abandon, tri, deal, less
<b>Topic 10 – Peace and harmony</b>	
Highest prob	world, nation, people, human, will, unite, justice
FREX	humankind, love, aspire, divine, prophet, truth, colony

**Table 4** List of topics after the implementation of comprehensive sanctions

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significant connections to the nuclear issue by contrasting *weapons* with *energy* of that kind, thereby illustrating the central issue of misunderstanding between Iran and the other negotiating parties. The frequent and persistent use of nuclear-related terminology in the topics listed above, therefore qualifies them for the issue-related topics category.

In contrast, topic 4 portrays notions of justice and freedom for Iran (*nation, justice, Iran, govern*) which are reaffirmed in topic 10 “Peace and harmony.” This topic is quite similar to the topics 7 and 8 of the topic assessment for the statements before comprehensive sanctions and proclaims more general concepts of a harmonious international society such as *unite, world, justice, love* and *peace*. The words *prophet* and *divine* in particular suggest the religious roots this view has, tying the topic back to the religious identity of Iran. Finally, the probably most hostile topic within the analysis of the period after comprehensive sanctions is topic 7 due to its references to *violence, extreme, fear* and *terror*, thus resulting in the title “Terrorism” for the topic. In total, these topics concern the Iranian identity, in particular its religious inclinations, therefore falling among the identity-related topics.

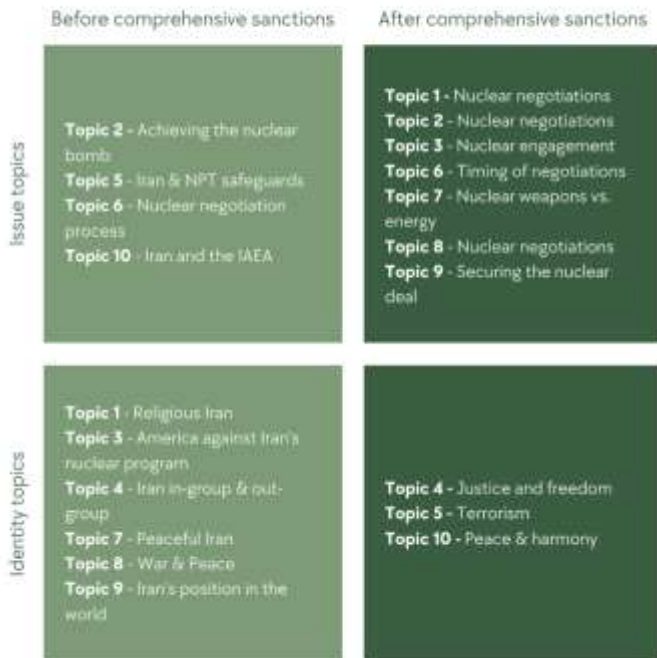
### *e. Discussion*

Bringing the results from phase two into the perspective of the overall objectives of this research, the theoretical framework suggests that looking at and understanding the context in which sanctions are communicated is important (Jaeger, 2018, p. 45). Phase two has therefore focused on trying to investigate the context of nuclear negotiations with Iran before and after the issuing of comprehensive sanctions. This was done in an attempt to identify if there is a particular relationship between the particular type of sanction issued and the context of conflicts, therefore investigating if the type of sanction could be linked to conflict transformation. On the basis of a quantitative approach, through structural topic modelling topics before and after the implementation of comprehensive sanctions were identified and thereafter associated with either an issue-relation or an identity-relation.

