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Research article

Iran's Nuclear Policy: A Cognitive Study on Defiance and Compliance

Mohammad Soltaninejad

University of Tehran, ORCID: 0000-0002-4995-6340, corresponding address: soltaninejad@ut.ac.ir

Abstract

This paper argues that the divides in Iran's nuclear behaviour between the three periods of 2005-2012, 2012-2016 and 2016-2021 are reflections of the varying modes of Iran's cognising the value of the nuclear program versus its costs. The predominant belief in the first period that Iran is in the gain domain made it defiant and risk-averse leading to Iran's avoidance of entering a pact with the untrusted US. The change of belief that Iran moved to the domain of losses as a result of sanctions drove Tehran more risk-taker and compliant in the second period and a part of the third period. This resulted in conclusion of the nuclear deal and the efforts to maintain it. While suffering in the domain of losses, the belief that another deal with the US is a predetermined failure explains the rest of the third period's Iranian fluctuation between compliance and defiance.

Keywords: cognition, prospect theory, Iran nuclear deal

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Introduction

Iran's foreign policy during Ahmadinejad's presidency, particularly his first term, was formulated around resistance against US pressures. Ahmadinejad vehemently called for standing up in the face of all US pressures, out of his belief that advancement of the nuclear programme is Iranians' inalienable right (Fathi &

Slackman 2007). Before Ahmadinejad, Rouhani who was then Iran's chief nuclear negotiator, had come to the conclusion that the 'European Union is after prolonging of negotiations without having an intention to recognize Iran's rights' (Rouhani 2012: 583) and therefore negotiation and interaction with the European troika had subsided, giving room for more concentration on completing the nuclear fuel cycle and enriching uranium inside Iran. Referral of Iran's nuclear dossier to the United Nations Security Council (UNSC) in February 2006 and adoption of several resolutions against Iran could not hinder development of the nuclear programme. In reaction, the US convinced the European countries, India, the Southeast Asian states, China and Russia to effectively implement the anti-Iran UNSC resolutions (Koulaei & Soltaninejad 2014). International pressures made Iran shift towards more serious negotiations over the nuclear issue in a way that in 2012, for the first time, ignoring the UNSC resolutions was replaced by one-on-one talks with the US (Cooper & Landler 2012). These negotiations reached momentum by a victory of Rouhani in the presidential elections of June 2013 and resulted in the signing of the interim agreement on Iran's nuclear programme in Geneva in November of that year and the Joint Comprehensive Plan of Action (JCPOA) in 2015. But the heady days of the nuclear deal did not last long. Even before Obama's term was over, critics began to attack the deal in the United States. The attacks were intensified during the campaigns of the 2016 presidential elections when Donald Trump condemned the deal with the aim to undermine his liberal opponent's foreign policy agenda. He called the nuclear deal 'an embarrassment and one of the worst and most one-sided transactions the United States has ever entered into' (White House 2018). Not long after he took office, Trump started to take practical measures against the deal to defuse it. These measures were a prelude to the actual withdrawal of the United States from the JCPOA in May 2018.

Iran did not respond by reversing its cooperative course or restoring its pre-deal nuclear status. Instead, Iran's then president, Hassan Rouhani, declared that 'Iran would remain in the nuclear deal without the US presence' (Press TV 2018). For a year, Iran adopted a policy of strategic patience based on working with the remaining parties to the deal, during which time Tehran, in the words of ex-foreign minister Mohammad Javad Zarif, 'remained fully committed to the agreement and gave Europeans the opportunity to fulfil their undertakings and make up for Washington's exit' (Tasnim News Agency 2019). Only after the European powers proved unwilling or unable to live up to their commitments and when Washington sought to zero Iran's oil sales from April 2019 onward (DiChristopher 2019) did Iran declare that it would enrich uranium beyond the limitations set forth in the nuclear deal (Rasmussen, Norman & Eqbali 2019). However, Iran did not consider this a violation of the deal. Zarif regarded the rolling back in

Iran's commitments in harmony with the nuclear deal which holds the right for any party to the deal to reciprocate in case other parties fail to live up to their commitments (Radio Farda 2019).

After the US assassination of the Iranian general Qasem Suleimani in January 2020, Iran declared that it is 'no longer abiding by a commitment made under the 2015 nuclear deal and would not limit its enrichment of uranium' (New York Times 2020). Despite this, Tehran remained within the outlines of the deal and allowed regular inspections to be carried out by the International Atomic Energy Agency (IAEA) (Siddiqui 2020). Moving towards the end of Rouhani's presidency and the beginning of conservative Ebrahim Raisi's tenure, Iran pushed harder to build on its leverages against the US's continued sanctions by limiting access of the IAEA inspectors to some nuclear facilities (Norman 2021), and also by increasing uranium enrichment degree to 60 per cent (Reuters 2021). Simultaneously, Iran engaged in negotiations to return to full compliance to the deal (Erlanger & Sanger 2021). Raisi, who shares a principlist foreign policy approach with Ahmadinejad, respected the goal of reviving the JCPOA and expressed his government's intention to return to the nuclear talks (Davenport, Masterson & Kim 2021). Yet, Raisi's approach towards the deal is characterised by sending mixed signals (Lotfy 2021). On the one hand his foreign policy team express readiness to revive the nuclear deal and on the other hand they walk back the prior arrangements reached during the six rounds of negotiations between the 4+1 (with the indirect involvement of the US) and Iran under Rouhani, raising speculations that the JCPOA will remain in a comatose condition in the years to come (Parsi 2021).

This quick review of Iran's nuclear behaviour raises the question of why, from 2005 to 2012, Iran resisted international political pressures and economic sanctions (defiance) but from 2012 onwards became cooperative, reached a deal and even after apparent violation of it by the US tried to salvage it (compliance). The inquiry goes on searching the reasons for the vague Iranian approach of neither compliance nor defiance under Raisi. In this paper, I use prospect theory that focuses on the Iranian decision-makers' perception of the costs and benefits of the nuclear programme to explain Iran's nuclear behaviours. To do that, I make a review of the existing explanations about Iran's nuclear programme in three areas of motivations, objectives and behaviours to demonstrate how prospect theory can be an addition to the present literature and how it sheds more light on Iran's nuclearisation. Relying on analysis of the speeches of Iran's primary foreign policymakers, this paper demonstrates that the evolution of the Iranian political elite's attitude to the costs and benefits of the nuclear programme is behind the fluctuations in Iran's nuclear policy between defiance and compliance.

Nuclear Iran: Standard explanations

The literature on Iran's nuclearisation can be divided into the works concentrating on the motivations that drive Iran to go nuclear, those trying to explain Iran's objectives from nuclearisation and those concerned about Iran's actual nuclear behaviours. Although the works concerned for the purpose of this paper are those related to Iran's nuclear objectives and behaviours, the first category will also be briefly reviewed so that the state of current literature and the place this paper occupies in that will be better established. Within the first category there is a range of views about the motivations that drive Iran towards developing an indigenous nuclear fuel cycle. For some authors, Iran's nuclearisation is first and foremost a matter of power maximisation with the ultimate aim of becoming a dominant power. From this perspective, 'Tehran views nuclear weapons as the means to regional preeminence' (Lindsay & Takeyh 2010). As Cortellesa (2016) put it 'Iran's true intention from going nuclear is to dominate its neighboring region.' Pollack (2013) puts Iran's nuclearisation in the context of two ultimate foreign policy objectives: first preserving the Islamic Republic's control over Iran and second reaching a regional hegemon status. Sherrill (2012: 31) also explains Iran's nuclear motivation in offensive terms of seeking dominance and control: 'the regime's desire to possess nuclear arms stems from offensive goals driven by domestic politics'. In opposition to this group, there are others who explain Iran's nuclear motivations in defensive terms. For them, the threat Iran perceives from the United States and its regional allies is the primary factor that drove it to go nuclear in the first place (Walt 2009). Bahgat (2006), who falls into this category, argues that perception of security threats together with domestic political-security dynamics and a sense of national pride drive Iran's nuclear policy. Bock (2014: 114) also points to buttressing the country against security threats as the major motivation behind Iran's nuclear programme: 'Iran has felt threatened, perhaps even endangered, for some time; Tehran's perceived adherence to its nuclear weapons programme can therefore be explained as a reaction to this perceived threat.'

