

# **Dangerous Design: Threat and Arms Control Agreement Design**

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*Abstract:* States put effort into forming and designing arms control agreements to control the spread of arms and arms-related technologies. However, many arms control agreements do not feature constraining obligations, leading to weak agreements that are less effective in controlling the spread of arms. This paper explains when states will choose to design agreements that feature high obligations that constrain their behavior. I argue that the level of obligation in an arms control agreement depends on a state's threat environment. When states experience threats from their negotiating partners ("partner threat"), then they are more likely to prefer high obligation agreements because this presents an opportunity for states to constrain their partners and reduce or eliminate some of that threat from the other members of the agreement. But when states experience threats coming from states outside the arms control agreement ("external threat"), then they should prefer low obligation agreements that are less constraining. I use data on all arms control agreements, negotiated between 1945 and 2010 to test my hypotheses. I find that while increases in partner threat do not lead to an increase in the likelihood of a high obligation agreement, increases in external threat lead to a decrease in the likelihood of a high obligation arms control agreement. These results have important implications for theories of arms control and for policymakers looking to craft effective arms control agreements.

From ancient Greece to the Cold War and today, humans have long been concerned with what type of weapons are to be made, sold, deployed and used on the battlefield. These concerns have only grown in importance in the modern era as weapons technology has become increasingly deadly, especially with the invention and use of nuclear weapons at the end of World War II. The main way political actors, including modern states, have sought to control the manufacturing, spread, deployment, and use of these weapons is through negotiating international arms control agreements. Modern arms control agreements (post-WWII) have not only sought to limit what type of weapons are built, but also how many of them are built, where they are deployed, who they can be sold to, and how their effectiveness can be tested. Like other international agreements, not all of these agreements are equal; some are much more effective in constraining state behavior than others. One of the keys in determining their effectiveness is to examine how they have been designed, specifically by looking at the level of obligation in these agreements. This leads to the following question: what factors influence arms control agreement design?

There are multiple domestic and international factors that may plausibly influence the design of arms control agreements, one of which I examine here. I focus on the impact that threats from other states can have on design choices, once again, specifically examining how threat influences the level of obligation in these agreements. I examine threats originating from two different sources: threats from states with who you are negotiating and designing the arms control agreement with (called “partner threat”) and threats from states who are not involved in the negotiating process (called “external threat”). I choose to focus on threat instead of other factors because, in general, arms control agreements are formed to control the spread of arms and arms-related technologies, which states can and have used to threaten other states. Many arms

control agreements are designed and formed in response to threats from other states. Thus, threat and arms control are intimately linked. While other scholars have examined how the design of arms control agreements impacts the likelihood that these agreements are ratified and entered into force (Kreps 2018), little is known about what influences states to choose that specific agreement design in the first place. By better understanding what drives states to make the design choices that they do, scholars and policymakers can have a better understanding of how these agreements come together, and how to best design them so they are effective in constraining state behavior when it comes to deadly weapons and potentially help save lives.

I choose to focus on the level of obligation in arms control agreements instead of other dimensions of agreement design, because the level of obligation determines how constraining the agreement will be on state behavior, and thus, how easy (or difficult) it is for states to cheat on the agreement. As a result, obligation is the most important dimension of design in determining whether an arms control agreement achieves the goal of controlling the spread of arms and arms-related technologies. Additionally, obligation is the most important design dimension in determining whether arms control agreements will be ratified and enter into force (Kreps 2018). Obligation is defined as the degree to which an agreement is legally binding (Kreps 2018), more specifically, whether the agreement includes escape, withdrawal, or sunset clauses that provide states mechanisms for withdrawal should circumstances change in the future (Milner and Rosendorff 2001) or allow for reservations, declarations, and interpretive statements that exempt states from particular aspects of the agreement (Helfer 2012). Placing reservations, declarations, and interpretive statements (also known as “understandings”) on an agreement communicates a state’s intent to exempt itself from particular provisions of a treaty (Hill 2016), thus nullifying some of the constraining effects the agreement may have on state behavior.

Obligation can be thought of as how much flexibility the agreement allows for in state behavior. A low obligation agreement, like the Interim Agreement between the United and the Soviet Union, give states the greatest amount of flexibility and are the least constraining on their behavior. This 1972 agreement is considered low in obligation because Article VIII of the agreement includes a sunset clause, which means the agreement is in place for only a set amount of time, instead of indefinitely (Interim Agreement). In the case of the Interim Agreement, the sunset clause lasted for five years, allowing both sides to resume their arms build-up after it ended. Agreements high in obligation, like the Comprehensive Test Ban Treaty (CTBT), allow for the least amount of flexibility and are the most constraining. The CTBT is considered to be high in obligation because Article XV of the agreement does not allow for reservations to be placed on the agreement, meaning states cannot exempt themselves from any part of the agreement (Comprehensive Test Ban Treaty).

In this paper, I argue that states purposefully design the level of obligation in arms control agreements based on the levels of threat that the designing states are feeling from the two different sources described above. I expect the two different sources of threat to lead to different design choices, with increases in partner threat leading to an increase in the likelihood of a high obligation agreement, while increases in external threat are expected to lead to a decrease in the likelihood of a high obligation arms control agreement. I test these expectations empirically but also present and discuss examples of partner threat and external threat influencing the level of obligation in arms control agreements. For partner threat, I discuss the negotiations around and the design of the SALT II agreement between the United States and the Soviet Union during the Cold War, with each sides' high level of threats toward one another leading a relatively high-level of obligation agreement. For external threat, Israel's exclusion from the Iran nuclear deal

epitomizes how external threats influence arms control agreement design and influences the level of obligation in these agreements. Israel's continued threats towards Iran over the last few decades, as well as their exclusion from the constraints of the Iran nuclear deal, led Iran to refuse to agree to a high obligation agreement and resulted in the low obligation Joint Comprehensive Plan of Action (JCPOA) that allowed Iran to maintain flexibility in order to deal with Israeli threats.

The paper will proceed as follows: I begin by discussing examples of low obligation and high obligation arms control agreements before introducing a theory that draws on the different incentives states face when they are experiencing threats from different sources. I test this theory on all arms control agreements, including formal treaties and informal arrangements, negotiated between 1945 and 2010. This includes agreements that have been ratified and entered into force and agreements that have been designed but for one reason or another have either not been ratified or entered into force. I find that the different sources of threat lead to different design choices as predicted, with increases in partner threat leading to less flexible, high obligation agreements and increases in external threat resulting in a decrease in the likelihood of designing a high obligation arms control agreement. I follow this up with a discussion of Israel's role in the negotiating and designing the Iran nuclear deal before concluding with a discussion of the important implications of these findings for policy-making and future research.

### ***General arms control***

Although the frequency with which arms control agreements are negotiated and formed has increased with time, modern arms control agreements are still exceedingly rare (Coe and Vaynman 2020). The general goal of any arms control agreement is to control the spread of arms and arms-related technologies. Modern arms control agreements seek not only to regulate the manufacturing of weapons and related technologies, but also to regulate how those weapons are

tested, where they can be deployed to, how many can be deployed, what international agencies monitor compliance, and which states weapons and weapons-technologies can be sold too. Even with these diverse set of goals, one thing all arms control agreements share in common is a desire to constrain states' behavior to some degree when it comes to arms and arms-related technologies. As discussed above, arms control agreements vary in their ability to constrain states, with the level of constraint being determined by the level of obligation in these agreements. At the same time, states are usually worried about designing agreements that are too constraining and usually still seek to preserve some flexibility in their ability to manufacture, test, deploy, sell, and acquire arms in order to be able to react to an uncertain future.

This leads to a trade-off between the ability to constrain state behavior and preserving flexibility in state behavior. This trade-off is present in the design of all international agreements. Koremenos (2005) examines the role that international uncertainty plays in international agreement design, with states being hesitant to commit themselves to an agreement if there are large degrees of uncertainty because they are afraid changing circumstances will alter their expected benefits. She finds that as uncertainty increases, the probability that states will design agreements with flexible duration provisions increases. While more flexible agreements allow states to have a wider latitude in what behavior (or when the behavior) is considered acceptable by the agreement, they also make it more difficult to constrain state behavior and lessen the effectiveness of the agreement. For arms control agreements, more flexibility will allow states to build, sell, deploy, and test more types of weapons, allow them to easily leave an agreement in order to build-up their arsenal, or place reservations and understandings on the terms of the agreement. Flexible agreements are those that have lower degrees of obligation. Higher obligation arms control agreements are by nature less flexible and more constraining, but they

are superior in preventing cheating and limiting states' abilities to build, sell, deploy, and test weapons.