As illustrated in the matrix **figure 6**, a shift between the dimensions of identity and issue can be detected. Before comprehensive sanctions were implemented, the analysis suggests that a slim majority of topics find their roots in identity-related issues. Many of the main topics under discussion relate to Iran’s relationship or lack thereof with the West and the United States in particular or about Iran’s identity as an Islamic state. However, nuclear topics were still of high

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### TOPIC DISTRIBUTION BY ISSUE VERSUS IDENTITY CONFLICT



**Figure 4** Topic distribution by issue versus identity conflict

In contrast, after comprehensive sanctions were implemented in June 2010, seven out of the ten most probable topics identified from the corpus of forty interviews are heavily related to the issue of nuclear proliferation, negotiations, and nuclear energy development. A particularly persistent theme within this analysis is the focus on the nuclear negotiations themselves, which five topics heavily emphasized. This larger focus on the nuclear issue, however, also translated into a particularly interesting shift on the side of identity-related issues in this period. In fact, comparing the period before and after comprehensive sanctions on the identity-related topics dimension, the number of topics categorized in this dimension halved from six topics previously to only three. Of these three, it is additionally fascinating to discover that two (topic 4 and 10) emphasize peace, which could be interpreted as a sign for increased effort to resolve conflict non-violently, therefore potentially increasing the willingness to cooperate.

Consequently, the findings of phase two build on the establishment of a positive relationship between the implementation of comprehensive sanctions and elite support for nuclear agreements. As phase one enabled the inference that this relationship exists in a statistically significant manner, the second phase tries to connect this finding with the theoretical framework's suggestion that the effectiveness of sanctions depends on the conflict context in which they are communicated.

relevance with four out of ten topics showing high issue-related tendencies. It is notable that a particularly salient theme within the interviews seems to be the interactions with the IAEA and regulations. This is likely due to the fact that in 2009, a potential deal concerning a fuel swap in exchange for a temporary suspension of the Iranian enrichment program and enhanced safeguards enforced by the IAEA had almost been struck. However, this agreement failed due to lack of domestic support as well as domestic turmoil in Iran at the time caused by national elections (Poneman & Nowrouzadeh, 2021).

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Through the structural topic modeling, the analysis was able to provide insight of the context in which each sanction type (targeted versus comprehensive sanctions) was issued. The conclusion of this analysis is that while the distribution of identity versus issue related topics was almost even, although leaning towards an identity-related context, after the imposition of comprehensive sanction, the context was much more dependent on nuclear issue-related topics. Having established these findings allows for further discussion on the causality. The analysis of this phase does not allow for the determination which one came first, comprehensive sanctions or a more issue-related conflict. However, due to the results gathered in phase one suggesting higher positive sentiment after intensified sanction and knowing through Jaeger's conceptualization that a transition from identity-related conflict to issue-related conflict tends to lead to higher chances of conflict resolution, I theorize that the imposition of comprehensive sanctions contributed to the formation of a more issue-related conflict context. This is due to the pointed nature of targeted sanctions which place responsibility on individuals, therefore allowing for the conceptualization of these sanctions as a power rationale more easily. In contrast, comprehensive sanctions are a greater commitment, usually affecting both the issuing country as well as the sanctioned one (Thompson, 2009, p. 311). As both parties, in this case, take a risk this option might appear like more of a choice rather than an imposition by a higher power. However, proving this particular theory is beyond the capacities of this research and would therefore present yet another opportunity for further research into the causal mechanisms that make different types of sanctions have different effects.

### **VIII. Combined discussion**

The aim of this research was to investigate the relationship between the implementation of different types of sanctions and support for nuclear agreements by the alleged proliferator in the context of Spaniel's nuclear bargaining theory (2019) as well as Jaeger's sociological take on coercive sanctions (2018). Moreover, a related sub-question was highlighted of the way this change in sanction type affects the context in which coercive sanctions are being issued. Both phase one and phase two did not only investigate these questions separately but demonstrated just how interconnected the two potentially are.

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Spaniel's theory suggests that, assuming the negotiations are classified as a "just right" scenario in its pre-shift bargaining phase, in order to dissuade a potential proliferator who has a credible potential to proliferate, the cost of such acts must be increased (2019, pp. 35-38). The first assumption in this model that the main research question tries to investigate is that sanctions can act as a way to increase costs for the proliferator to the point at which proliferation is not longer feasible and an agreement can be reached. In the context of this study, the indicator for having raised the cost of nuclear proliferation enough to incentivize a butter-for-bombs agreement was defined and operationalized as an increase in support for nuclear agreement by the political elite of the allegedly proliferating nation Iran. Within the first phase of the study, the analysis was able to identify a statistically significant positive relationship between the imposition of comprehensive sanctions in favor of targeted ones in Iran and sentiment in the context of more frequent discussions about sanctions.