There is also a sociological approach to understanding Iran's motivation to develop a nuclear programme, according to which Iran decided to go nuclear to assuage concerns about its status in the region and the world. The logic is often based on the fact that since the 1979 revolution Iran has been stigmatised and excluded from the international community by the US. Iran is routinely described as a violator of international agreements (United against Nuclear Iran 2019), a threat to international peace and security and a disrupter of regional order (e.g. Shinkman 2019; Danon 2019). This makes Iranian ruling elites believe that the great powers are not ready to respect Iran and to acknowledge the status Iran deserves. Therefore, the only way for Iran to prove itself and to gain

its desired position is to practice self-reliance and to stand up against the great powers' bullying. There are references in the speeches of Iran's foreign policy makers that support the idea that status-related concerns drive Iran's nuclearisation. For instance, reference can be made to the Supreme Leader of Iran's (2016) insistence on 'the internal capabilities of the Iranian nation alone' as the way to achieve development. As Prosser (2017: 18) argues 'Iran's nuclear ambitions have been spurred on by its considerable status expectations on the one hand and disappointment over deficiencies in its regional and global standing on the other—apparently reinforced by the belief that foreign powers have sought to limit Iran's status'. In the same manner, Fitzpatrick (2006: 531) summarises Iran's motivations for nuclearisation as achieving prestige, asserting national pride and sovereignty as well as ensuring that Iran is accorded equality and respect.

The works that focus on Iran's nuclear objectives are also varied. Some scholars argued that Iran's final goal is to develop an advanced nuclear arsenal. Sebenius and Singh (2012) consider a large nuclear arsenal as the best outcome for Iran's nuclear bids. Reardon (2012) also analyses Iran's nuclear programme based on the assumption that Iran's aim is to build a nuclear arsenal. In opposition to this view, others, including Pillar (2013: 174) argue that the objective of Iran's nuclear programme is not to make a nuclear arsenal: 'Tehran evidently has had an interest in nuclear weapons, reportedly even doing some work in the past on the design of such weapons. Such interest, however, does not equate with the utility function that Sebenius and Singh ascribe to the Iranians.' Others have found ways out of this dichotomy by describing Iran's nuclear objectives in terms of strategic hedging saying that Iran's aim is not to build a bomb but is to secure the technology and the know-how to do it. Bowen, Moran and Esfandiary (2016: 7) write that 'from 2002 to 2013 at least, Iran's approach to the nuclear issue was driven by a strategic desire to hedge its bets. Simply put, this approach involved developing the technical foundations from which nuclear weapons could be acquired relatively quickly if a political decision was taken to do so'. Einhorn (2014: 15) also explains Iran's nuclear objectives in a similar way saying that '...under international pressures Iran suspended its uranium enrichment activities after 2003 but did not abandon its goal of approaching a nuclear weapon threshold.'

There are other works about Iran's nuclear programme that concentrate on Iran's nuclear behaviours. Drawing on the theoretical debates about nuclearisation, Rezaee (2017: 4) distinguishes between optimistic and pessimistic readings of Iran's nuclear behaviour. Optimists regard Iran as a rational actor whose nuclear programme can be curbed through a coercive policy. In contrast to them, pessimists look at Iran as an irrational actor that is 'ready to trigger a nuclear Armageddon at a drop of a hat'. Others have gone beyond this rationality-irra-

tionality duality to explain Iran's nuclear behaviour and also Tehran's reaction to sanctions. Soltaninejad (2015) attributes the failures and successes in negotiations between Iran and the US to lack/presence of mutually hurting stalemates and mutually enticing opportunities. Sebenius and Singh (2012) also point to the absence of any zone of possible agreement to explain failures in negotiation with Iran to settle the nuclear dispute. Parsi (2012) focuses on domestic political limitations as well as fractures among Iran's political elites to explain the nuclear stalemate. Landsberg and Solomon (2010) regard the religiosity of Iran as a major cause for failure in reaching a deal with the West. For them, Iranian diplomacy is faith-based and is focused on the religious methods that remain largely alien to the international community. Dehghani et al. (2010) demonstrate how turning the nuclear energy to a sacred value for a relatively small but politically significant portion of the Iranian population makes compromise on the nuclear programme difficult.

A cognitive addition to the standard explanations

As the above review demonstrates, Iran's nuclear programme is approached from varying angles and there is a rich literature addressing Iran's nuclear motivations, objectives and behaviours. Here, I want to present a novel perspective that has not been considered before; one that adds to our understanding of Iran's nuclear objectives and behaviours evading certain flaws that some of the most cited views suffer from. On the objectives side, my criticism is primarily headed towards first, the *nuclear weapons arsenal* view and second, the *strategic hedging theory (nuclear bomb threshold)*. On the behaviours side, I critique the two poles of rationality and Irrationality. Methodologically speaking, the recurrent flaw in these works is that they do not infer/describe Iran's nuclear objectives and behaviours in an adaptable way. In fact, these works do not observe shifts in Iran's objectives and behaviours in accordance with Tehran's perception of the conditions under which it develops its nuclear programme. These works propose hypotheses about Iran's objectives and behaviours and try to find evidence that support those hypotheses. In contrast to them, prospect theory as an alternative cognitive approach which I am going to apply, recognises the floating nature of Iran's objectives and behaviours and their adaptability in reaction to the constraints and opportunities Iran faces. In this cognitive approach, the mindset and attitude of the Iranian decision makers is studied at the time they adopt policies and implement them. The way this work studies Iran's nuclearisation is unique in the sense that instead of looking for evidence in Iran's behaviour that confirm fixed and pre-defined objectives, it reads the mindset of the Iranian decision makers through the words they utter to understand what they could possibly define as objectives and adopt as policies.

To better understand the said flaws one should consider that the views expressed about Iran's objectives to go nuclear are not in constant harmony with what Iran has practically done or has been able to do. As I showed earlier, the two major objectives ascribed to Iran's nuclear programme are acquiring a nuclear weapons arsenal (nuclear deterrence) and reaching a nuclear bomb threshold (forward deterrence). These two views have two features in common. First, they only provide hypotheses about Iran's objectives and second, they discredit Iranian officially expressed claims that Iran's nuclear programme is meant to solely serve civilian purposes. In fact, for them what Iran declares as its objectives and what we should believe as Iran's objectives are mutually-exclusive. That explains why serious academic studies of Iran's nuclear programme hardly presume that Iran's nuclear objectives are primarily civilian, as Iran claims. The basic and easily understandable reason not to trust Iran's declared objectives is that the costs Iran has already paid for such a programme are too high that nothing short of deterrence/threshold of deterrence can explain that. A cognitive reading, by contrast, allows for considering conflicting objectives for Iran's nuclear programme all together from pursuing a nuclear weapons arsenal at one extreme and civilian use of the nuclear technology at the other. Reaching a nuclear bomb threshold falls in between. As I will show, prospect theory pictures the trajectory of Iran's move to go nuclear that covers both a possible nuclear deterrence and an extremely hard to deviate civilian nuclear programme. In the former case, no matter what Iran declares as its nuclear objectives, the Iranian perception that it can pursue its nuclear programme with bearable costs directs it to develop its nuclear capabilities to the end, which is the capability to build a nuclear weapons arsenal. In the latter case, Iran is obliged to suffice to civilian use of the nuclear technology and therefore what it declares as its objectives aligns with what it practically does. In fact, in such conditions there is no real chance of diverting from a non-military nuclear programme and therefore we can trust the Iranian officially declared objective of having a civilian nuclear technology.