One aspect of uncertainty in international politics is which states will threaten other states politically, economically, and militarily in the future. As we have observed over the years, relationships between states can become better or worse depending on a number of developments that are often difficult to foresee. I argue that what determines which side of the constraining-flexibility trade-off that an arms control agreement falls on is the level and source of threat that states designing the agreement face. Before a deeper discussion on the role of threat in influencing arms control agreement design, I discuss two examples of arms control agreements, to give the reader a better understanding of what low and high-obligation agreements look like.

#### ***Low Obligation: the Wassenaar Arrangement***

An example of a low obligation agreement is the Wassenaar Arrangement (hereafter known as the Arrangement). The Arrangement entered into force on December 19<sup>th</sup>, 1995 with a declaration issued at the Peace Palace in The Hague (Wassenaar Arrangement). The Arrangement was intended to succeed the Coordinating Committee for Multilateral Export Controls (COCOM), a Cold War-era arms control arrangement between seventeen non-Communist, Western states led by the United States, that sought to restrict the export of sensitive military technology and dual-use items that could contribute to the military capabilities of Communist states.

As the successor organization to COCOM, the Arrangement shares many of the same goals and a similar structure. As of 2020, there are forty-two states who take part in the Arrangement, including many former Communist states in Eastern Europe. The purpose of the Arrangement is to promote transparency in regards to transfers of conventional arms and dual-use goods and technologies, to ensure through national policies that transfers of these items do

not contribute to the development or improvement of military capabilities, to complement and reinforce existing arms control agreements, and to improve cooperation between the member states of the Arrangement when it comes to preventing the acquisition of weapons and dual-use technologies by actors in unstable regions or by actors whose behavior is threatening peace and security.

This arms control agreement is considered a low obligation agreement for a few reasons. First, like COCOM, there is no official treaty text which governs the organization. There is the Wassenaar Arrangement Initial Elements document that was created at the founding of the organization, but this is not a standard international treaty and has not been deposited with the UN. With no treaty text, states maintain maximum flexibility and do not have their behaviors constrained at all, except by their own voluntary choices. With no treaty to fall back on, the Arrangement is a voluntary arrangement with no treaty-specific mechanism to enforce compliance.

While states must meet certain criteria in order to become a member of the Arrangement, once a member, there is no treaty text which would constrain their behavior. Instead, member states of the Arrangement are only constrained by their own choices and national policies, not by the Arrangement itself. This allows states to maintain maximum flexibility as they can decide to change course at the national level and easily withdraw from the Wassenaar Arrangement or place reservations and understandings on the terms of the arrangement that would except them from prohibitions against exporting specific technologies or weapons to rogue states. This flexible structure is common among other arms control export regimes like the Missile Technology Control Regime or the Proliferation Security Initiative and is in direct contrast to a high obligation agreement, like the Treaty of Pelindaba which I will discuss next.



***High Obligation: Pelindaba Treaty***

Pelindaba Treaty, also known as the African Nuclear-Weapons-Free Zone Treaty (hereafter ANWFZ) entered into force on July 15<sup>th</sup>, 2009 after the deposit of the twenty-eighth instrument of ratification. The treaty has been signed and ratified by forty-one states in Africa, with additional protocols to the treaty being signed and ratified by every member of the Permanent Five members of the U.N. Security Council except the United States. Discussions for creating a nuclear-free Africa had begun much earlier than this though, with the “Declaration on the Denuclearization of Africa” being issued by the heads of state and government of the Organization of African Unity (predecessor to the African Union) in 1964. Building off this declaration, the ANWFZ Treaty’s main goal is to prevent the deployment, manufacturing, and testing of nuclear weapons on the continent of Africa, with secondary goals including contributing towards global non-proliferation and disarmament through regional non-proliferation and disarmament, promote cooperation in the peaceful development and uses of nuclear energy, and to protect African states from possible nuclear attacks or the threat of nuclear attacks. To achieve these goals, a high obligation arms control agreement has been designed.

Two articles in this treaty specifically, Articles XVI and XVII, make this treaty a high obligation arms control treaty. Article XVI ensures that no reservations are placed on this treaty, so states who sign and ratify this treaty are not allowed to have exceptions to the treaty (Pelindaba Treaty). This constrains state behavior by not allowing states the avenues to argue that the treaty does not apply to them under specific circumstances or to specific weapons, facilities, tests, deployments, and other actions. Article XVII ensures the treaty is in force for an unlimited duration and does not mention any specific sunset or escape clauses. With no sunset clauses states’ behavior is constrained by ensuring that they are not able to begin to develop a

nuclear weapons program after the treaty ends; instead, the unlimited duration of the treaty prevents states' the opportunity to pursue a nuclear weapons program indefinitely.

Not having escape clauses in the treaty constrains behavior by not giving states' the option of leaving the treaty and immediately pursuing nuclear weapons. Escape clauses differ from formal withdrawal mechanisms, in that escape clauses allow the state who exercises the clause to immediately be free of the terms of the treaty, albeit often with some type of penalty imposed. Formal withdrawal mechanisms allow states to leave agreements early but only after some period of time has passed. For example, Article XX of the ANFWZ Treaty allows for states to withdraw from the treaty but only after they have given the treaty body 12 months' notice of their intent to leave. This is not unusual among arms control agreements.

A high obligation arms control agreement like the ANFWZ Treaty is relatively rare, as low obligation arms control agreements are more common than high obligation agreements. Of the forty-eight arms control agreements examined in this paper, thirty-nine are considered low obligation agreements, while nine are considered high obligation agreements. This is puzzling because high obligation agreements are universally acknowledged as being better at constraining states' behavior and preventing the manufacture, spread, deployment, and testing of weapons. If the goal of arms control is to prevent the spread of weapons, why are states more likely to design these weak, low obligation agreements that are less effective in constraining state behavior? Once again, I argue that regime type and partner and external threat all play a role in influencing the design of arms control agreements. I now briefly review the international agreement design literature before moving into my theory and expectations.

### ***Threat and Arms Control Treaty Design***

Threat is defined as a situation in which a state has both the capabilities and intentions to inflict a negative consequence on another state (Davis 2000). Threat is essentially the ability to

coerce a state to do something they would not do by themselves, with this often leading to negative consequences for the state being threatened. Threats are probabilistic in that they may or may not be acted on. Threat has two key dimensions that must be realized in order for something to be considered a threat: intentions and capabilities. With intentions, states must have negative intentions towards another state and want to force negative consequences on that state in order for that dimension to be satisfied. It is not enough just to want to be able to inflict a negative consequence on another state, in order to be considered threatening, a state must be able to act on those intentions, thus bringing in the capabilities dimension. Without the capabilities to inflict a negative consequence, negative intentions will not be considered threatening. Consider the hypothetical example of Peru and Botswana. Even if Peru and Botswana greatly disliked each other, had opposing foreign policies, and had negative intentions toward one another, we would not consider them to be threats to each other because neither state has the capability to project sufficient military or economic force to inflict a negative consequence on the other.

In the context of arms control agreements, states may face threats from two sources: partner and external threats. Partner threat refers to threats originating from states with who you are directly negotiating and designing the arms control agreement with. External threats are threats that come from states that are not involved with the original design of the arms control agreement. The source of the threat should lead to differences in arms control treaty design.

With partner threat, states are directly negotiating with the sources of that threat and as such, have the opportunity to constrain their adversaries' behavior in order to reduce the level of threat they are facing. This should lead to states wanting to "lock it in" and create less flexible and thus, higher obligation agreements, but the level of partner threat felt by each state is different. These differences mean that it is actually the least threatened state, among the states

negotiating and designing the agreement, that determines the level of obligation in the agreement. This is because the least threatened state does not need to constrain their “partners” as much or as urgently as the other states do. With that being said, the least threatened state will still want to constrain their partners to a certain degree.

States have different preferences for arms control treaty design when facing external threats. There are not the same incentives to “lock it in” and design agreements high in obligation. Instead, because the threats are coming from outside the arms control agreement, states will not want to be constrained by the arms control agreement and will favor flexibility in agreement design. If states are constrained by an agreement, they will be less able to build, acquire, and deploy certain types of weapons that may help them successfully face an external threat. This leads to the following hypotheses:

*H1 (Partner threat): As the minimum partner threat increases, the probability of designing a high obligation agreement should increase.*

*H2 (External threat): As the level of external threat that states engaged in an arms control agreement design face increases, the probability of designing a high obligation agreement should decrease.*

In the next section, I detail the negotiation and design of the Strategic Arms Limitation Talks (SALT II) to illustrate the role partner threat plays in determining arms control agreement design before following that up with Israel’s role in the Iran nuclear deal to illustrate the role of external threat.

### ***SALT II: Arms control in the Cold War***

The Strategic Arms Limitation Talks (SALT) were a series of arms control discussions and agreements designed and negotiated by the United States and the Soviet Union during the Cold War. Beginning in 1968 and continuing almost continuously until the SALT II agreement was signed in 1979, the SALT talks resulted in three arms control agreements between the

United States and the Soviet Union, with discussions around SALT II beginning in November 1972 (U.S. State Department 2017). The general goal of the SALT II talks was to design and commit to a long-term treaty between the United States and the Soviet Union to limit each sides' quantity and quality of strategic offensive (i.e., nuclear weapons) weapons and delivery vehicles and to bolster and replace both the SALT I agreement and the Interim Agreement (Nuclear Threat Initiative 2011).

