

How the Iran Deal Prevents a Covert Nuclear Weapons Program

On July 14, Iran and the six-country group known as the P5+1 (China, France, Germany, Russia, the United Kingdom, and the United States) reached an agreement on Iran's nuclear program that promises to end the 13 years of escalating tensions that Tehran's nuclear ambitions have caused.

The deal, formally known as the Joint Comprehensive Plan of Action, is an impressive collection of restrictions, restraints, and monitoring provisions applied to the Iranian nuclear program. Under the deal, Iran's path to a nuclear weapon using declared facilities is effectively closed for at least 10 years and in some respects longer. Tehran could attempt to produce nuclear weapons material via the declared nuclear program, but to do so would be to risk almost immediate detection and response. This is a result of a combination of measures that constrain Iran's

capabilities and ensure their monitoring.

Although media and public attention has often focused on the known nuclear program, experts generally agree that it is the possibility of a covert program that causes them most concern. Iran has a history of building nuclear facilities in secret and admitting to a range of sensitive nuclear activities only after the fact. The agreement needed to address this problem.

At a fundamental level, this is tremendously difficult. It is difficult to prove the absence of something, particularly in a country as large as Iran.

Deliberate evasion of monitoring and transparency measures, which any covert program would involve, naturally makes this job even more difficult.

The subtle effectiveness of the agreement may be most pronounced in the provisions dealing with potential covert activities. Critics have latched on to the issue of how much time it would take for inspectors from the International Atomic Energy Agency (IAEA) to gain access to undeclared sites, but this is largely a straw-man complaint based on an erroneous assumption that "anytime, anywhere" inspections would be achievable in anything short of a postwar environment, such as the one in Iraq in the 1990s.

By focusing on this particular issue, skeptics miss the fact that the rest of the agreement is geared to ensure that no significant undeclared facilities can exist. This article will describe in detail the various provisions of the deal that serve as a check against the possibility of covert sites by forming concentric circles of protection. The article also will address the few scenarios in which a potential failure of the system could take place. In doing so, it will demonstrate that the likelihood of these scenarios is

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German Foreign Minister Frank-Walter Steinmeier (left), French Foreign Minister Laurent Fabius (third from left), Chinese Foreign Minister Wang Yi (fifth from left), EU foreign policy chief Federica Mogherini (center), U.S. Secretary of State John Kerry (third from right), UK Foreign Secretary Philip Hammond (second from right) and Russian Foreign Minister Sergey Lavrov (right) sit at a table at the Palais Coburg hotel in Vienna on July 6. The officials were representing the group known as the P5+1 in the final stages of negotiations with Iran on the country's nuclear program.

sufficiently small as to be implausible and therefore does not constitute a sound reason to reject the deal.

Defeating the Covert Option

In order to have a covert nuclear weapons program, Iran must address three needs: access to nuclear materials, access to the equipment and technology to transform nuclear materials into weapons-usable materials, and time. Iran also would need to have a proven nuclear weapons design and viable means of delivery, but the longest lead time and greatest complication are associated with the production of the nuclear weapons material itself. To be truly covert, such a program should have minimal interactions with declared Iranian facilities, which will be subject to inspections and monitoring. Thus, it is likely that an entirely separate nuclear fuel cycle would have to be created for this endeavor, in which there might be a sharing of knowledge between the declared and covert programs but little

else that would risk the exposure of illicit activities.

Among the needs of a covert proliferator, the first and foremost is finding a way to obtain nuclear materials. The uranium-monitoring provisions of the comprehensive agreement will make it very difficult for Iran to do this without being caught. Under the terms of the deal, Iran will permit the IAEA to “monitor, through agreed measures that will include containment and surveillance measures, for 25 years, all uranium ore concentrate produced in Iran or obtained from any other sources.”¹¹ As a result, Iran will not be able to produce a secret stockpile of uranium from its existing mines because such a move would be detected by means of the containment and surveillance measures that exist, which can be loosely described as a combination of seals and cameras.