According to prospect theory, Iran chooses between these options according to its perception of their costs in relation to the gains they provide based on a reference point that I will explain in detail later on. Prospect theory explains such dramatically different objectives by showing that the Iranian nuclear programme is not fixated on either of such objectives and Iran may shift between them in response to the restrictions/opportunities it faces and its perception of being in the domain of gains or the domain of losses. Iran may aim at building a nuclear weapons arsenal or it may stop below the threshold of having a nuclear bomb if the conditions allow for that (when Iran considers advancement of the nuclear programme the dimension according to which it defines its reference point and continuously sees itself in the win domain) and it would stop at the

level of having a civilian nuclear programme that is under robust international inspections if the punishments for developing a nuclear weapon programme is too high (when Iran defines the reference point based on economic considerations and therefore sees itself in the loss domain). It is necessary to add that the Iranian nuclear objectives are hard to measure and no analysis can tell the real aims of Iran with certainty. The objectives, instead, can be inferred from the possibilities and practicalities. Then, instead of providing prophecies about Iran's objectives I present what Iran can consider as its objectives in varying phases and rule out what it cannot. This approach is a substitute to the previously discussed ones that see deterrence and threshold of deterrence as Iran's ultimate targets.

Similar to the views about Iran's nuclear objectives, the opinions expressed about Iran's nuclear behaviours suffer from certain flaws. According to Rezaee's classification that I reviewed before, theories that explain Iran's nuclear policies are mainly formulated around the concept of rationality; either regarding Iran as a rational actor whose nuclear policies can be changed by increasing the costs it would pay to go nuclear or an irrational actor that cannot be directed towards compliance through coercive measures. The works that focus on the religiosity of Iran (faith-based diplomacy) and transformation of the nuclear programme to a sacred value are close to this latter class. The views that regard Iran as a rational actor cannot tell us why Iran invested substantially in a programme that would buy it loads of sanctions, cost its coffers billions of dollars and bring it international isolation only to be obliged to reverse it according to a deal. A rational actor is expected to have a sound calculation of the costs and benefits of the policies it adopts and therefore chooses policies with the highest probability of win and evades those with costs that surpass the gains. This logic cannot explain Iran's behaviour that has oscillated between reckless advancement of the nuclear programme and the readiness to drastically restrict it. In some periods of the nuclear discord, coercive policies simply failed to oblige Iran to abandon its nuclear programme and even their combination with incentives was insufficient to persuade Iran to change its defiant course. In other periods, Iran was ready to ship all its enriched uranium overseas, deactivate the most significant of its nuclear facilities and accept the most robust of international inspections just to get sustainable relief from sanction. These dramatic shifts in Iran's behaviour are better explainable when going beyond the rationality-irrationality dichotomy and instead regarding Iran as a rational actor that doesn't have a fixed calculation of the costs and benefits of its nuclear programme but rather calibrates its policies according to the deviations from a reference point. The other way around, the same discontent is observable in the views that regard Iran as an irrational actor. Although pressures and coercion failed to change Iran's behav-

our into submission for some years, Iran's ultimate consent to accept proposals for reconciliation was out of the expenses imposed on Iran's economy and the political isolation Iran tolerated as a result of its nuclear programme. Therefore, Iran cannot be seen as an irrational actor with religiously or ideologically formulated nuclearisation plans that are impervious to foreign pressures.

Prospect theory: From rejection to acceptance of a nuclear agreement

Having a review of the flaws in the existing literature, I now turn to prospect theory as an addition that sheds light on the shifting nature of Iran's nuclear objectives and behaviours. The first step is to locate prospect theory in the greater realm of cognitive theories. In general, cognitive theories are developed in reaction to the rational choice theory. According to the rational choice theory people have stable and regular preferences and before making a decision they gather as much information as possible and evaluate the probable outcomes of their decisions carefully. The cognitive approach recognises rationality in foreign policy decision-making but it takes into account its limitations with a special focus on the factors that hinder foreign policy decision-making based on accurate cost and benefit calculations (Mintz 2007). Cognitive theories have contributed to our understanding that foreign policy decision-makers are affected by certain factors that prevent them from functioning as calculating machines. Some of the most recurrent cognitive concepts and analytical instruments used in foreign policy studies are: heuristics (Tversky & Kahneman 1974), prospect theory (Levy 1992), motivational reasoning (De Dreu & Carnevale 2003), clichés (Booth 1995), misperceptions (Jervis 1976), metaphors (Shimko 1994), analogical reasoning (Hehir 2006) and social preferences (Kertzer & Rathbun 2015). All these concepts, one way or another, refer to the fact that policymakers' minds have a limited capacity to analyse realities. Therefore, they use mechanisms to simplify the world. Here, cognitive and rational choice approaches part ways. In the remainder, I focus on prospect theory to see how the evolutionary and adaptive understanding of Iran from the gains of the nuclear programme versus its costs shape Iran's nuclear objectives and behaviours.

Prospect theory was first proposed by Kahneman and Tversky (1979). Their theory was based on a series of experiments and highlighted inconsistencies between behaviour and expected utility theory. Expected utility is the theory of choice to explain decisions that states take under conditions of risk. Expected utility asserts that in their choices between risky options, individuals try to maximise their marginal utility. To do so, they weigh the utility of individual outcomes by their probabilities and choose the option with the highest weighed sum (Luce & Raiffa 1957). It means that to choose between options and strategies, actors evaluate their marginal utility. Kahneman and Tversky demonstrat-

ed that expected utility is descriptively inaccurate. In practice, people deviate from the expected utility in a systematic way and make their decisions not on their expectation of the final outcome but rather on deviation from a reference point (Vis & Kuijpers 2018).

The primary finding of Kahneman and Tversky's experiment is that values are attached to changes rather than final outcomes. In their experiment 80% of respondents preferred a certain outcome of \$3000 to an 80% chance of \$4000 and a 20% chance of nothing. If faced with the same two negative prospects, however, 92% of respondents preferred to gamble on an 80% chance of losing \$4000 and 20% of losing nothing to a certain loss of \$3000. Having these results, Kahneman and Tversky proposed that people are not really sensitive to final outcomes but they are instead primarily concerned about departure from an initial position or the reference point. In fact, people frame their decisions around a reference point (Levy 1992: 171). Thus, people think in terms of gains and losses and their preferences change as they shift positions between the domains of gains and losses. Gains are treated differently than losses in that losses loom larger than gains: I hate to lose more than I like to win (Levy 1992: 174-175). As McDermott (1998: 18) put it, prospect theory predicts that individuals are risk-averse in a domain of gains, or when things are going well, and relatively risk-seeking in a domain of losses, as when a leader is in the midst of a crisis. According to prospect theory, individuals tend to remain at the status quo. Status quo is the main reference point for the states in framing a decision-making problem and the loss aversion properties of the value function imply that the disadvantages of leaving the status quo are outweighed relative to the corresponding advantages. This is also the case in international relations where states are primarily concerned about preserving the status quo and not improving their position.