With these goals in mind, both sides agreed to the following reductions and limitations to their nuclear arsenals: 2,400 vehicle limit on strategic nuclear delivery vehicles (i.e., intercontinental ballistic missile launchers (ICBMs), submarine-launched ballistic missiles (SLBMs), and heavy bombers); 1,320 limit on multiple independently targetable re-entry vehicle (MIRV) systems; prohibition in the construction of new land-based ICBM launchers; and limits on the deployment of new types of strategic offensive arms. While these reductions were important in removing and eliminating dangerous weapons from deployment, for this paper, the more pressing issue is whether a low or high obligation arms control agreement was designed.

Based on the data collected by Kreps (2018), scholars would consider the SALT II agreement a relatively high obligation arms control agreement. The reason that SALT II is considered a relatively high obligation agreement is that it is a legally binding agreement that does not allow for reservations, understandings, and declarations (SALT II Article XII); it is not considered at the highest levels of obligation because clause one of Article XIX limits the duration of the treaty to December 31<sup>st</sup>, 1985, thus including a sunset clause in the agreement. The inclusion of a sunset clause precludes the agreement from being considered to be at the highest level of obligation. What led to the United States and the Soviet Union to design a relatively high obligation arms control agreement, instead of opting for a less constraining low

obligation agreement? Consistent with the argument laid out in the section above, I argue and present evidence that the “partner” threats felt and issued by the United States and Soviet Union towards one another led them to design a constraining, high obligation agreement that would “lock” in their behavior when it came to strategic offensive weapons and delivery vehicles.

Since SALT II is a bilateral agreement, the United States and the Soviet Union represent partner threats to each other. I predicted that as the level of partner threat in an arms control agreement increases, then the probability of designing a high obligation agreement should also increase. For both states, the SALT II talks represented a unique opportunity to directly constrain their biggest adversaries’ ability to deploy and build strategic offensive weapons. This opportunity to constrain the source of each state’s biggest threat occurred in the midst of the Cold War, when the United States, the Soviet Union, and both states’ allies and proxies battled for global political, economic, and military dominance.

It is without question that during this time period, the biggest threat to the United States was the Soviet Union and vice versa. Both sides dominated their spheres of influence of politically and economically, and together they possessed a large amount of the world’s military capability and nuclear weapons. Additionally, both sides were either just exiting or about to enter long-lasting military conflicts during the SALT II negotiation and design period (November 1972-early 1979). The United States finally withdrew all military personnel from Vietnam in March 1973 (Herring 2001), while the Soviets were still 6 months away from invading Afghanistan at the time of the signing of SALT II. Thus, both the U.S. and Soviet Union were not focused on conflicts on the periphery of the international system and could devote more time and resources to countering threats from each other.

If both sides were the main threats to each other during this time period, then why did the SALT II talks not result in an agreement with the highest level of obligation? While direct evidence of this is difficult to gather, I argue that the reason the SALT II agreement did not reach the highest levels of arms control agreement obligation is because it was negotiated and designed during the period of détente between the United States and the Soviet Union. Détente was a period of easing tensions between the U.S. and the Soviet Union in the midst of the Cold War and saw an increase in attempts to cooperate on a range of issues, from arms control to the economy and lasted throughout most of the 1970s (Cox 1990). It should be noted that even during this period of relative calm and cooperation between the superpowers there were still significant disagreements with one another and both sides viewed the other as the primary threat in the international system.

With that being said, the relatively positive and cooperative relationship between the United States and Soviet Union during the period of détente may have led the SALT II agreement to being a step-below the highest-level obligation agreements because both sides had more trust for one another than before and did not see it as imperative that they constrain their adversaries' capabilities to the greatest degree possible. Once again, the reason why the SALT II agreement is not considered to be at the highest level of obligation is because it features a sunset clause that limits the duration of the agreement. It is possible that this sunset clause was put into the agreement, during a time of improved relations, because it was believed by either side that relations would continue to improve and there would be less of a need to constrain each other in the uncertain future. I now turn towards the discussion of how external threat influences the level of obligation in arms control agreements by digging deeper into the negotiation and design process of the Iran nuclear deal.

### *Israel and the Iran Nuclear Deal*

The Joint Comprehensive Plan of Action (JCPOA), also known as the Iran nuclear deal, is one of the most recent arms control agreements to have been negotiated, designed, and entered into force. The deal was finalized in 2015, with the main accomplishment of the agreement being the slowdown of Iran's nuclear program in exchange for the lifting of sanctions that had been placed on the Iranian economy by the United States and others. The most common criticism of the deal was that it would only delay and not indefinitely prevent Iran from being able to produce a nuclear weapon (Lewis, Siddiqui, and Jacobs 2015; Kershner and Sanger 2015). If fully implemented, the JCPOA was predicted to prevent Iran from producing fissile material for nuclear weapons for at least 10 to 15 years, after that period, the deal expires and Iran would be free to pursue a nuclear weapon (Samore 2015). The JCPOA was designed and signed by Iran, the United States, the United Kingdom, France, Germany, Russia, and China. The one notable state who was left out of the design process of the agreement was Israel, one of Iran's greatest threats.

While leaving Israel out the design process makes sense in that if they were included in the design process then it would make finalizing a deal even more difficult than it was without them in the agreement, leaving Israel out of the deal influenced how the agreement was designed. Similar to Republicans in the United States, Israel's main concern with the deal was that it limited the duration of the agreement to 15 years, with Iran being free to pursue a nuclear weapon after that time period (Kershner and Sanger 2015). With this sunset clause in the JCPOA limiting its' effectiveness to only 15 years, this deal would be considered a weak, low obligation arms control agreement. Israeli Prime Minister Benjamin Netanyahu, in a rather infamous speech to the United States' Congress railed against the deal, and stated that Iranian acquisition of a



nuclear weapon would pose a threat to the very existence of the state of Israel (Kershner and Sanger 2015). With the close relationship between the United States and Israel, why was the United States not able to help design an agreement that would do a better job of allaying the Israeli's fears of Iranian acquisition of a nuclear weapon?

I argue, based on my theory discussed above, that the reason why the JCPOA was designed to be a weak, low obligation agreement, and not a constraining, high obligation agreement was because of Iranian fears of Israeli's threats. Very simply, Iran was never going to agree to a high obligation agreement that seriously constrained their long-term ability to acquire nuclear weapons because they knew the Israelis were not going to be constrained by that same agreement in any way and wanted to preserve some flexibility in order to deal with an uncertain future. While finding direct evidence of this is difficult because of the secretive nature of the Iranian regime, and because some of the people involved in the design process and negotiation of the agreement are still in power in certain states, there is enough evidence to indicate that Israel's failure to be included in the design process led to the JCPOA being a weak, low obligation agreement.

Since Israel was not involved in the design of the JCPOA, they would be considered an external threat to the Iranians. Remember, I found that as external threat increases, we should see an increase in the probability of a weak, low obligation being designed, as states involved in designing the agreement aim to preserve their flexibility to meet outside threats. For Iran, Israel is especially a threat when it comes to the acquisition of nuclear weapons, as the Israelis have shown a unique willingness to use force to ensure that regimes they deem hostile are unable to acquire nuclear weapons. Besides being a nuclear power in their own right, the Israelis have used a combination of traditional military force, cyber capabilities, and assassination to ensure that

Syria, Iraq, and Iran did not acquire nuclear weapons. With Iraq and Syria, Israel used more traditional methods to prevent these states from being able produce their own nuclear weapons, bombing an Iraqi nuclear reactor in 1981 and a Syrian reactor in 2007.

With Iran, Israel has taken a more covert, and less direct approach to slowdown the Iranian nuclear program. In 2010, it was discovered that Israel had partnered with the United States to use what has been described as one of the world's first cyberweapons to physically destroy Iranian nuclear centrifuges (Langner 2011). Called Stuxnet, this cyberweapon did not steal, manipulate, or erase information, but instead caused Iran's nuclear centrifuges, components vital for enriching uranium and creating a nuclear weapon, to uncontrollably spin and eventually damage themselves, thus leading to lengthy delays in repairing or replacing the broken centrifuges. This has not been the only action Israel has taken against Iran's nuclear program. Another high-profile incident occurred in 2020, when Iran's top nuclear scientist, Mohsen Fakhrizadeh, was assassinated (Atwood 2020). This follows a series of assassinations of Iranian nuclear scientists in the last 10 years. With both Stuxnet and the series of assassinations, Israel has not openly claimed responsibility, but has been acknowledged as the source of these attacks by the global media and other governments, with US officials noting that Israel was behind the assassination of Fakhrizadeh (Atwood 2020).