However, an important caveat to note here is that when only considering comprehensive sanctions and sentiment, the results of the linear regression actually found no such significant relationship. Only once the multiple regression model controlled for the increase in sanction-related terminology as well as the distribution of statements classified as interviews versus speeches was the relationship between comprehensive sanctions and sentiment in Iran significant. As indicated in the discussion of the results of phase one, this could likely be the byproduct of the persistent underlying attitudes of Iran and the West, in particular the United States (Barzegar, 2014, p. 2). However, by accounting for sanction-related terminology, the analysis was able to consider the particular context in which the investigation of sentiment was relevant for this study.

Additionally, although some might find the increase in sanction-related terminology after the imposition of comprehensive sanctions unsurprising, this is a result of great relevance. Through the results of the linear regression between sanction-related terminology and the actual imposition of comprehensive sanction, a strong positive relationship between the two could be identified. As sanctions on Iran have, however, been in place since 2006 the question that remains is why this definite increase in sanction terminology could be identified in the transition from pre-June 2010 to afterwards. Since this transition point of June 2010 was chosen due to the imposition of comprehensive sanctions in favor of targeted ones, this result is indicative of the fact that targeted sanctions versus comprehensive ones have significantly differing effects on how a proliferator

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communicates about sanctions. This indication that sanctions gain greater relevance after the imposition of comprehensive sanctions is further supported by the keyness analysis. It indicates that the term “sanctions” saw the highest increase in frequency if comparing the corpus before and after June 2010 among all terms contained in the document. With this, it can already be inferred that the type of sanctions affects the frequency at which sanctions are discussed by nuclear proliferators significantly.

This insight can then be brought in the context of the other side of the coin – sentiment and support for nuclear agreements. As mentioned, if controlled for the increase in sanction-related terminology, a positive relationship between sentiment and the imposition of comprehensive sanctions can be assumed. Moreover, the keyness analysis suggests greater discussion related to negotiations after this imposition as is indicated by the increase in the frequency of negotiation-related terminology. Combining the insight on the increase in (positive) sentiment as well as higher willingness to discuss negotiations, the results of this analysis support the previously suggested alternative hypothesis:

*H<sub>1</sub>: Comprehensive economic sanctions increase support for nuclear agreements significantly.*

Less definite, however, is the discussion surrounding the interrelated sub-question concerning the context in which sanctions are issued. While Spaniel’s theory (2019) suggests that raising the costs of negotiations will deter a potential nuclear proliferator from realizing this goal, Jaeger (2018) takes the approach conflict transformation can happen through a transition of the conflict context. Integrating these two insights therefore suggests that if negotiations raise the cost enough through imposing comprehensive economic sanctions, the context of the conflict can transform from an identity-conflict to an issue-based conflict. This result would therefore increase the receptiveness of the sanctioned country to a positive outcome as discussions revert back to being perceived as problem-based instead of as attacks on one’s identity.

The structural topic modeling approach in the second phase integrates these insights by generating topics for the corpus of texts before comprehensive sanctions and after. Subsequently, these topics were then categorized as either identity or issue-based. This analysis indicates that although issue-based topics were already of relevance in before this cutoff date, the number of such topics nearly doubled for the period after. Identity-issued were of much less importance in the time after

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comprehensive sanctions were imposed indicating that the emphasis of communication, the utilized proxy for communication context, has changed. Interpreting these insights, I would suggest the following explanation: The imposition of comprehensive sanctions changed the communication context as it conveyed a utility-rationale rather than a power-rationale. This could have potentially been a result from the fact that while only single individuals and entities were targeted, many of these individuals were in the political elite (Borszik, 2016, pp. 24-25). As the political elite makes the negotiating decisions, the imposition of targeted sanctions was potentially perceived as an attack on the political elite, which in Iran is highly interlinked with the nation's clergy (Arjomand & Brown, 2013, p. 126). However, as the state identity is so closely linked to religion in the state, sanctions on this political elite might have therefore been perceived as attacks on the identity of the state itself (Borszik, 2016, pp. 24-25). Furthermore, as one major tension between the West and Iran is its rather authoritarian status as opposed to the Western democratic values, sanctioning that government also might have been interpreted as a direct conflict with the identity of the Iranian state.