To see how prospect theory can provide an insight into Iran's nuclear programme I am reliant on an interpretive method of qualitative discourse analysis. The most available data that would enable me to get into the minds of Iranian policymakers are the speeches they deliver about the nuclear programme. I try to find out how Iran's understanding of the costs and benefits of its nuclear programme has evolved by analysing the speeches delivered primarily by Iran's Supreme Leader and also Iran's presidents and other officials. As Daddow (2015) argues 'the beliefs of foreign policy actors can be accessed . . . via the interpretation of published data by and about those actors'. He further argues that 'when a politician repeats a central idea in various places to different audiences, then he or she is setting out to persuade those interlocutors of the rectitude of the politician's position. It further assumes that politicians do not use language – all the time – as a smokescreen to hide or obscure their "real" intentions' (Daddow 2015).

Based on the above, to understand Iran's nuclear behaviour the reference point as well as the domains of loss and gain should be portrayed. Before trying to determine the reference point, it should be noted that this is the most challenging task when applying prospect theory. As Taliaferro (2010) shows, prospect theory literature suffers from conceptual and methodological difficulties, mainly around the issues of reference point selection, framing and preference reversal outside laboratory settings. Mercer (2005: 4) also recognises this difficulty saying that even when status quo is regarded as the reference point, establishing the point is challenging. Following Stein (2017), Vis and Kuijpers (2018: 580) argue that what makes determination of the reference point especially challenging is the fact that actors face outcomes in multiple dimensions. They bring up the case of a state facing the dilemma of making a foreign policy decision that strengthens its international standing (gain in dimension 1) but weakens its domestic standing (loss in dimension 2) as an example. Scholars have taken varying paths to tackle this challenge. The first way is a deductive one in which researchers may decide what dimension states consider to establish the reference point using an already existing theory. Taliaferro (2004), for instance, has used defensive realism to conclude that states regard the international dimension (against the domestic dimension) as their criteria to choose the reference point when deciding to have a risky military intervention overseas. The second way is an inductive one in which the researcher finds the reference point of a given state through a close observation and empirical study of its preferences. A decent example is Linde & Vis' (2017) experiment of the Dutch parliament's consideration of the two dimensions of economic and electoral to see how they frame the reference point.

Having these methods in mind, I sketch Iranian decision makers' framing of the reference point between the two dimensions of first, *advancement of the nuclear programme* and second, *economy* through observation of the Iranian Supreme Leader's choice of words and the way he frames these two dimensions. The idea is that when the Supreme Leader repeatedly and constantly underlines the benefits of the nuclear technology, he is seeing the advancement of the nuclear programme as the reference point. In such times, Iran's primary concern is preserving the nuclear achievements, and economic considerations take a back seat compared with that. The more Iran progresses towards completing the nuclear fuel cycle, increases its centrifuges, improves their quality and adds to its stockpile of enriched uranium the more it feels that it is in the win domain. And when in the win domain, Iran refrains from entering arrangements with the US as an untrusted interlocutor. Under such conditions, Iran believes that it should not let go of its precious nuclear achievements in the hope that the US would keep its promises in accordance with a deal. The other way around, when the

Supreme Leader's tone of speaking and choice of words changes from underlining the benefits of the nuclear technology and praising the progress Iran makes in developing the nuclear programme to underscoring the economic costs imposed on Iran as a result of US punitive measures, it is an indication that the reference point is in a state of transition/already transitioned to economy away from advancement of the nuclear programme. With the rise in economic costs, Iran starts to see itself in the domain of losses where economic sacrifice is too high to be ignored or downplayed. Under such conditions, the decline in revenues, loss of the oil market and exclusion from the global financial system become the yardsticks according to which Iran evaluates its conditions. Then, Iran's response shifts towards accepting the risk of entering a deal with the US and compromising its nuclear achievements in the hope that the economic pains would be substantially and sustainably relieved.

To understand the attitudinal evolution of Iran's policy makers about the costs and benefits of the nuclear programme, I made a longitudinal study of the speeches of Iran's Supreme Leader delivered in the course of sixteen years, from 2005 to 2021. The speeches of Iran's Supreme Leader were accessed from the website 'preserving and disseminating the works of Ayatollah Khamenei' in which they are archived in order of the time they were delivered and according to their main themes. The website's archive was searched for keywords 'nuclear' and 'sanction'. The relative frequency of these words was registered in three periods of 2005-2012, 2012-2016 and 2016-2021. The first period encompasses the years from the start of the nuclear dispute between Iran and the US after the Iran-European troika arrangements failed until the start of direct talks between Iran and the US over the nuclear issue. The second period covers the years of Iran-US negotiations until the nuclear deal was signed. The third period starts from the signing of the JCPOA and lasts to date. In these three periods, it is observed how the two words of sanctions and nuclear are mentioned. In the remainder, these periods are studied in turn.

The first period: Defiance

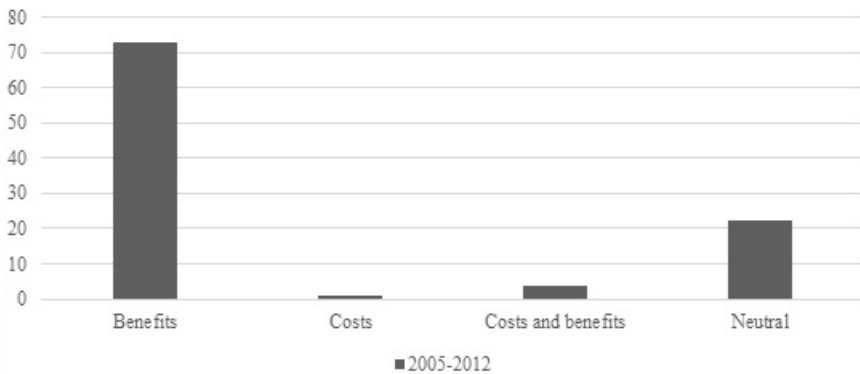
During the first period under study, the reference point was mostly formulated around Iran's perceived precious advancement of its nuclear programme that was clearly reflected in mastering nuclear science and technology as well as the increasing number of centrifuges and the growing ability to enrich uranium. This means that contrary to the principle of expected utility, Iran was not concerned about the utility of the final outcome that could be calculated by subtracting the costs of going nuclear from its benefits. In this period, Iran's nuclear behaviour was defying the calls for suspending its uranium enrichment programme, preserving the nuclear advancements and continuing to complete

a domestic nuclear fuel cycle. This behaviour was not driven by a cost-benefit calculation of the ultimate outcome of its nuclear quest under the shadow of sanctions but was rather energised by the desire to preserve the status quo and adding to it. The result on the ground was that in the words of Abbas Araghchi, the ex-deputy foreign minister of Iran, 'during Ahmadinejad's presidency *Nezam's* (the political system) policy was that we advance our nuclear objectives without paying attention to the probable sanctions' (YJC 2015). Likening the acceptance of uranium enrichment suspension in return for the EU incentives to 'exchanging pearl for candy' by Iran's ex-chief nuclear negotiator, Ali Larijani (Alef 2007) also demonstrates that Iran's primary concern was preserving the status quo (nuclear achievements and the prospects of adding to them) instead of having a nuclear technology that is worth the cost.