Fully knowing Israel's history of meddling in the nuclear programs of other states and the tense relationship between themselves and the Israelis, the Iranians were not going to constrain themselves by agreeing to a high obligation agreement. As an external threat, the Israelis are not constrained by the JCPOA in any way, and are free to hassle the Iranians and their nuclear program. By avoiding the design of a high obligation agreement with a sunset clause, the Iranians preserved their future flexibility to deal with threats from Israel. If the Iranians had

agreed to a high obligation agreement without a sunset clause, they would have permanently surrendered their ability to build a nuclear weapon, severely hampering their ability to deter future threats from Israel, especially nuclear threats.

### ***Research Design***

I test my theoretical expectations on data from Kreps (2018) that covers all arms control agreements concluded, negotiated, and seriously considered from 1945 to 2010. This dataset includes both agreements that were ratified and entered into force and those that were negotiated and designed but either were not ratified or did not enter into force. The dataset includes forty-eight different arms control agreements. The unit of analysis is at the arms control agreement level, so all variables are aggregated up to the agreement level. Since the independent variables of interest are all measures of state characteristics that are then aggregated up to the arms control agreement level, I identified all states that participated in negotiations over each agreement. Not all states that sign and ratify treaties participate in the design and negotiation of the treaty. For example, one hundred and ninety states are recognized as having signed the Nuclear Non-proliferation Treaty (NPT Treaty) since it was opened for signature; but only eighteen states actually took part in the design of this treaty. In cases where it was not entirely clear which states participated in the design of an agreement, I code all states who signed the agreement within a week of it being open for signature as participants in the design of the treaty. I am assuming that if states are willing to sign a treaty almost immediately when it opens for signatures then they are probably aware of its design and gave their input somewhere in the negotiating process. I use logistic regression to test my theory because the dependent variable is binary.

*Dependent Variable: Level of agreement obligation*

The dependent variable of interest is the level of obligation within arms control agreements. Once again, arms control agreement obligation refers to how legally binding the agreement is. Kreps (2018) codes obligation on a 4-point scale that ranges from 0 to 3, with “0” referring to an agreement that is informal, not legally binding and is instead based on a voluntary arrangement. A “1” refers to a formally binding agreement that is legally binding, but allows for reservations, understandings, declarations, and escape or sunset clauses. A “2” refers to a formally binding agreement that has no reservations, declarations, or understandings but does allow for escape and sunset clauses. Finally, agreements coded as “3” are the most binding agreements and are those without escape or sunset clauses or reservations, declarations, or understandings. Agreements with high obligation scores are the most constraining on state behavior.

I then turn obligation into a binary dependent variable by recoding the categories so that all the agreements are coded as either 0 or 1. Low obligation agreements that were originally coded as 0 or 1 are now all coded as equaling 0, while high obligation agreements that were originally coded as 2 and 3 now equal 1. I move from a categorical dependent variable to a binary variable because of the small number of agreements that fell into the highest categories of obligation, especially agreements where obligation equaled 3. This small number of agreements precludes me from producing any reliable estimates when it comes to the obligation=3 category. By decreasing the number of possible categories to two, I increase the number of agreements that fall into each category and thus, increase the reliability of these estimates.

*Main Independent Variables: Partner threat and external threat*

The main two independent variables in this study are the level of threat experienced by states designing an arms control agreement that originates from the other states who are also taking part in the design process of an agreement (“partner threat”), and the level of threat experienced by states designing an arms control agreement that originates from states not involved in designing a specific agreement (“external threat”).

My other main independent variables are the minimum level of partner threat and external threat that the negotiating states are feeling at the time of agreement design. To calculate threat, I adopt the procedure used by Leeds and Savun (2007). I will briefly describe this process. First, threat is a function not only of capabilities but also of goals and intentions (Walt 1988). We know that states that share foreign policy orientations are less likely to engage in military conflict than those states with opposing foreign policies. But not all states are able to reach other states militarily because of a lack of capabilities, so I first identify all states that are able to reach a state militarily. States that share land borders and great powers, who have the military capabilities to reach any state in the world, are identified as being able to reach a state militarily. I identify the great powers as the Permanent Five members of the UN Security Council. I then employ Signorino and Ritter’s (1999) S score to identify states with similar or opposite foreign policy orientations. Any state whose S score is below the population median and shares a land border or is a great power is coded as threatening (Leeds and Savun 2007). Using S scores captures the goals and intentions aspect of threat.

Finally, to capture the capabilities aspect of threat, I simply sum the capabilities of all threatening states using the Correlates of War CINC scores. This gets me the overall level of threat that a state is facing in a given year. For partner threat, I then subtract out the CINC scores

of every threatening state who was not identified as taking part in the arms control agreement negotiation or design, leaving me with the threat each state is feeling from other states involved in the design process. I then use the lowest partner threat score, as the least threatened of the partners has the ability to act as a veto player and have the greatest influence on agreement design. The least threatened state has the lowest number of incentives to see a high obligation agreement designed because they do not have the same need to constrain their partners as the more threatened states do, and so they can greatly impact the design of the arms control agreement.

For external threat, I sum together the CINC scores of all threatening states who were not involved in the arms control agreement negotiation and design process. I then add all these up for each state involved in an agreements' design process and divide by the number of states in the design process to get an average external threat score for each agreement. I use the average to ensure that the level of external threat is not being driven by how many states are involved in the design of the agreement. Agreements vary in the number of states involved in the design from bilateral agreements like SALT I between the United States and the Soviet Union to the large multilateral agreements such as the NPT which involved a large number of states. I then take the natural log of both the partner and external threat variables to approximate a normal distribution.

### *Control Variables*

I control for a number of factors that may influence arms control agreement design. All of these control variables come from Kreps (2018), except for regime type. I use a dummy variable to indicate whether the agreement was negotiated in the Cold War. I code every observation before 1991 as a "1" and every observation after 1991 as a "0". Additionally, I include a dummy variable to indicate whether an agreement was multilateral or not. Multilateral agreements may

be more difficult to design because you have to take into account the conflicting preferences and interests of three or more actors instead of just two.

I also control for the depth of the agreement. This is also a dummy variable in which “1” indicates that the agreement changes arms outputs such as the number of weapons or the locations that they may be deployed. Agreements with more depth are more costly to states since they will most likely have to change their behavior in order to meet the requirements of the agreement. Depth may influence arms control agreement design because states may want to circumvent a “deep” agreement by making the agreement low in obligation, presenting them with an easy exit avenue if it becomes too costly to meet the terms of the agreement.

Finally, I include a control variable that measures the proportion of states involved in the design process of a specific arms control agreement who are democracies in the year before the agreement’s design is finalized to ensure that regime type is not driving my results. There is a deep literature that shows that democracies prefer more flexible, low obligation agreements because these types of agreements are easier for states to uphold, and less likely to result in the leaders of democracies being punished by their constituents for not upholding the terms of the agreement (Leeds 1999; McGillivray and Smith 2008; Chiba et al. 2015). To create this measure, I first identify all the states that took part in the original design of the agreement and then use Polity scores to code whether that state was a democracy in the year before the design of the agreement was finalized. I code any state that scores a 6 or above on Polity2 as a democracy and every state that scores below 6 as a nondemocracy. I then divide the total number of democracies by the number of states that were involved in the original design of the agreement. I use the proportion of democracies because my unit of analysis is arms control agreement-year and so this allows me to capture how democratic the original states in the agreement are.

## Results

To test my two hypotheses, I run multiple models all using logistic regression and robust standard errors. Table 1 presents the results from these tests. Coefficients from logistic regression are difficult to interpret; to make interpretation easier I use percent change in the odds and graph the predicted probability associated with each of the main independent variable while keeping the control variables constant at their means.