Theoretically, Iran could seek to procure uranium illicitly, but this would be contrary to UN Security Council actions taken before and since the

July 14 deal. These restrictions dictate that any uranium coming into Iran go through a procurement mechanism that is enshrined in the deal. This procurement mechanism will govern the transfer of any Nuclear Suppliers Group (NSG) controlled or dual-use items or materials to Iran, as well as any items that a potential exporting state may determine could contribute to an illicit Iranian nuclear program. Under the deal, a transfer is considered illicit if it does not come through this mechanism.

Iran also can receive uranium as part of a swap of its enriched-uranium stockpile, but any such swap would be declared by Iran and known to other parties in the agreement. Skeptics may argue that Iran is capable of evading sanctions and could similarly evade the rules established in the agreement. Yet, there is some historical evidence indicating that success at evasion should not be assumed. UN Security Council Resolution 1737, adopted in 2006, was the first resolution that prohibited Iran from importing

uranium. During the nine years since the adoption of that resolution, although there have been occasional concerns that Iran could obtain uranium or that its partial ownership of a uranium mine in Namibia gives it license to import uranium from that mine, there has not been any verified transfer of uranium to Iran aside from fuel for the Bushehr power reactor.

centrifuges and associated components and infrastructure for 15 years. With this kind of monitoring in place, the IAEA would notice any attempt to divert these centrifuges well before a plant could be built.

Instead of taking centrifuges out of its declared centrifuge stockpile, Iran could instead decide to build new centrifuges. To do so, it would need to produce new

production for use in a covert bomb. One such design is the heavy-water research reactor currently being built at Arak, but under the agreement, it will be modified to produce as little as one-eighth of the annual plutonium output of its present design. It is reasonable to suspect that Iran would seek to build a new heavy-water reactor like the present Arak design, given that it has some experience

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Assuming that Iran is able to procure the uranium needed to begin its clandestine program, it must be able to modify the uranium into a form useful for weaponization—the second condition that clandestine proliferators must meet. Generally speaking, this means Iran would have to convert the uranium from its raw form into material capable of being enriched or into fuel for a reactor. This step would require the construction of a new, covert uranium-conversion plant.

For the next step, it is most likely that Iran would seek to utilize centrifuge-based uranium enrichment in its covert program. Iran has experience in uranium enrichment with centrifuges and in the covert construction of facilities for such enrichment, albeit with facilities that were exposed long before they ever became operational. In addition, centrifuge plants have fewer detectable signatures than nuclear reactors or spent fuel reprocessing plants.

Covert uranium enrichment would require the construction of a new covert enrichment facility, which is prohibited under the deal with the P5+1, and outfitting with centrifuges. The easiest supply of these is the stockpile of centrifuges removed pursuant to the deal. Fortunately, the deal addresses the possibility of centrifuges being removed from storage, requiring continuous monitoring, including containment and surveillance measures, of Iran's stored

rotors and bellows for these centrifuges, among other parts and pieces. Because the agreement requires containment and surveillance of the existing inventory of both rotors and bellows for 20 years, Iran would have to produce new centrifuge components using specialized equipment.

Yet, the deal guards against this route as well by requiring Iran to provide a declaration of all locations where centrifuge component production could take place and to permit access to those locations to verify that illicit production is not ongoing. Furthermore, the deal requires Iran to provide access to the flow-forming machines, filament-winding machines, and mandrels that are used for production of centrifuge rotor tubes and bellows. This equipment is subject to continuous monitoring, including containment and surveillance. If the equipment were to be diverted or misused, the IAEA would know. This access will persist for 20 years.

In sum, to have a covert enrichment path, Iran would have to have a clandestine supply of uranium, a covert uranium-conversion plant, a covert means of producing centrifuges, and a place to install and operate them. This would require essentially replicating its current enrichment program, which is a costly, complicated, and detectable enterprise.

With respect to the covert-reactor path, there are reactor designs that could permit Iran to maximize plutonium

with it. Yet, Iran's experience with the construction of the heavy-water reactor at Arak does not give any credence to the notion that such a facility could be constructed without being noticed, due to the long lead time required for construction and fact that the Arak reactor was itself observed long before it was completed, as was the heavy-water production plant located next door.