A review of the statements of the Supreme Leader of Iran during the period Iran showed maximum defiance to the United States' threats (from start of the nuclear dispute in 2005 until start of direct talks between Iran and the US in 2012), demonstrates that the pivotal concern of Iran was continuing to complete the nuclear fuel cycle and developing a domestic nuclear technology. Searching the keyword 'nuclear' in the speeches of Iran's Supreme Leader during this period comes up with 103 mentions out of which 75 cases (72.8 per cent) were centred on the benefits of the nuclear technology. In these speeches nuclear technology is seen as beneficial on the following grounds: it is the factor of Iran's power, it is a requisite for Iran's economic development, it serves scientific and technological advancement, it is an indigenous industry, it is a substitute for oil, it is a means for national unity and cohesion, it is necessary to produce electricity, it's a diplomatic and political achievement, it's a record for the *Nezam* (political system) and a sign of its efficiency, it is a means to boost national pride, it's a historical achievement based on which the Islamic republic will be judged in history. In this period, there was only one reference (0.97 per cent) to the costs of the nuclear programme and there were only four cases of referral to the costs and benefits both together (3.8 per cent). The remaining 23 cases (22.3 per cent) were neutral with no inclination to the benefits or the costs of the nuclear programme. (See Figure 1)

The above analysis suggests that during this period Iran was not acting according to the expected/marginal utility. If marginal utility guided Iran's nuclear programme, there should have been a considerable number of references to the prospects of the costs that Iran would pay to develop the nuclear programme. It further suggests that Iran's behaviour was driven by the desire to preserve the status quo and the positive trend of advancing its nuclear programme. Some examples of how 'nuclear' was framed in the speeches of Ayatollah Khamenei are: 'Westerners' propaganda about the nuclear energy is aimed at depriving the

Figure 1. Percentage distribution of referral to “nuclear” in the statements of Iran’s Supreme Leader (2005-2012)



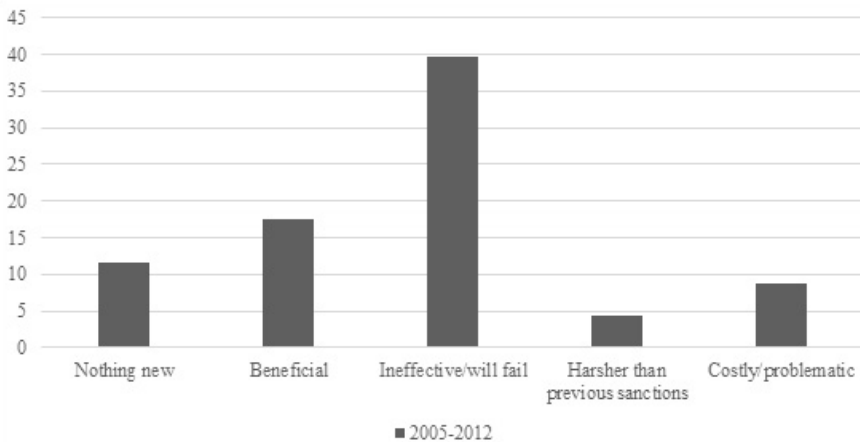
Source: the author

Iranian nation from a scientific and technological progress. This [progress] is our right. Why should we be deprived of that? . . . Nuclear energy is the inalienable right of the Iranian nation; this is science, this is technology, this is protection of the environment, it has medical purposes, it is our youth’s hope for development. There is no doubt that our nation will not abandon it’ (Khamenei 2005a); ‘We are thinking about a scientifically and economically justified work [nuclear energy] that is in line with our national interests, our nation wants it so we resist [to gain it]’ (Khamenei 2005b).

To better understand Iran’s perception of the costs and benefits of the nuclear programme a similar search is done on the keyword ‘sanctions’ in the speeches of Iran’s Supreme Leader delivered in the same time span. The search came up with 68 cases of reference, the majority of which (27 cases or 39.7 per cent) were centred on the notion that sanctions are ineffective, they are doomed to failure or development is possible despite sanctions. In 12 cases (17.6 per cent) the Supreme Leader saw sanctions as even beneficial and in eight cases (11.7 per cent) as nothing new, meaning that the nuclear sanctions are no different from the sanctions Iran had already experienced from the beginning of the revolution in 1979. During this period, in only six cases (8.8 per cent) there was a reference to the harmfulness/effectiveness of sanctions. Likewise, in only three cases (4.4 per cent) the Supreme Leader admitted that nuclear sanctions are different from previous sanctions (harsher and more harmful). Even these six and three cases of admitting the harmfulness of sanctions that made them distinct in Iran’s post revolution history were made in the last two years of the period under study. It means that for the first five years since the start of the nuclear dispute (2005-2009) there was not even a single reference to harmfulness of sanctions. Nuclear sanctions were depicted as normal, in continuation of the US previous sanctions, harmless and even beneficial (See Figure 2). Some examples of how sanctions

were mentioned in the speeches of Ayatollah Khamenei in this phase are: ‘They [the US and Europe] threaten that we sanction the nation of Iran but haven’t you done that already?! We are developed now and we are in the forefront of scientific and industrial development in the region. This status is achieved under sanctions’ (Khamenei 2006a); ‘They threaten that they sanction us. Sanctions cannot inflict any damage upon us. Haven’t they sanctioned us already? We achieved nuclear technology under sanctions. We gained scientific achievements under sanctions’ (Khamenei 2007); ‘When they sanctioned us Imam [the late Ayatollah Khomeini] expressed satisfaction and said even better! He was right. We pulled together in reaction to sanctions. It is also the case today. You want to threaten the Iranian nation with these words?! They are useless’ (Khamenei 2006b).

Figure 2. Percentage distribution of referral to (nuclear) sanctions in the statements of Iran’s Supreme Leader (2005-2012)



Source: the author

As far as Iran’s nuclear objectives are concerned, in this period Iran could have pursued both a civilian nuclear programme and a military-oriented one. Although Iran never implied that it is pursuing a military nuclear capability, the mere fact that Iranian priorities were geared towards development of the nuclear technology makes it impossible to rule out the scenario that Iran’s ultimate objective was to develop a nuclear weapons arsenal. In addition to that, as review of the statements of Iran’s supreme leader demonstrates, Iran perceived the pictured punishments for continuation of the nuclear programme manageable and therefore would see it possible to make a nuclear bomb. Despite this, Tehran was unsure about the strategic ramifications of building nuclear weapons that could provoke the US, Israel and its Arab neighbours in the Persian Gulf to encircle it even further and put permanent pressures on that. Moreover, in this period,

Iran was already satisfied with the balancing and deterring level that its existing means of power had brought it. Iran's defence doctrine was, and continues to be, primarily relied on developing its missile capabilities as well as expanding its strategic depth through sponsoring Shia organisations throughout the region. During the period under study, Tehran was doubtful whether building a nuclear weapons arsenal would give it further privilege than what it already had. A military nuclear power could even weaken Iran's position in the region by ushering in a nuclear arms race. Then, Iran's most conceivable objective could be to master nuclear science and technology necessary to build nuclear weapons but not to build such weapons or make a large arsenal of them.

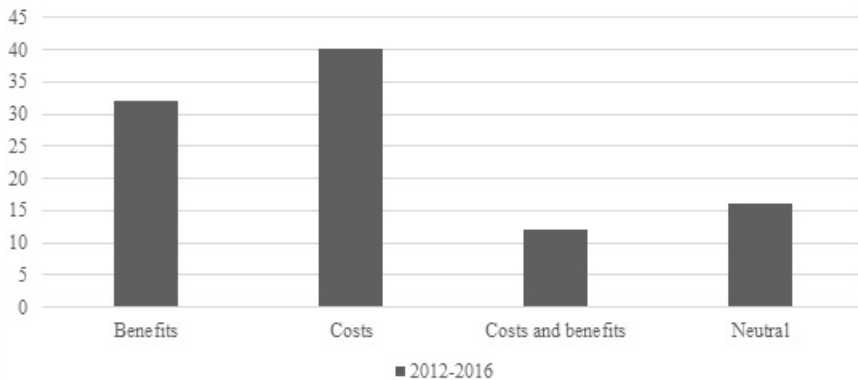
The second period: Compliance

Talking about 'nuclear' as mainly an asset and denying effectiveness of 'sanctions' continued as long as Iran was seeing itself in the win domain. In this period, Iran was mastering nuclear science and technology, the number of centrifuges and amount of enriched uranium was in the rise and no real pressure on the economy was felt. In 2005, Iran had only 200 centrifuges that rose to 19,000 in 2012 (Davenport 2015). It was only after the sanctions showed their real damaging effects that Iran's behaviour and rhetoric started to change. The change in behaviour was that it turned cooperative, seriously negotiating to resolve the nuclear issue and then preserving the nuclear deal was accompanied by a change in the way Iran talked about sanctions and is a sign of the change in Iran's perception of the reference point and the reality that it is moved to the domain of losses. During this phase, the dimension according to which Iran defined the reference point shifted to economic considerations away from nuclear advancements. The prevailing of economic considerations over the nuclear achievements was a result of the constantly degrading economic conditions as a result of sanctions. In 2011, before the direct talks between Iran and the US started, Iran exported 2.6 million b/d of oil. In 2012, as the US and the EU imposed sanctions the buyers of Iran's oil either halted or reduced their purchase in a way that a year later, in 2013, Iran's crude oil and condensate exports dropped below 1.3 billion dollars p/d (Energy Information Administration 2015).