Table 1: Level of obligation in arms control agreements

	Model 1	Model 2	Model 3	Model 4	Model 5
Partner Threat	0.70 (0.42)	0.87 (0.55)			2.37 (1.73)
External Threat			-0.39** (0.16)	-0.37* (0.19)	-0.79 (0.52)
Multilateral		0.57 (1.18)		0.79 (1.13)	-1.81 (1.27)
Depth		2.19 (1.13)		1.39 (0.93)	1.75* (1.02)
Cold War		-0.69 (0.86)		-0.04 (0.97)	0.53 (1.93)
Regime Type		0.10 (2.23)		-1.16 (2.97)	1.12 (2.13)
Constant	-0.36 (0.70)	-0.75 (1.43)	-2.68** (0.73)	-3.08* (1.72)	-1.11 (1.60)
Observations	48	48	48	48	48

Standard errors in parentheses

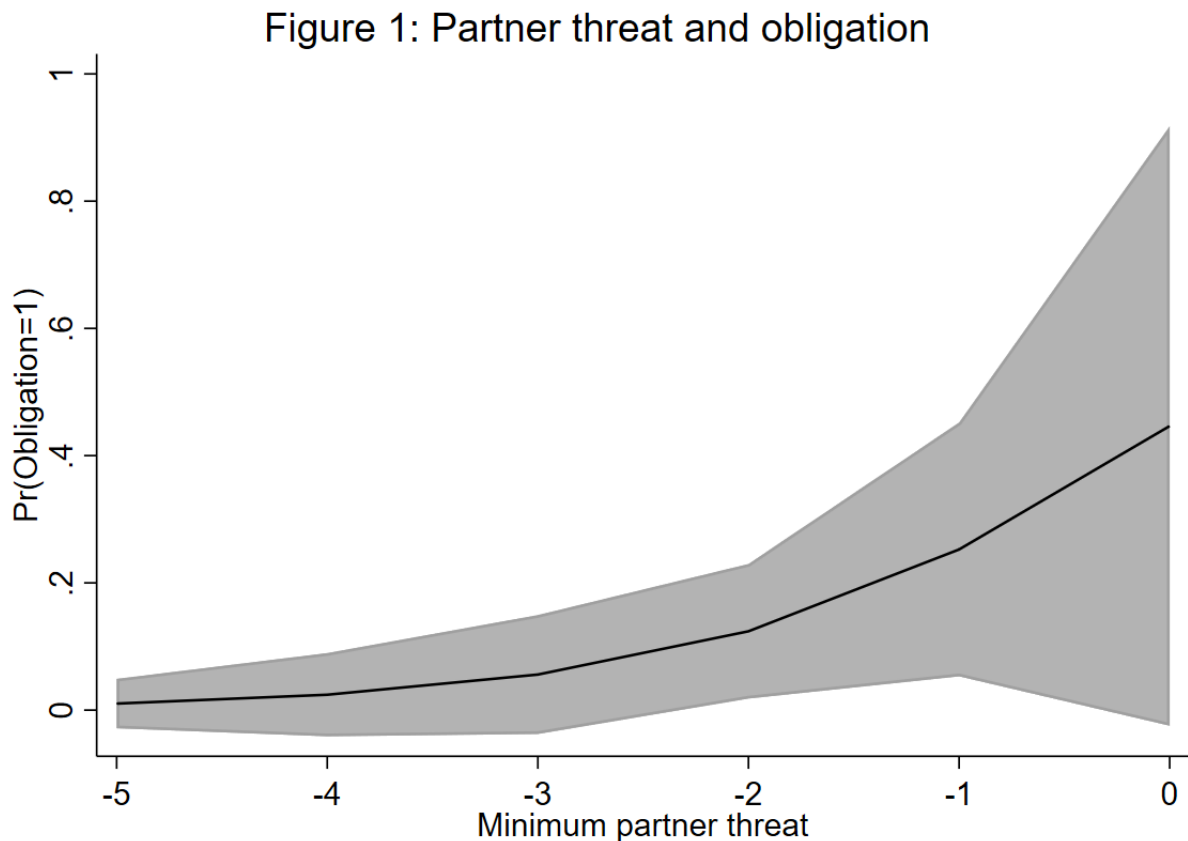
\*  $p < .10$ , \*\*  $p < .05$

In hypothesis 1 (partner threat), I predict that as the partner threat of the states involved in negotiating each arms control agreement increases, the probability of designing a high obligation arms control agreement should increase. I do not find support for this hypothesis. While the coefficients for both models 1 and 2 are positive, indicating that as partner threat increases so does the probability of designing a high obligation arms control agreement, neither is statistically significant. In model 2, for each one unit increase in the level of partner threat, the odds of designing a high obligation arms control agreement increases by 138.8%, holding all other variables constant. Although using odds ratios and percentage changes to interpret the



coefficients of logistic regression are common methods of interpretation, they do not indicate the magnitude of the change in the probability of the outcome (Long and Freese 2014). To indicate the magnitude in the change in the probability of the outcome, I plot the predicted probabilities.

Figure 1 plots the predicted probabilities of being in the highest obligation (obligation=1) category depending on the level of minimum partner threat of the states involved in the design of the agreement, while holding all the other variables at their means, with 95% confidence intervals. I interpret the substantive effects below.

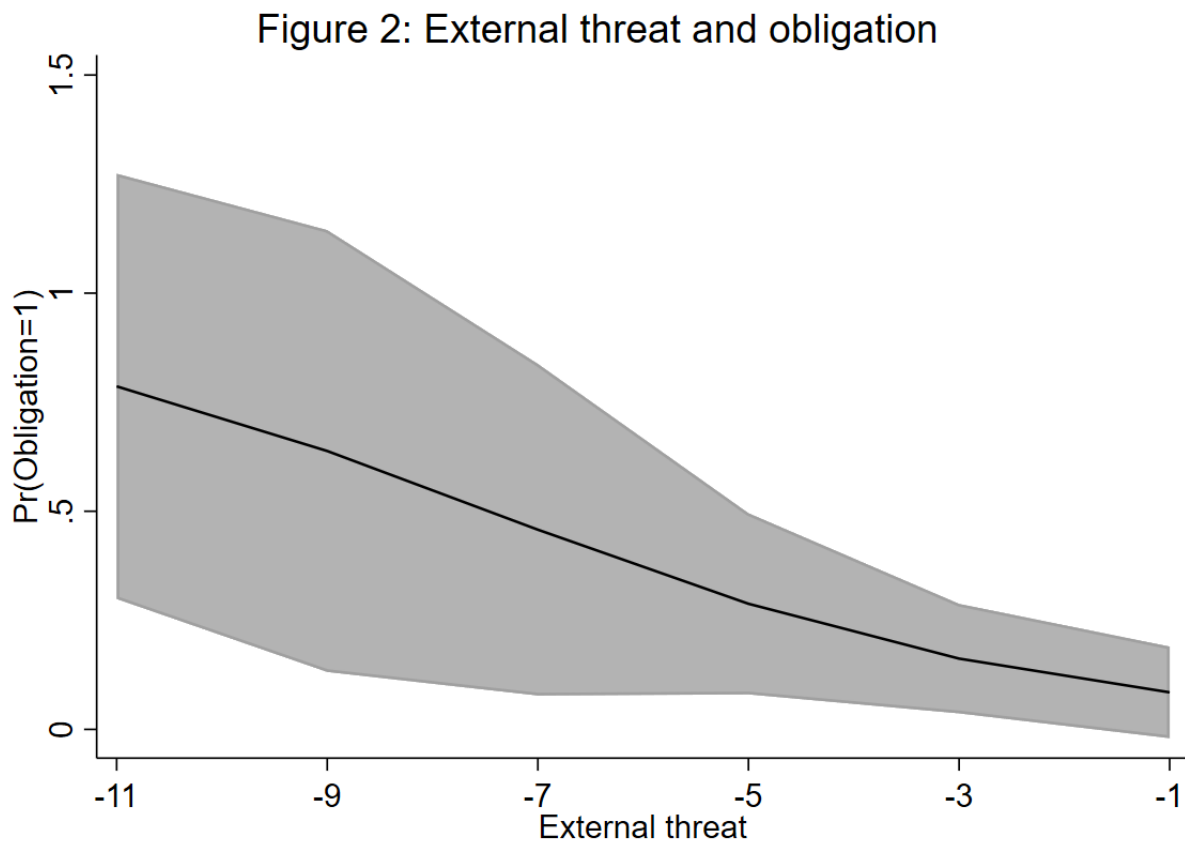


On average, going from an arms control agreement where the minimum partner threat is at 0 and states are generally on friendly terms, like the Treaty of Tlatelolco, to an arms control agreement where the minimum partner threat is at its greatest, increases the probability of designing a high obligation arms control agreement by 42.5%. This indicates that higher levels of partner threat

are more likely to result in high obligation agreements, although once again, these effects are not statistically significant. Overall, the results here do not indicate support for the partner threat hypothesis. It seems that even when receiving threats from a state with whom you are directly negotiating an arms control agreement with, states are hesitant to constrain themselves and surrender their flexibility, even if it would mean constraining the source of the threat as well.