Reactors themselves require specially designed parts and materials, at least some of which Iran would probably have to procure from non-Iranian sources. In addition, reactors have unique construction signatures that can be spotted with intelligence satellites. It is not impossible to construct a reactor clandestinely—the North Korean-built al Kibar reactor in Syria that was destroyed in 2007 by Israel is a case in point—but it is more difficult. The Israeli ability to spot and destroy the reactor before it was operational supports the idea that even a carefully concealed reactor facility can be stopped before coming online.

Assuming Iran could build a new reactor that produces weapons-grade plutonium, Iran still would have to extract the plutonium from spent fuel. The absence of a spent fuel reprocessing capability in Iran and Iran's inexperience with spent fuel reprocessing technology make it unlikely that Tehran would seek this path for a covert weapons program. In fact, it could take Iran the full 15 years

that the reprocessing and associated spent fuel restrictions of the deal are in place to learn enough about the technology and to construct facilities capable of performing the operation, minimizing its value to Iran while maximizing risk.

As noted above with respect to uranium enrichment, Iran would need to have a way of procuring items that it needs for work on a covert reactor program. To a large extent, the procurement channel established as a result of the deal ought to guard against this. Iran will be prohibited from engaging in any procurement of items especially designed or prepared for nuclear uses without going through the procurement channel. Iran will likewise be prohibited from procuring dual-use items listed by the NSG, as well as any items that a potential exporting state determines could contribute to illicit nuclear activities, unless Tehran obtains these items through the approved channel. Any identified procurement outside the channel would be an immediate red flag once detected. (The

issue of undetected nuclear procurements is discussed below.)

Even if Iran obtained illicit uranium, illicit uranium-conversion equipment, and illicit uranium-enrichment equipment and constructed the necessary facilities, it still would not be invulnerable to detection. This points to the last requirement on the list cited above: time. Every day an illicit facility operates is another day for a spy, a wiretap, or a satellite image to catch the proliferator in the act.

The construction and operation of these facilities and their associated activities require time to achieve their desired results; one weapon's worth of highly enriched uranium (HEU) is not made in a day. A proliferator must have enough time to ensure its facilities fulfill their function. If the proliferator fails to have enough time, it runs the risk of being caught early and having the attempt curtailed by diplomatic action or military strikes. The United States and its partners have thus far detected the Natanz facility, the Arak facilities,

and the Fordow facilities before they were completed, without much of the access to be provided under the terms of the comprehensive agreement. Should another such facility be detected, the comprehensive agreement provides yet another tool to address it: required provision of access.

Under the terms of the deal, Iran is required to provide access to undeclared facilities if the IAEA requests such access and suitable alternative arrangements cannot be identified. This requirement is based on the implementation of Iran's additional protocol, which Iran will begin implementing provisionally when implementation of the deal begins.²

The agreement specifies a process that the IAEA request would set in motion once the agency has learned of a potential covert site or undeclared nuclear-related activities. This process includes the provision of information by the IAEA to Iran on the nature of the suspicions prompting the access request. The request could trigger a 24-day clock under which Iran would provide the requested access



Atta Kenare/AFP/Getty Images

Iranian Foreign Minister Mohammad Javad Zarif speaks at a press conference at Tehran's Mehrabad airport on July 15. Zarif and Ali Akbar Salehi (not pictured), head of the Atomic Energy Organization of Iran, spoke after returning to Tehran from Vienna, where they reached an agreement with the P5+1 on Iran's nuclear program.

or the issue would be sent to the dispute resolution process stipulated in the agreement. Iran could head off a request for access only if four of the eight parties to the agreement—Iran, the P5+1, and the European Union—opposed granting access. Even then, the complaining state could still take up the matter in the dispute resolution process. The end result

comprehensive agreement, within six months, UN Security Council sanctions would have snapped back against Iran for such behavior.

Second, although six months had passed since the Kalaye facility was first identified publicly, with extensive modifications made to the workshop, traces of enriched uranium still were

P5+1, Iran would be prepared to risk the consequences of that deal being torn apart by its actions, consequences that could include sanctions or military action. Although this is conceivable in the event of a near-term, regional security threat to Iran, no such threat exists at present, with the possible exception of Israel. Yet, as the existence of a covert program is one

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of that process could be the reimposition, or “snapback,” of UN Security Council, U.S., and EU sanctions and a resumption of the crisis over Iran’s nuclear program.