Finally, issue-based conflicts imply a utility-rationale, therefore implying the presence of choices the sanctioned nation gets to make, comprehensive sanctions appear to overcome the power-rationale related hurdle of perceived imposition of decisions by the sanctioning country. Although the particular reason for this cannot be inferred through the results of the second phase of this analysis, one theory for this transformation lies in the "artificial butter" argument contained in the theoretical framework. Starting out, what the analysis above does suggest is that comprehensive sanctions raise the cost of proliferation higher than targeted sanctions. It can be argued that this not only dissuades nuclear proliferation but also creates "artificial butter" or artificial incentives in the form of sanction relief. As such, if negotiations are successful, one of the concessions the nuclear countries can make is lifting imposed sanctions, therefore benefitting the sanctioned country. I propose that in creating this artificial incentive while simultaneously having raised the costs of proliferation, the cost/benefit calculations of the proliferating country will have to start to view the negotiations through a utility-rationale. In other words, proliferating states now find themselves with a perceived choice of ending nuclear proliferation for the sake of their population and economy or continuing proliferation while paying the price of the previous.



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Although the analysis of phase two cannot prove these proposed causalities, it provides the necessary assumption underlying this suggestion: A change in sanctions from targeted to comprehensive is related to conflict transformation indicated by a change in the conflict context, therefore supporting  $H_{1a}$ . Further research can utilize this insight as well as the proposed explanation as a starting point to investigate the actual causal link between sanctions, conflict context and support for agreements in greater depth. One such project might look into the role of public pressure created through comprehensive sanctions in particular and its relation to the increased cost of proliferation in a hybrid regime such as Iran.

### **IX. Limitations and considerations for future research**

Although the analyses incorporated in this study aim to give a better understanding of how different types of sanctions affect nuclear negotiations and in particular the proliferating power's support for such negotiations, the study has several limitations. These limitations are of two-fold nature as both internal versus external validity have to be addressed.

First and foremost, the most glaring limitation of the study is related to the content itself or rather the lack of further content. This study relies on the case study of Iran and the processes contained within these negotiations in particular. Therefore, although the analyses aim to explore and understand how sanctions affect support for nuclear agreements, it can only claim inference and conclusions for this case study in particular. Despite the initial consideration of the inclusion of other cases of (attempted) proliferation such as North Korea, Libya, and Iraq, these were not included for two reasons. For one, the inclusion of further case studies would have exceeded the scope and length of a master's thesis, therefore recommending the single case study approach. Secondly, in the case of both Libya and Iraq, sanctions were imposed not only to dissuade nuclear proliferation but also for alternate reasons such as support of terrorism abroad, war or domestic violations of human rights (Niblock, 2001). Any analysis of these cases would therefore need additional considerations of these special circumstances. As this research focuses on nuclear negotiations in particular however these considerations would fall outside the considered scope and potentially obscure results. In the case of North Korea, though the circumstances due to which sanctions were imposed were centered around nuclear proliferation, the inaccessibility of public statements obstructed their inclusion in this analysis. However, the single case study of Iran offers

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valuable insight in the workings of sanctions in response to nuclear proliferation attempts that can be used as a point of departure for adapted studies of the aforementioned case studies.

As a result, even though the single-case study nature of this study affects the generalizability of inference claims, the study intentionally employs quantitative methods instead of a qualitative approach as most often expected in case studies to provide replicability. While findings cannot be extended to other case studies, the methods of utilizing sentiment analysis, sanction-related-terminology as well as structural topic modeling in an interacting way can be used to examine future cases of comprehensive sanctions in response to nuclear proliferation. In fact, the demonstrated methodology might also find utility in the general field of conflict resolution and the utility of sanctions within that field.