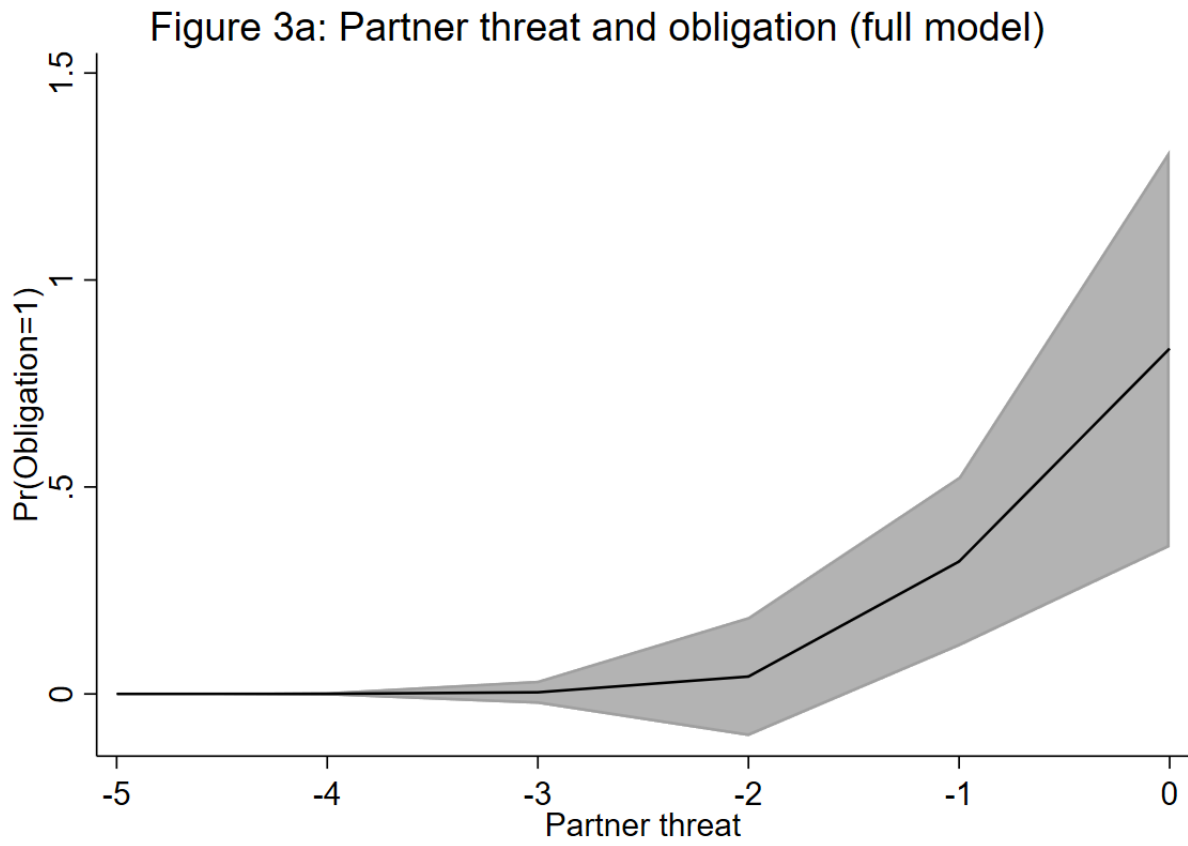
In hypothesis 2 (external threat), I predicted that as the level of external threat states designing an arms control agreement face, the less likely they should be to design a constraining, high obligation agreement, in order to preserve their flexibility and be able to meet those external threats. Model 3 shows the relationship between external threat and obligation, while model 4 shows the relationship with all control variables included. The coefficient for Model 4 is negative and statistically significant, indicating strong support for the external threat hypothesis. Similar to the results for the partner hypothesis, to interpret the substantive results for external threat, I first use the percent change in odds before plotting the predicted probabilities of moving from the lowest levels of external threat to the highest levels of external threat, while keeping all the control variables at their means, and with a 95% confidence interval. In model 4, for each one unit increase in the level of external threat, the odds of designing a high obligation arms control agreement decreases by 30.8%, holding all other variables constant.

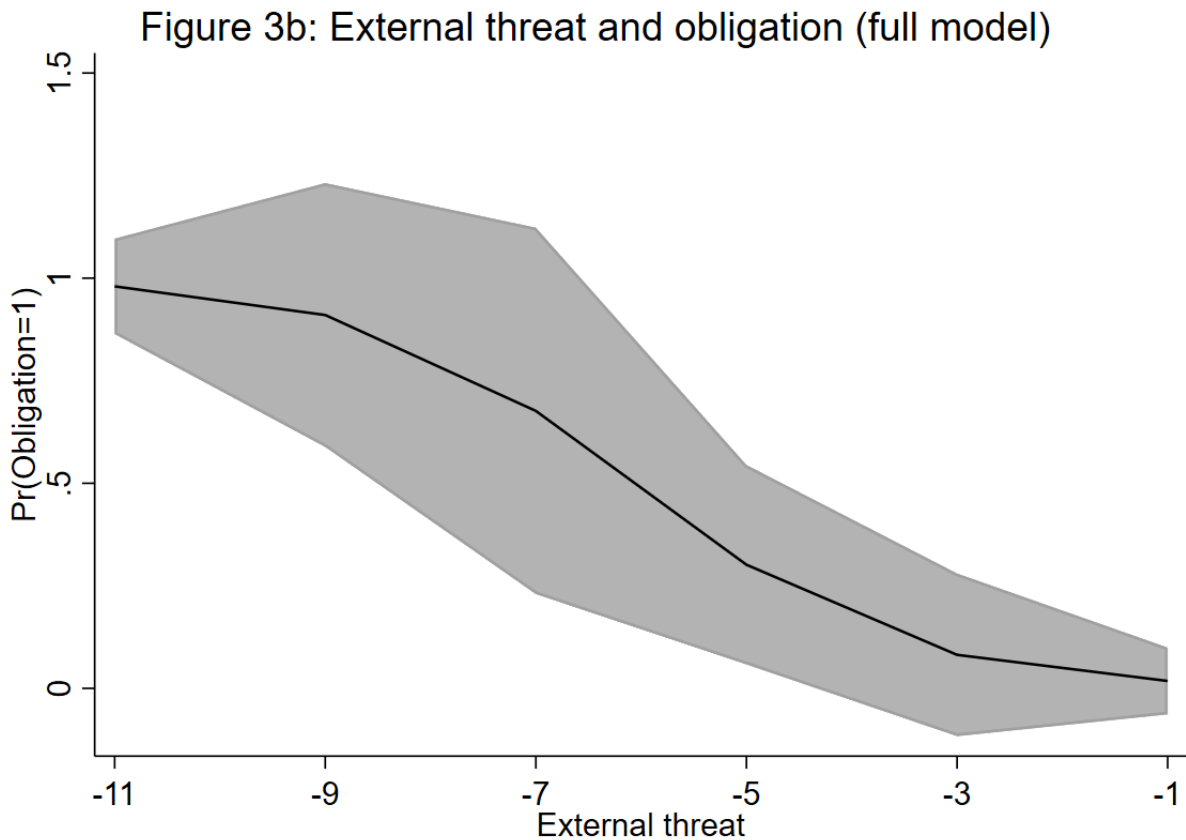
Figure 2 plots the predicted probability of designing the highest-level obligation agreement, as the level of external threat increases from its lowest value to its greatest value.



For Figure 2, on average, moving from the lowest level of external threat to the highest level of external threat decreases the probability of designing the highest-level obligation arms control agreement by 66.3%. These results indicate support for the external threat hypothesis. As the levels of external threat experienced by states designing arms control agreements increases, the probability of designing a constraining, high obligation agreement decreases greatly. Similar to the dynamic described in the discussion of the Iran nuclear deal, states that are in the process of shaping an arms control agreement and are experiencing threats from states not involved in the same negotiation process, opt to preserve their flexibility to better be able to meet those external threats. In the context of arms control agreements, preserving flexibility means states would have greater capabilities to deploy, build, sell, test, and acquire arms and arms-related technologies.

Finally, for the main set of results, Model 5 shows the full model with both of the independent variables and all control variables included. The results mirror those discussed above. Both partner threat and external threat maintain the same relationship with the level of obligation in arms control agreements as they did in the models discussed above. Increases in partner threat are associated with increases in the probability of designing high obligation arms control agreements, while increases in external threat are associated with decreases in the probability of designing high obligation agreements. A one-unit increase in partner threat, increases the odds of designing a high obligation arms control agreement by 971.9%, holding all other variables constant. While for external threat, a one-unit increase is associated with a 54.6% decrease in the odds of designing a high obligation agreement, with all other variables constant. Once again, I graph predicted probabilities to demonstrate the magnitude of the change in the probability of the outcome.





Figures 3a and 3b show the predicted probabilities of designing a high obligation agreement based on the levels of partner (Figure 3a) and external (Figure 3b) threat. For Figure 3a, on average, moving from an arms control agreement where the minimum partner threat is at 0 to an arms control agreement where the minimum partner threat is at its greatest, increases the probability of designing a high obligation arms control agreement by 73.0%. In Figure 3b, the substantive effects are quite large. On average, increasing external threat from the lowest levels to the highest levels decreases the probability of designing a high obligation arms control agreement by 84.7%.