Critics have argued that 24 days is far too much time to grant for this procedure because Iran would be able to use the time to cover up its activities. Olli Heinonen, the former head of the IAEA Department of Safeguards, has cited Iran’s renovation of the Kalaye Electric Company facility in 2003 as proof that Iran can rapidly dispose of the evidence of misdeeds.³ Heinonen noted that, two weeks after the IAEA requested access to the facility, where Iran engaged in undeclared centrifuge experiments, it had been completely renovated, with new floors, walls, and air-handling systems.

The problem with this example is twofold. First, Iran did not have only two weeks to sanitize the facility. The initial public revelation of Iran’s clandestine enrichment program was in August 2002 by the National Council of Resistance of Iran, which subsequently identified the location of the Kalaye facility in February 2003. The IAEA was denied access at that time and permitted only limited access in March 2003. In May 2003, the agency gained full access to the facility but without the right to take environmental samples from the site.⁴ Iran granted permission to do this in early August 2003, at which time inspectors noted that further modifications had been made to the site since March 2003.⁵ Even under the most liberal of interpretations of the

found in the facility. Heinonen’s own example tends to underscore the likelihood that Iran will not be able to guard against contamination of every room of every facility in which undeclared uranium work takes place if it is carrying out such work. It was probably for this reason that when confronted in 2004 with incriminating evidence about undeclared work at the Lavisan site, Iran decided to destroy the facility completely. Satellite images taken before and after the destruction underscore that Iran was sufficiently concerned about IAEA access and environmental sampling to essentially remove the location from the face of the earth, taking three feet of topsoil with it.⁶ Iranian sanitization activities at Parchin show a similar dedication to eradicating facilities rather than granting access for fear of what would result.⁷

Possible Failure Scenarios

As the preceding section outlines, although a theoretical opportunity exists for Iran to engage in a covert program, the comprehensive agreement was designed to make this opportunity far more difficult than it currently is. If the agreement functions as designed, then a covert program is likely to be detected very early in the process. Iran’s awareness of this risk creates deterrence for a covert path being pursued in the first place.