The change in the way Iran defined its reference point and the subsequent perception that Iran is moved to the loss domain as a result of economic sanctions can be understood again through analysis of the speeches of the Supreme Leader on the nuclear programme and the sanctions delivered from the time direct nuclear talks between Iran and the US started in 2012 until the signing of the nuclear deal in 2015. In this period, the word nuclear is mentioned 50 times out of which the majority of cases (20 cases) are focused on the costs of the nuclear programme which amount to 40 per cent of all mentions. This is

in stark contrast to the less than one per cent mentions of the word nuclear in a context denoting its costliness in the first period of the study. In six cases, costs and benefits of the nuclear programme are brought together and this time only 16 mentions are dedicated to the usefulness of the nuclear programme (32 per cent) down from 72.8 per cent of the time Iran was seeing itself in the domain of gains (See Figure 3). In this period, the Supreme Leader refers to the damages inflicted upon Iran as a result of sanctions more frequently. He describes the costs of the nuclear programme as a cruelty that is imposed on the Iranian nation: ‘Today a huge nuclear cruelty is imposed on us. They [the US/great powers] don’t massacre us like what they did in Myanmar only because they cannot do that. They wouldn’t shy away from committing even that if it were in their power’ (Khamenei 2012a).

Figure 3. Percentage distribution of referral to “nuclear” in the statements of Iran’s Supreme Leader (2012-2016)

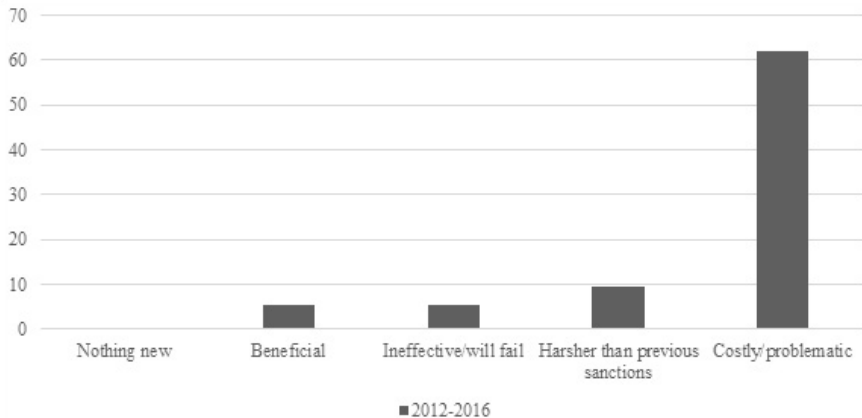


Source: the author

During this period the way the Supreme Leader mentioned sanctions was also dramatically changed, from rejecting the idea that sanctions can be effective and harmful to admitting it. In this period sanctions was repeated 72 times in the speeches of the Supreme Leader, out of which 45 cases were directly suggesting that the sanctions are hurtful. This amounts to 62.5 per cent of all mentions that is a considerable increase in comparison with the first period of the study that the effectiveness of sanctions was admitted only in 8.8 per cent of all mentions. In this period sanctions were referred to as ineffective and beneficial only in four cases each, which is 5.5 percent, down from 39.7 per cent and 17.6 per cent respectively in the first period. During that time Iran embarked on direct talks with the US till the time the JCPOA was signed, it is also more commonly admitted that the nuclear sanctions are different from the sanctions imposed on Iran from the beginning of the revolution (an increase to 9.7 per cent from 4.4 per cent) (See Figure 4). In this

period, sanctions are commonly referred to as savage, cruel and illogical. Some examples are: 'They pretend that they lift sanctions if Iran abandons its nuclear energy. They lie! They impose illogical sanctions out of their grudge. These Sanctions are literally savage in the eyes of all wise and just peoples of the world. This is a war against a nation' (Khamenei 2012b). 'I do not refuse to accept that the cruel sanctions that the enemies of the revolution imposed on Iran's nation are effective. Yes they undoubtedly have their effects' (Khamenei 2015).

Figure 4. Percentage distribution of referral to (nuclear) sanctions in the statements of Iran's Supreme Leader (2012-2016)



Source: the author

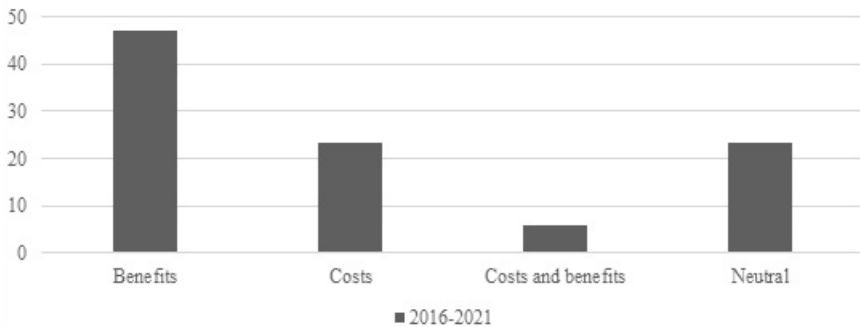
Economic hardships imposed by sanctions and the prospect of their aggravation that turned Iran cooperative and obliged it to compromise its nuclear rights in return for sanctions relief has obvious implications for inference of Iran's nuclear objectives. Minimising the uranium enrichment level to 3.67 per cent, confining the number and type of centrifuges to 5060 IR-1, deactivating some nuclear facilities and readjustment of others to solely civilian use along with accepting the most robust of international inspections demonstrate that in this phase Iran's nuclear objectives were only civilian, as an unnoticed deviation from the agreement could be extremely difficult. In other words, the process of negotiating a deal that would drastically restrict Iran's nuclear activities is a strong reason to believe that Iran's nuclear objectives were civilian.

The third period: Unsure to defy or to comply

The third period concerning the cost-benefit calculus of the nuclear programme and its effect on the actual nuclear policy of Iran starts from 2016, which is a year after the nuclear deal was signed and lasts to date. In this period a shift in favour of the gains of the nuclear programme in comparison with the costs is observed.

From a total 34 mentions of the word nuclear, 16 (47 per cent) are about nuclear advancements or/and their benefits that is an increase from 32 per cent of the second period. This, however, is still much less than the 72.8 per cent of the first period in which nuclear was primarily seen as an achievement. In a similar manner, talks about the costs of the nuclear programme drops to eight cases (23,5 per cent) down from 40 per cent of the second period. Again this is still much higher than the rate in the first period when less than one per cent of the mentions of the word nuclear were pointing towards its costs. (See Figure 5).