Furthermore, so as to provide a convincing analysis several concerns about internal validity of the study will need to be addressed as well. First and foremost, due to the quantitative nature of the analyses conducted, as well as the lack of control of potential covariates as would be provided in an experimental setting, no causal claims can or are intended to be drawn from this study. However, the statistical methods employed have several robustness checks in place such as the consideration of outliers as well as the inclusion of Cook's distance calculations. As relationships have been established, the analysis once again looks to further research to investigate particular causal mechanisms tying economic sanctions and their effect on nuclear negotiations together.

As for the corpus considered in the analyses, although the number of speeches and interviews meets the minimum threshold of more than thirty cases each group of interest (Diez, Barr & Çetinkaya-Rundel, 2016, p. 178) – in this case forty texts before as well as forty after June 10, this by no means can be considered a large n-study. However, as the conventional minimum threshold has been met the necessary conditions regarding external and internal validity have been fulfilled. Still, it is necessary to be aware that outliers have a greater influence than they would on larger studies. This concern has been addressed through a calculation of Cook's distance calculation. Finally, although all statements included in the analysis were made by Iranian officials, almost all interviews were conducted by Western, that is to say American or European, news organizations or Western venues. This is a result of the language barrier and access problems involved in utilizing interviews by domestic Iranian sources.

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Although this exclusion translates in potentially Western-centric approaches to the conduction of interviews, the analysis has aimed to mitigate any validity concerns by including only statements from Western sources rather than mixing the two. This ensures that the audience addressed by the statements remains the same, therefore, seeking to keep the perspective from which statements are issued constant. Still, this particular limitation is important as it limits conclusions to the effect on the elite support for nuclear negotiations *as portrayed to the Western world*. However, this perspective is valuable to the discussion of nuclear negotiations as the negotiations involving Iran were conducted with several Western powers and the United States in particular. Therefore, how the political elite of Iran expresses their support of nuclear negotiations toward Western media is thought to be indicative of the positions they would take in negotiations with Western nations (Levenotoğlu & Tarar, 2005).

### **X. Conclusion**

While the question of nuclear proliferation and weapons might at first glance seem outdated and cumbersome, existing without them in a world with several nuclear powers is understandably disconcerting. As such it is of little surprise that nuclear negotiations remain relevant today as they did seventy years ago. Therefore, knowing how to reign in and dissuade attempted nuclear proliferation, is of the utmost importance. This analysis in particular looked at the way in which the implementation of different types of sanctions impacts the support of alleged nuclear proliferators to negotiate their non-proliferation commitment. The results of the first phase indicate that a positive relationship exists between the implementation of comprehensive sanctions in favor of targeted ones and the sentiment of the political elite in Iran. This case study therefore suggests that comprehensive sanctions were more successful in bringing about support for nuclear agreements than targeted ones. Results from the second phase were able to provide a potential explanation of why such a shift occurred. The outcomes indicate that the transition from before comprehensive sanctions to after was accompanied by a shift in the conflict context. This suggests that the context in which sanctions were communicated changed from an identity-based context to an issue-based one, providing an account of why comprehensive sanctions were more successful than their targeted counterparts.

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Overall, the case study of Iran provides a starting point for further examination of the different types of sanctions in the nuclear context and their effectiveness, building a foundation future policy suggestions and considerations about what sanctions communicate so as to better time and structure sanctions in future negotiations. Most importantly, however, this analysis provides yet another step towards more efficient nuclear non-proliferation and hopefully a future that can eliminate nuclear weapons as a whole.

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### **Annex- List of sanction-related terminology**

- Ban(s)/banned/banning
- Blackmail
- Blockade(s)
- Coercive
- Embargo
- Exclusion(s)
- Export Control
- Import/export restriction
- Investment(s)
- Penalty/penalized/penalized
- Pressure(s)
- Prohibition/prohibiting
- Punishing/punishment
- Restriction(s)
- Sanction(s)/sanctioning
- SWIFT
- Trade sanctions
- Withdrawal