### ***Robustness check***

The small sample size with which I am testing my theory naturally leads to questions about the robustness of the results presented above. To check the robustness of the results, I used

Pregibon's delta-beta influence statistic to identify observations that are influential in determining the relationship between partner and external threats and the level of obligation. I then re-ran models 2 (partner threat) and 4 (external threat) while excluding the most influential observations. For model 6, which is testing the partner threat hypothesis, I removed the four most influential observations, while in model 7, I removed the three most influential observations. I removed an extra observation in model 6 because two observations had the same exact Pregibon's delta beta value. If the results from above hold, especially concerning the external threat hypothesis, then we can be more confident that threat plays a role in determining how states design arms control agreements. Table 2 presents the results below.

Table 2: Robustness checks

	Model 6	Model 7
Partner Threat	0.02 (0.71)	
External Threat		-0.93* (0.55)
Multilateral	2.57 (1.81)	0.47 (1.72)
Depth	2.56 (1.61)	0.90 (1.05)
Cold War	-0.54 (1.28)	3.76 (3.16)
Regime Type	-5.43 (4.57)	-0.78 (6.44)
Constant	-1.55 (2.36)	-8.21 (6.73)
Observations	44	45

Standard errors in parentheses

\* p&lt;.10, \*\* p&lt;.05

The results shown here mirror those above and indicate support for the external threat hypothesis. In model 6, the coefficient for partner threat is positive, but like the results in model 2, partner threat is still not statistically significant. In model 7, as the level of external threat that

states designing an arms control agreement face increases, the probability of those same states designing a high obligation agreement decreases, even after I have accounted for the most influential observations. Overall, the results presented in this section and the section above offer strong support for the external threat hypothesis. States' design preferences for arms control agreements are influenced by threats they receive from states who are not participating in the design of that arms control agreement.

Do these results indicate that threats coming from arms control agreement design partners are inconsequential for the level of obligation observed in those agreements? When, if ever, is partner threat influential in determining the level of obligation in arms control agreements? For many states, in any given year they are likely to experience both partner and external threats and so determining the extent that partner threat matters could be useful in helping scholars determine what threats states are more likely to respond to. In the next section, I determine when partner threat is influential in determining what the level of obligation will be in an arms control agreement.

### ***When does partner threat matter?***

To determine when partner threat is influential in determining the level of obligation in arms control agreements, I begin by restricting my sample to arms control agreements where external threat is at its lowest. Partner threat should be significant in cases where states are experiencing low levels of external threat because states do not face the same decision calculus as they did when external threat was high. When external threat is low it should lose its salience and partner threat should dominate state decision-making. If partner threat is not significant when external threat is at its lowest, then it is unlikely that partner threat is influential in determining the level of obligation in arms control agreements.



To empirically test this, I run two logistic regression models that are similar to the models run above, with the results being shown in Table 3. In model 8, I restrict the sample to only the arms control agreements where the level of external threat is in the 75<sup>th</sup> percentile or below. Model 9 restricts the sample to agreements where the level of external threat is in the 50<sup>th</sup> percentile or below.

Table 3: When does partner threat matter?

	Model 8	Model 9
Partner Threat	1.72* (0.98)	-2.46 (2.85)
Multilateral	1.12 (1.25)	2.93* (3.35)
Depth	1.51 (1.10)	6.40 (3.91)
Cold War	-1.40 (1.61)	-4.30 (2.31)
Regime Type	-4.44 (3.47)	-23.86** (10.65)
Constant	3.39 (3.14)	4.98 (7.11)
Observations	36	24

Standard errors in parentheses

\* p<.10, \*\* p<.05

In model 6, partner threat is positive, indicating that as partner threat increases, the probability of designing a high obligation arms control agreement also increases. In model 7, the coefficient for partner threat flips and becomes negative, indicating a lack of support for the partner threat hypothesis. This is not too concerning considering the small sample size. Overall, the results from model 6 indicate some support for the partner threat hypothesis, but only when the level of external threat is low or nonexistent. It seems that partner threat is influential only when external threat is low, and that external threat is more important to state's decision-making when it comes to the level of obligation in arms control agreements than partner threat.

## *Conclusion*

This study examined what factors influence the design of arms control agreements, specifically focusing in on how different sources of threat influence the design choices of states when negotiating arms control agreements. Overall, the results suggest that my theory can explain levels of obligation in arms control agreements. The results also show that different sources of threats can lead to different preferences, as increases in external threats were reliably associated with increases in the probability of designing a high obligation agreement, while there less evidence of the role that partner threat plays in arms control agreement design. The findings illustrate the importance of states' security environment in influencing their foreign policy preferences and that states can not design and negotiate agreements in the international system without taking into account the considerations of other actors.

Additionally, one implication from this paper is that the influence of external threat goes beyond agreement design and moves into compliance. Increases in external threat should be associated with an easier ability to comply with an arms control agreement because increases in external threats decrease the probability of designing a high obligation agreement. High obligation agreements are more difficult for states to comply with because of the constraints that are placed on state behavior. Thus, higher levels of external threat should lead to low obligation agreements that are easier for states to comply with. Future work could test this relationship more broadly, examining how external threats influence compliance with different types of international agreements.

One major policy recommendation that arises out this study is which states should be included in the design of arms control agreements, in order to be able to design constraining, high obligation agreements that are more effective in preventing the spread of arms and arms-

related technologies. With arms control looking poised to be one of the most salient areas of foreign policy in the upcoming years, especially among great powers like the United States, Russia, and China, it will be important for policymakers to know which states to get involved in the design of these agreements in order to craft the most effective arms control agreement possible. Coming back to the Iran nuclear deal, one recommendation based on this line of thinking would be to include Israel in the negotiation and the design of any subsequent agreements. By including the Israelis in the design of any subsequent agreements, Iran can be sure that one of their biggest adversaries and a source of threat towards them will be constrained by that agreement, thus, making it much more likely that the Iranians agree to a constraining, high obligation agreement.

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## Appendix A: Arms Control Agreement Sources

- Year = year opened for signature
- Process is as follows:
  - Identify if negotiation of the treaty was referred to a subset of states (this is usually the case for the large multilateral treaties) or carried out by all states who were involved.
  - For those treaties in which I cannot find which states were apart of the negotiations, I code the states who signed the treaty within a week of when it was opened for signature. I am assuming that if states are willing to sign a treaty immediately when it opens for signatures then they are probably aware of its design and even took part in part of the design.
  
- <https://2009-2017.state.gov/t/avc/trty/193967.htm>
  - Antarctic Treaty
- <https://fas.org/nuke/control/tbtt/intro.htm>
  - Test Threshold Ban
- [https://en.wikipedia.org/wiki/Eighteen\\_Nation\\_Committee\\_on\\_Disarmament#Members](https://en.wikipedia.org/wiki/Eighteen_Nation_Committee_on_Disarmament#Members)
  - NPT
    - Negotiation was referred to Eighteen Nation Committee on Disarmament
- <http://disarmament.un.org/treaties/t/pelindaba/deposit/desc>
  - AWFZ
    - Included all countries who signed on 11 April 1996 + Russia who signed 5 November 1996.
- <https://disarmament.un.org/treaties/t/tlatelolco>
  - Tlatelolco
    - Included all countries who signed on 14 February 1967 + Nicaragua who signed 15 February 1967
- <https://www.armscontrol.org/factsheets/Hotlines>
  - Hotline Treaty
- [http://disarmament.un.org/treaties/t/outer\\_space/signature/desc](http://disarmament.un.org/treaties/t/outer_space/signature/desc)
  - Space Treaty
    - Included all countries who signed on 27 January 1967 + Brazil who signed on 30 January 1967
- <https://www.armscontrol.org/factsheets/abmtreaty>
  - ABM Treaty
- [http://disarmament.un.org/treaties/t/sea\\_bed](http://disarmament.un.org/treaties/t/sea_bed)
  - Seabed Treaty
    - Negotiation referred to Conference of the Committee on Disarmament
- <https://www.britannica.com/event/Strategic-Arms-Limitation-Talks#ref117729>
  - Interim Agreement is part of SALT I