Figure 5. Percentage distribution of referral to “nuclear” in the statements of Iran’s Supreme Leader (2016-2021)

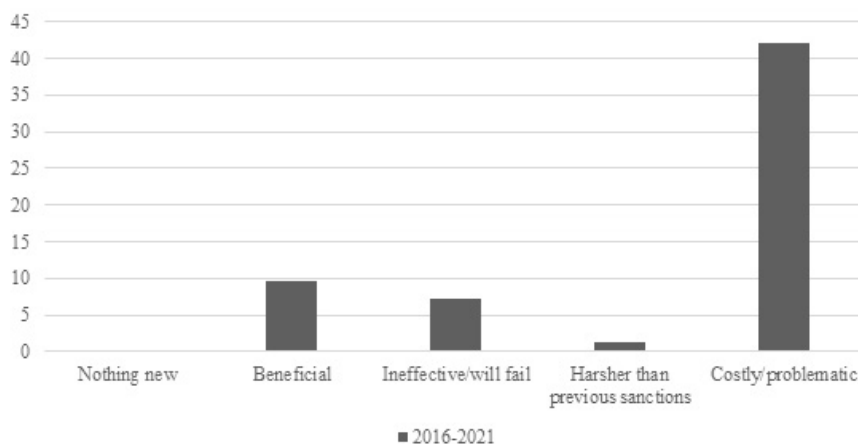


Source: the author

A similar trend is also observable with respect to the Supreme Leader’s attitude towards sanctions where the expressions about harmfulness of sanctions decreases to 42.1 per cent down from 62.5 per cent of the second period. The usefulness of the sanction, on the other hand, is raised to 9.6 per cent of all mentions compared to 5.5 per cent of the second period. Ineffectiveness of the sanctions is also slightly raised to 7.2 per cent compared with the 5.5 per cent of the second phase. There is still a huge gap between these numbers and those of the first phase when sanctions were seen as ineffective in 39.7 per cent and beneficial in 17.6 per cent of the whole mentions. In that phase, sanctions were seen as effective in only 8.8 per cent of the whole pool of references (See Figure 6). Some examples of how sanctions are mentioned in the third phase are: ‘There is no doubt that sanctions are a crime committed by the United Stets. It’s a blow to the Iranian nation by the US’ (Khamenei 2020). ‘The economic blockade applied against us and some other nations by the US is one of the most severe crimes a state can commit. . . . A crime that a state able to massacre 220 thousand people in a single day can do’ (Khamenei 2021).

As the above diagrams show, in the third period the costs of the nuclear programme are well recognised and sanctions are still mostly referred to as problematic. Then the reference point for Iran is still defined based on the economy

Figure 6. Percentage distribution of referral to (nuclear) sanctions in the statements of Iran's Supreme Leader (2016-2021)



Source: the author

dimension and Iran continuously sees itself in the domain of losses. It should be argued here that a major difference between the second period and the third period led to the third period's dissimilar reaction of Iran to the fact that it is still in the domain of losses. The different reaction of Iran was a reflection of the fact that the United States did not respect its commitments during the remainder of Obama's presidency and then abandoned the deal under Trump. These led to a change in the cost-benefit calculation of Iran between the values of the nuclear deal versus its costs. As a result of the US breach of its commitments Iran assumes that a future deal with the US will not remove sanctions in a sustainable way. Therefore Iran should stick to the nuclear achievements instead of pinning hopes on sanctions relief. This is reflected in the statements of Ayatollah Khamenei when he says: 'They [European countries] expect that the nation of Iran tolerates sanctions and abandons the nuclear activities both together. I am telling them that this nightmare won't come true' (Khamenei 2018a). Reconsideration of the way to address sanctions is also demonstrable in another statement of Iran's Supreme Leader when he expresses regret about the way Iranian officials talked about sanctions as harmful: 'The enemy has felt that our country is prone to sanctions. Unfortunately we ourselves strengthened such perception. In some periods and on some occasions, we inflated [the significance of] sanctions saying that we must remove them. We exaggerated the significance of sanctions removal . . .' (Khamenei 2016).

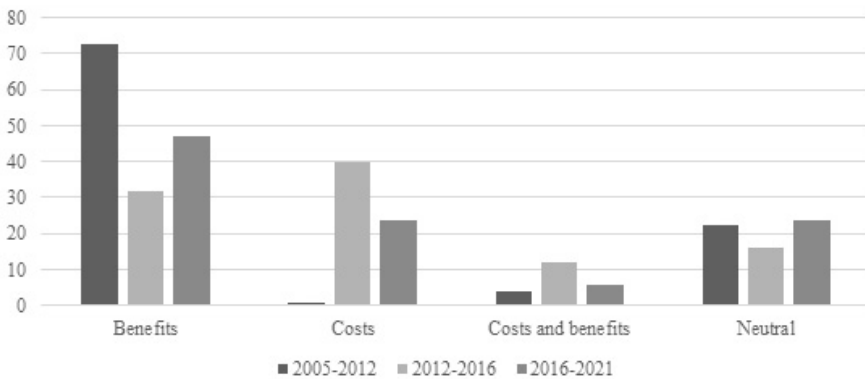
In the second period Iran was confronted with a dilemma of whether the US would adhere to the commitments it would make under a deal or not. Under pressures of sanctions and international isolation Iran took the risk and compromised its nuclear rights to receive sanctions relief. However, in the third pe-

riod, the US breach of its commitments is not a risk for Iranians but is rather a foregone eventuality. This is reflected in the speeches of Ayatollah Khamenei when saying: 'My understanding is that the sanctions are there, they should be there and they will not be lifted' (Khamenei 2019). In fact, the experience of the JCPOA tells Iran that sanctions are an integral component of the US strategy of containment. Iran has come to the conclusion that the US will not be satisfied by anything short of Iran's ultimate surrender. Iran's capitulation, however, cannot be achieved all at once. Therefore, the US seeks to make Iran surrender phase by phase. The first phase is to force Iran to limit its nuclear programme but without a sustainable sanctions relief. Sanctions should be kept as the primary leverage to extract further concessions from Tehran. After Iran's nuclear programme is neutralised it would be the turn for Iran's missile programme and then its regional involvements. The confidence that the US will not remove sanctions in a sustainable way is reflected in the speeches of Ayatollah Khamenei, who, on several occasions, has talked about the lessons that Iran should learn from the JCPOA. Some examples are: 'We have learnt [from JCPOA] that the Islamic Republic cannot interact with the US. Why is that? It is because the US will not adhere to its commitments. Don't tell me that these are Trump's doings. No. The previous US administration also reneged on its commitments' (Khamenei 2018b). 'They tell us that if you want sanctions removed, you should include a sentence in the agreement that you would talk to us about other issues in future. This sentence would be a pretext for their future interferences in various issues including the missile program and the region' (Khamenei 2021).

In spite of the belief that the US will not keep its pledges to Iran according to any agreement, the balance is not radically shifted in favour of another full defiance. This is because the pressures of sanctions are still there, the risk of their ramifications looms large and some venues of oil sell is allowed to be open for Iran under Biden with the prospect of JCPOA revival (Jakes 2021). After two years of rise (2016-2017), under Trump's maximum pressure policy Iran's oil exports started to decline dramatically and the inflation rate increased substantially. After a considerable rise in Iran's oil exports to over 2 million b/d in 2017, in 2018 it decreased to 1,549,991 b/d and then plummeted to less than half a million b/d in 2019. This even decreased more in 2020 when Iran managed to export only 440,323 b/d of oil (Fred Economic Data 2021). The pressures of sanctions are also reflected in other economic indicators including the inflation rate that was 9.1 per cent in 2016 but mounted to 39.3 per cent in 2021 (IMF 2021). There have even been estimates that in case sanctions remain in place, the equivalency of Iranian currency (Rial) to the US dollar will reach a record of 280,000 to 1 in 2027 (Bourseno 2021), which would be ten times more than the rate in 2021. This impact of sanctions on the Iranian economy

and the prospects of its aggravation is reflected in the statements of Ayatollah Khamenei by addressing sanctions as *mean* and *criminal* instead of ineffective/beneficial (in the first period) or cruel/illogical (in the second period). This awkward position of suffering economically accompanied by the belief that the US will not keep its pledges explains Iran's 'vague and noncommittal' approach towards the nuclear talks under Raisi (International Crisis Group 2021) with his government's rhetorical support of JCPOA revival (to keep the economic conditions manageable) and practical build-up of the nuclear capabilities in utter violation of that.