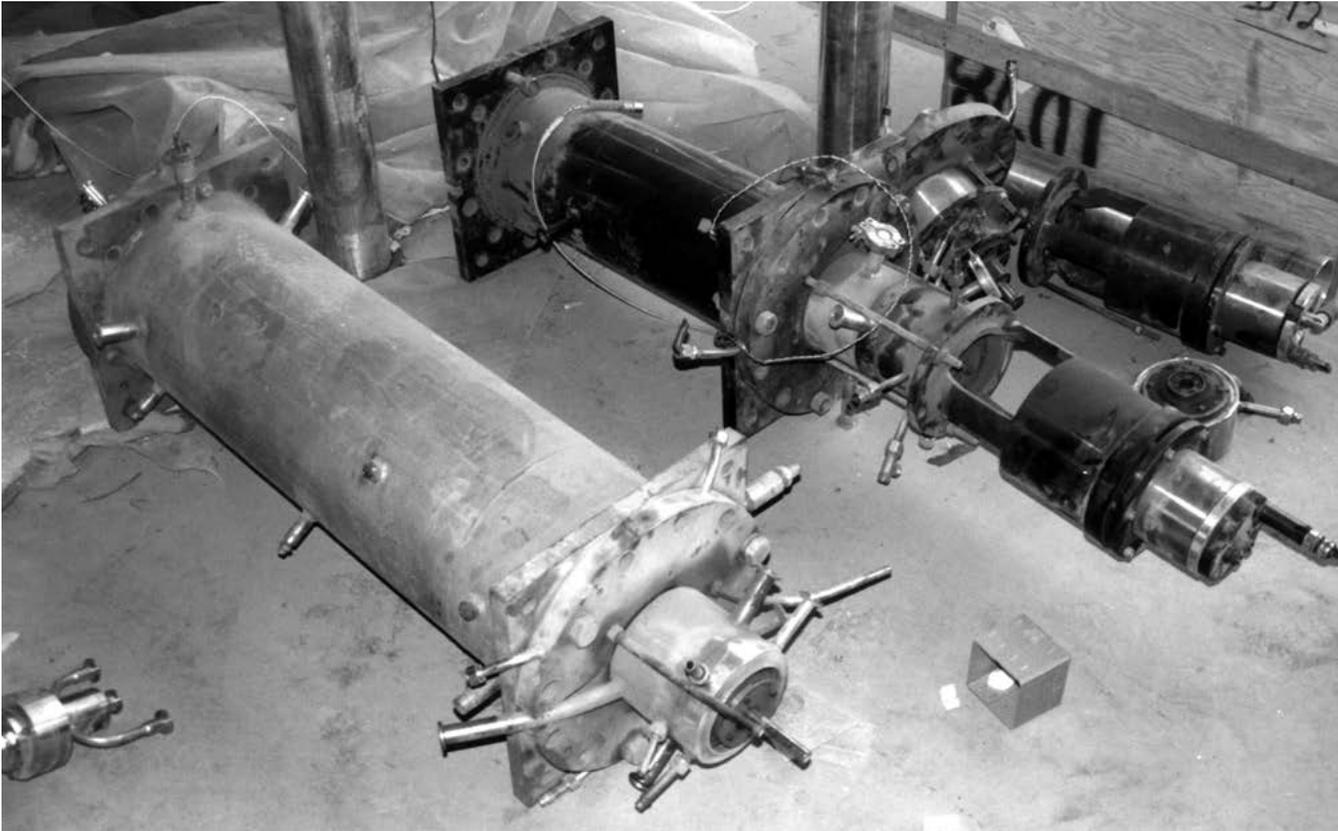
Scenarios predicting an Iranian covert program assume that having worked hard to achieve a deal with the

of the most likely prompts for an Israeli military strike, it would not be logical for Iran to tempt fate by engaging in such an activity. It is also possible that detection of a covert site during the deal would provide the impetus for U.S. military action against Iran.

Nevertheless, it is worth considering possible covert-path scenarios to identify potential points of breakdown and to account for the possibility that Iranian decision-making does not follow rational or logical lines. Three scenarios are worth evaluating here: a catastrophic failure of the agreement, the current existence of an undeclared nuclear program in Iran, and the possibility that Iran could seek to acquire nuclear weapons material or an assembled weapon from another state.

Catastrophic failure. It is possible that each individual element of the agreement fails catastrophically. In such a scenario, Iran would be able to obtain the materials and equipment it needs and to do so without being detected by the IAEA or the intelligence apparatus of the United States and those of its partners. In such a scenario, Iran would not be subject to any particular constraints and could engage in a breakout at its leisure.

This is theoretically possible yet difficult. Iran is one of the most watched intelligence targets for the United States, let alone U.S. partners in the region and in Europe. Moreover, past successes in detecting such activities in Iran long before they reached fruition should



Centrifuges found by an International Atomic Energy Agency team in a warehouse near Tuwaitha, Iraq, during the team's inspections following the 1991 Persian Gulf War are shown in this undated photo.

provide some confidence that the size and scope of what Iran would have to do to make the attempt would lend itself to detection. The access granted under the comprehensive agreement will help matters by assisting analysts in sorting legitimate activities from illicit ones. For example, if Iran were detected procuring goods for an enrichment plant outside the authorized procurement channel, then it would be a rather good bet that the procurement is intended to support a clandestine effort. For intelligence analysts, eliminating legitimate activities as explanations could be very helpful in forming judgments on intent, as well as in establishing priorities for further investigation.

Notably, it would be a challenge for Iran to procure for and construct the relatively large covert program needed during the 10 to 15 years of the main restrictions of the deal.

Existing covert program. Iran may already have a fully constructed covert program and merely be awaiting the removal of sanctions to reveal it. This is theoretically possible but unlikely. Iran has had a difficult enough time sustaining its

now-declared program, as has been demonstrated by reports of material shortages in Iran's nuclear program for several years.