- <https://fas.org/nuke/control/accident/intro.htm>
  - Accidents Measures
- <https://2009-2017.state.gov/t/isn/5195.htm#narrative>
  - SALT II
- <https://www.nti.org/learn/treaties-and-regimes/southeast-asian-nuclear-weapon-free-zone-seanwvz-treaty-bangkok-treaty/>
  - Southeast Asia Nuclear Weapons Free Zone
- [https://treaties.un.org/Pages/ViewDetails.aspx?src=IND&mtdsg\\_no=XXIV-2&chapter=24&clang=en](https://treaties.un.org/Pages/ViewDetails.aspx?src=IND&mtdsg_no=XXIV-2&chapter=24&clang=en)
  - Moon Agreement
    - Difficult to code this one since the treaty was opened for signatures on 5 December 1979 but no states actually signed on that date. I instead code all states who signed before it entered into force in 1984 (11 total).
- <https://fas.org/nuke/control/prevent/text/prevent1.htm>
  - Prevention of Nuclear War Agreement
    - Bilateral between US-USSR
- [https://en.wikipedia.org/wiki/Treaty\\_on\\_Conventional\\_Armed\\_Forces\\_in\\_Europe](https://en.wikipedia.org/wiki/Treaty_on_Conventional_Armed_Forces_in_Europe)
  - Conventional Forces in Europe Agreement
    - Seems that it was negotiated by all members of NATO and the Warsaw Pact. Could not find a source that explicitly states which states were involved in negotiations. Code the 16 NATO members and 6 Warsaw Pact members who signed
- [https://en.wikipedia.org/wiki/Nuclear\\_Suppliers\\_Group](https://en.wikipedia.org/wiki/Nuclear_Suppliers_Group)
  - Nuclear Suppliers Group
    - Coded first 7 states that were involved
- <https://www.ctbto.org/nuclear-testing/history-of-nuclear-testing/peaceful-nuclear-explosions/>
  - Peaceful Nuclear Explosions Agreement
    - Bilateral between US and USSR
- <https://treaties.un.org/doc/Publication/UNTS/Volume%201445/volume-1445-I-24592-English.pdf>
  - South Pacific Nuclear Weapons Free Zone
    - Coded 6 states who signed it. Left out Cook Islands and Niue because they do not reach the population threshold to have a ccode
- <https://history.state.gov/historicaldocuments/frus1977-80v26/d162>
  - Trilateral CTB
    - US, UK, & USSR
- <https://www.nap.edu/read/11/chapter/7>
  - Anti-satellite treaty
    - Not really sure who was involved here but the best I can find are the US and USSR. The only countries who currently have anti-satellite capabilities are the US, Russia (USSR), China, and India (as of 2019).

- <https://www.iaea.org/sites/default/files/infcirc274r1.pdf>
  - Convention on the Protection of Nuclear Materials
    - Treaty lists which states participated in the meeting to draft the convention. 58 in total
- INF is bilateral between US and USSR
- <https://www.armscontrol.org/factsheets/negsec>
  - Negative Security Assurances
    - Negative security assurances are when nuclear weapons states promise not to use or threaten to use nuclear weapons against non-nuclear weapons states. Difficult to figure out which states hold them but I have found a 1995 UNSC Resolution (UNSC Resolution 984) in which the P5 members issue some form of negative security assurances. This is what I code.
- <https://www.armscontrol.org/factsheets/start1>
  - START I
    - Agreement was originally signed between the US and USSR in 1991 but when the USSR collapsed the agreement was expanded to include the successor states of the USSR who possessed nuclear weapons: Russia, Belarus, Ukraine, and Kazakhstan. I only code the agreement between the US and USSR because these were the states who negotiated it.
- <https://www.armscontrol.org/factsheets/mtrc>
  - Missile Technology Control Regime
    - Coding the members who signed the agreement in 1987 since that is when it was opened for signature.
- <https://www.nti.org/learn/treaties-and-regimes/india-pakistan-non-attack-agreement/>
  - India-Pakistan Non-Attack Agreement
    - Bilateral between India-Pakistan
- <https://fas.org/nuke/control/start2/index.html>
  - START II
    - Bilateral between US and Russia
- <https://www.nti.org/learn/treaties-and-regimes/nuclear-weapon-free-status-mongolia/>
  - Mongolian Nuclear Weapon Free Status
    - Unilaterally declared by Mongolia in 1992 so that is the year I use. It entered into force in 2000 when it was recognized as legally-binding by the UN.
- [https://en.wikipedia.org/wiki/Fissile\\_Material\\_Cut-off\\_Treaty](https://en.wikipedia.org/wiki/Fissile_Material_Cut-off_Treaty)
  - Fissile Material Cut-off Treaty
- [https://www.unog.ch/80256EE600585943/\(httpPages\)/6286395D9F8DABA380256EF70073A846?OpenDocument](https://www.unog.ch/80256EE600585943/(httpPages)/6286395D9F8DABA380256EF70073A846?OpenDocument)
  - Fissile Material Cut-off Treaty
    - Proposed by the UN Conference on Disarmament which currently has 65 members. It was originally proposed in 1993 but no action has been taken on it. I code members during the year 2010 since this is the last year in the dataset.



- <https://www.un.org/disarmament/wmd/nuclear/ctbt/>
  - Comprehensive Test Ban Treaty
    - Treaty was negotiated by the 65 members of the Conference on Disarmament (CD). CD originally consisted of 40 members but additional members were [added in 1995](#) before the conclusion of negotiations over the CTBT so I code all members of the CD.
- <https://www.armscontrol.org/factsheets/Ukraine-Nuclear-Weapons>
  - Trilateral Statement
    - Included US, Russia, and Ukraine
- [http://inesap.org/sites/default/files/inesap\\_old/mNWC\\_2007\\_Unversion\\_English\\_N0821377.pdf](http://inesap.org/sites/default/files/inesap_old/mNWC_2007_Unversion_English_N0821377.pdf)
  - Nuclear Weapons Convention (NWC)
    - First proposed in 1997 by Costa Rica and subsequently updated by Costa Rica, Malaysia, and the International Campaign to Abolish Nuclear Weapons. I code Costa Rica and Malaysia in the year 2007.
- <https://www.wassenaar.org/about-us/>
  - 33 original members including the 17 that were part of [COCOM](#)
- [https://undocs.org/en/A/RES/3034\(XXVII\)](https://undocs.org/en/A/RES/3034(XXVII))
  - Nuclear Terrorism Convention
    - Developed by the 34 members of the Ad Hoc Committee on International Terrorism
- <https://www.armscontrol.org/factsheets/start3>
  - START III
    - Bilateral between US and Russia
- <https://www.nti.org/learn/treaties-and-regimes/central-asia-nuclear-weapon-free-zone-canwz/>
  - Central Asia Nuclear Weapons Free Zone
    - Includes 5 states of central Asia
- <https://www.nti.org/learn/treaties-and-regimes/lahore-declaration/>
  - Lahore Declaration
    - Bilateral agreement between Pakistan and India
- <https://www.armscontrol.org/factsheets/sort-glance>
  - SORT
    - Bilateral agreement between US and Russia
- <https://www.armscontrol.org/factsheets/PSI>
  - Proliferation Security Initiative (PSI)
    - Originally proposed and shaped by 10 states
- <https://www.un.org/disarmament/wmd/sc1540/>
- [https://en.wikipedia.org/wiki/United\\_Nations\\_Security\\_Council\\_Resolution\\_1540](https://en.wikipedia.org/wiki/United_Nations_Security_Council_Resolution_1540)
  - UNSCR 150
    - Designed and adopted by the 15 members of the UNSC at the time
- <https://www.armscontrol.org/factsheets/NewSTART>

- New START
  - Bilateral agreement between US and Russia
- <http://zanggercommittee.org/history.html>
- <https://www.iaea.org/sites/default/files/infcirc209.pdf>
- <https://www.iaea.org/sites/default/files/publications/documents/infcircs/1974/infcirc209a1.pdf>
- <https://www.iaea.org/sites/default/files/publications/documents/infcircs/1974/infcirc209a3.pdf>
- <https://www.iaea.org/sites/default/files/publications/documents/infcircs/1974/infcirc209a4.pdf>
- <https://www.iaea.org/sites/default/files/publications/documents/infcircs/1974/infcirc209a5.pdf>
  - All of the 5 above documents are letters sent from the 15 original members of the Zangger Committee to the IAEA indicating that they will be acting in accordance with the trigger list developed by the Zangger Committee and the obligations laid out in the NPT regarding the export of nuclear materials.
    - The 15 members are as follows: Australia, Denmark, Canada, Finland, Norway, USSR, U.S., UK, Netherlands, West Germany, East Germany, Poland, Hungary, Czechoslovakia, and Ireland.
- [https://en.wikipedia.org/wiki/Nuclear\\_Terrorism\\_Convention](https://en.wikipedia.org/wiki/Nuclear_Terrorism_Convention)
- <https://undocs.org/en/A/RES/51/210>
- Diaz Paniagua, Carlos Fernando, *Negotiating Terrorism: The Negotiation Dynamics of Four UN Counter-Terrorism Treaties, 1997-2005* (2008). City University of New York, 2008. Available at SSRN: <https://ssrn.com/abstract=1968150> or <http://dx.doi.org/10.2139/ssrn.1968150>
  - Nuclear Terrorism Convention
    - The UN established an *Ad Hoc Committee* in resolution A/RES/51/210 to negotiate a Nuclear Terrorism Convention. I cannot find a source that lists which states were apart of the *Ad Hoc Committee* but Diaz Paniagua (2008: 32) states that membership on the *Ad Hoc Committee* was open to all states, even non-UN members, since they would be eligible to be apart of the subsequent treaty. With this being said, I have followed the rule I laid out earlier: I code all states who have signed the treaty within a week of its opening as taking part in the negotiations.