Figure 7. Percentage distribution of referral to "nuclear" in the statements of Iran's Supreme Leader (2005-2021)

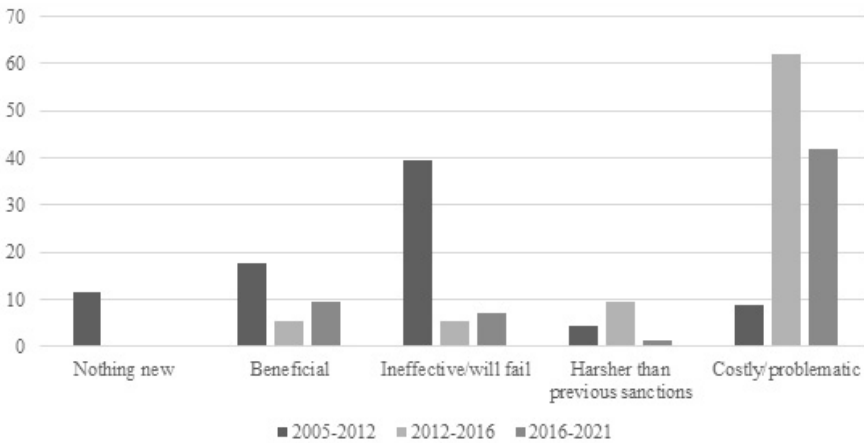


Source: the author

For a comparison of percentage distributions of the two words of nuclear and sanctions in the three periods of the study see the Figures 7 and 8.

When it comes to the nuclear objectives, Iran is now entangled between two conflicting considerations. On the one side, the persistent status of Iran in the domain of losses and the fact that economic hardships form the dimension according to which the reference point is defined justify Iran's pursuit of a mere civilian nuclear programme. Under the current conditions, Iran's primary need is sanctions removal and therefore Iran is ready to compromise its nuclear rights again to regain its economic stability. On the other side, the experience of the JCPOA tells Iran that the US's ultimate aim is to contain Iran and therefore sanctions will never be lifted in a sustainable way. Tangled between these two, none of the three discussed objectives can be ruled out. Iran may be after a nuclear weapons arsenal, it may suffice to a weapon threshold nuclear technology or it may still think of securing a civilian nuclear level. Despite this, the priority of economic recovery over strategic uses of the nuclear programme brings forth a fourth objective that is to increase its nuclear capabilities only to use them

Figure 8. Percentage distribution of referral to (nuclear) sanctions in the statements of Iran’s Supreme Leader (2005-2021)



Source: the author

Table 1. Iran’s nuclear behaviours and objectives in the three periods

| Period | Dimension to define the reference point | Domain | Behavior | Possible objectives | The most conceivable objective |
|-----------|---|--------|---------------------------------|---|--------------------------------|
| 2005-2012 | Advancement of the nuclear program | Gains | Defiance | Nuclear weapons arsenal Strategic hedging Civilian use | Strategic hedging |
| 2012-2016 | Economic considerations | Losses | Compliance | Civilian use | Civilian use |
| 2016-2021 | Economic considerations | Losses | Between defiance and compliance | Nuclear weapons arsenal Strategic hedging Civilian use Leverage building | Leverage building |

as levers to pressure the US into re-entering the nuclear deal and removing the sanctions. In fact, it appears that Iran is taking a couple of steps forward to build a strong negotiating position. Then, it would take some steps backward as necessary compromises for a deal without being obliged to give concessions on other sources of disagreement with the US that are its regional involvements and its missile programme.

Conclusion

This paper demonstrated that a cognitive addition to the existing literature on Iran's nuclear policy can help us better understand Iran's nuclear objectives and behaviours. Prospect theory, as a significant development in cognitive foreign policy analysis, explains the differences in Iran's nuclear objectives and behaviours in the three periods of 2005 to 2012, 2012 to 2016 and 2016 to 2021 in terms of Iran's perception of being in the domain of gains or the domain of losses. Analysing Iran's nuclear objectives according to prospect theory demonstrates that such objectives are not fixed and Iran may shift between a series of them according to its understanding of the benefits of the nuclear programme versus its costs. This cost and benefit calculation is based on Iran's perception of deviation from reference points that are floatingly defined according to the two dimensions of advancement of the nuclear programme versus economic considerations. During the first period and while Iran was seeing itself in the domain of gains, advancement of the nuclear programme was Iran's reference point and therefore its nuclear objectives can be any of these three: deterrence, forward deterrence or civilian use of the nuclear technology. In the second period, Iran defined the reference point according to economic considerations and therefore was seeing itself in the domain of losses. As a result, its nuclear objectives can only be civilian as the two other hypothetical objectives lose their relevance in relation to the reference point. The result was Iran's readiness to let go of its nuclear achievements in return for a sustainable sanctions relief. In the third period, Iran's continued perception that it is in the domain of losses combined with its understanding that the US will not adhere to any deal, make it possible that Iran has all the three objectives in mind without being fixated on any of them. The reference point in this period is still economy but contrary to the second period, Iran does not expect that compromising the nuclear advancements would lead to a sustainable sanctions relief. This puts Iran's objectives in another state of flux. The most conceivable objective, though, is to build levers by developing its nuclear programme beyond JCPOA limitations to push the US towards re-entrance to the deal without asking for further concessions from Iran on the other sources of difference, particularly Iran's regional involvements and its missile programme.

When it comes to Iran's nuclear behaviours, the cognitive study goes beyond the rationality-irrationality dichotomy as it recognises the fact that Iran is a rational actor but in a bounded way. Iran's nuclear policy is based on a calculation of the costs and benefits of the nuclear programme that evolves over time within a learning process. The cognitive approach also proved useful to see Iran's nuclear policy from an adaptive and evolutionary prism so that the behaviours of Tehran are analysed according to the dominant attitudes and understandings of the Iranian decision makers at the time of their happening. During the first period, Iran saw itself in the gain domain and was therefore reluctant to compromise its nuclear achievements. Iran did not accept proposals for settlement because the gains from such proposals were perceived as far less valuable than what Iran would give in return. In this period, Iran was risk-averse, not giving up its nuclear achievements in the hope of US adherence to its commitments. Tehran became ready to compromise and accept the risk of a deal with the untrusted US only when it found itself in the loss domain under the heavy pressures of sanctions. Continuation of this perception after the US exit from the JCPOA explains Iran's efforts to salvage the deal. Iran's gradual shift towards reciprocating the US breach of its commitments in the form of scaling back some of its commitments, restricting access of the IAEA inspectors to some nuclear sites and increasing the level of uranium enrichment under Rouhani followed by Raisi's vague position between return to the deal and building up nuclear capabilities can also be explained in terms of the shift in Iran's calculation of the benefits of the nuclear deal versus its costs. While deep in the domain of losses, Iran is measuring the costs of another US breach of a deal versus some immediate benefits Iran may gain after that deal. The past experience strongly suggests to Iran that the US violation of its commitments is a foregone eventuality. Yet, the heavy pressures of sanctions and the prospects of their increase dictate to Iran not to leave the deal altogether and to take a cooperative posture.

MOHAMMAD SOLTANINEJAD is Assistant Professor at University of Tehran. His main research interest is Iran's foreign policy with a special focus on cognitive-emotional dimensions of Iran's international behaviours.

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