Moreover, asserting the possibility of an existing covert program offers no guidance on handling the deal because such an allegation can never be satisfactorily disproven. Policymakers can act only on what they know and what they have good cause to believe. To do otherwise is to repeat the mistakes of U.S. policy in Iraq in 2003, when it was assumed that the Iraqis must have had a covert program because they were not adequately assisting UN inspectors to demonstrate that no such program existed. With the benefit of hindsight, one can say that there was very little Iraq could have done to prove that something did not exist. The only way out of this conundrum was by offering robust access, which the Iraqis were loath to do. If properly implemented, the comprehensive agreement will remedy this problem in Iran.

Buying a bomb or bomb material. It is also theoretically possible that Iran could contract for its nuclear weapons

program by buying a nuclear weapon or the material for one. One such theory postulates that Iran and North Korea, which have a long history of collaboration on ballistic missiles, could collaborate to mutually develop nuclear and missile capabilities, with each providing access to resources that the other cannot. For Iran, this could include the covert acquisition of HEU or plutonium from North Korea.

This scenario is an interesting possibility but, as with an existing covert program, offers nothing by way of guidance for how to interpret the deal. At a minimum, the deal prohibits such transfers, as would Iran's commitments under the nuclear Nonproliferation Treaty (NPT), which it joined in 1970.

If one is convinced that Iran would be prepared to undertake such an adventure, there is nothing in the public domain that can provide irrefutable and unambiguous assurance that no such activity would ever be contemplated. One might as easily suggest that Iran could have a nuclear weapon already designed and built, ready to be mounted on a missile tomorrow. It cannot be proved

that this has not happened, just that no such activity has been detected and that, circumstantially, it would not make much sense. The same argument could be made about other countries but without proof that it has happened. Policymakers rarely have complete knowledge; they have to make their decisions on the basis of what intelligence reveals and what logic suggests.

From this perspective, the transfer

problem is to change the regime. If that is one's outlook, then it is fair to suggest that the deal is poorly equipped to handle this challenge. In making that argument, however, one would have to explain how any reasonably conceivable deal could prevent that.

The Status Quo

A fair estimate of the value of the comprehensive agreement in addressing

comprehensive deals, Iran would not restrain its production of heavy water and might not restrain research on spent fuel reprocessing or construction of a reprocessing facility. Construction of the Arak reactor would be restarted, giving Iran valuable experience that could be applied to a covert nuclear program.

- Without the interim and comprehensive deals, there would be

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of a nuclear warhead or weapons-grade material would be a risky proposition for all concerned. The transfer could be detected, prompting almost immediate calls for military strikes against Iran at a minimum. The associated signatures of such moves probably would be observed through intelligence channels. Given the existence of the Proliferation Security Initiative—a program launched by President George W. Bush to increase cooperation among states in interdicting transfers of weapons of mass destruction and their materials and components—and the widespread presence of the U.S. Navy and partner navies in the sea lanes between North Korea and Iran, such transfers could be met with a military response of boarding any ship involved.⁸

As noted above, Iran already has made a commitment not to seek to acquire nuclear weapons, including weaponization-related components, in perpetuity. Iran also has agreed not to seek to obtain uranium or plutonium metal for 15 years. Under such a scenario, it is highly doubtful that there would be any defense of Iran in the international community. Tehran would be inviting attack by pursuing this option. Moreover, there is enough intelligence focus on Iran and North Korea that it is highly speculative to assume that either could pursue such an arrangement without detection.

Finally, this threat does not diminish the value of the deal, except if one assumes that the only way to address the

the problem of an Iranian covert program must include a comparison to the status quo. There is no comparison possible between the comprehensive agreement and the two most extreme failure scenarios—the existence of a covert program at present and an Iranian purchase of weapons-usable materials or a bomb itself. No deal could definitively address these current threats.

The more interesting point of comparison is the status quo—or, more precisely, the situation that persisted prior to the interim deal of November 2013 because that would likely be the situation in the event of a collapse of the comprehensive agreement—against the risk of a catastrophic failure of the comprehensive agreement.

- Without the interim and comprehensive deals, Iran's provision of information on its uranium production would not be required. Iran also would not be required to permit the IAEA to undertake any monitoring activities concerning uranium production.
- Without the interim and comprehensive deals, Iran would not permit IAEA inventorying, let alone monitoring, of its centrifuge components and the tools for producing more of them.
- Without the interim and

no procurement channel monitoring what would come into the country that could aid a covert effort.

- Without the interim and comprehensive deals, Iran would not be forthcoming with respect to access requests, and skeptics could look back fondly at an opportunity for required access within 24 days.

Although none of these activities would be permitted as a legal matter under the UN Security Council resolutions adopted prior to July 2015, the entire discussion of a covert program assumes that Iran is not fulfilling its legal or political commitments. Notwithstanding these facts, some opponents would argue that the status quo remains preferable because, without the deal, Iran's nuclear program would remain largely illegal under the Security Council resolutions. Yet, Iran has not fulfilled its obligations under these resolutions since 2006. Practically, the legal prohibition has had little value in stopping Iran from having a covert program. The deal, on the other hand, does much to prevent such covert efforts.

Similarly, many opponents would argue that without the comprehensive deal, international sanctions would not have been relaxed on Iran, and Iran would find itself under continued economic strain. Yet, there is no compelling evidence that such pressure has precluded covert activities in the past. Moreover, it is



North Korean Foreign Minister Ri Su Yong (left) shakes hands with Iranian President Hassan Rouhani during a meeting in Tehran on September 16, 2014.

precisely such strain that could convince Iran's leadership that its only opportunity for regime survival is to concentrate on establishing a nuclear deterrent.

The goal of the sanctions, which they achieved, was to bring Iran to the table. Nothing in the last 12 years of negotiating history with Iran suggests that sanctions alone will compel Iranian capitulation.

Conclusion

It is inarguable that a covert path to Iranian nuclear weapons would present the United States and its partners with a tremendous security challenge. It would undermine the terms of the comprehensive agreement and consequently prompt a re-establishment of intense sanctions pressure on Iran, if not military action. Moreover, a covert program could spur additional proliferation in the region and beyond. These are threats Iran would have to anticipate and manage before proceeding with a covert option, probably precluding it.

The agreement is a material improve-

ment over the status quo across the board, offering at worst an improved opportunity to detect such activities. In doing so, the agreement will deter Iranian cheating and make succeeding at it a virtually impossible task.

ENDNOTES

1. "Annex I - Nuclear-Related Measures," n.d., para. 68, http://eeas.europa.eu/statements-eeas/docs/iran_agreement/annex_1_nuclear_related_commitments_en.pdf.
2. The Model Additional Protocol is a nonproliferation agreement developed by the international community after revelations about the extent of clandestine Iraqi nuclear weapons-related work after the 1991 Persian Gulf War. There is a standard format for the additional protocol for all non-nuclear-weapon states that are parties to the nuclear Nonproliferation Treaty (NPT). See International Atomic Energy Agency (IAEA), "Model Additional Protocol to the Agreement(s) Between State(s) and the International Atomic Energy Agency for the Application of Safeguards," INFCIRC/540, September 1997.
3. Bill Gertz, "Ex-IAEA Leader: 24-Day Inspection Delay Will Boost Iranian Nuclear Cheating," *Washington Free Beacon*, July 21, 2015, <http://freebeacon.com/national-security/ex-iaea-leader-24-day-inspection-delay-will-boost-iranian-nuclear-cheating/>.
4. Institute for Science and International Security (ISIS), "ISIS Imagery Brief: Kalaye Electric," March 31, 2005, <http://isis-online.org/publications/iran/kalayeelectric.html>.
5. IAEA, "Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran," August 26, 2003, GOV/2003/63, <https://www.iaea.org/sites/default/files/gov2003-63.pdf>.
6. ISIS, "Nuclear Sites: Lavisian-Shian (Lavizan-Shian)," n.d., <http://www.isisnucleariran.org/sites/detail/lavisian-shian/>.
7. ISIS, "Nuclear Sites: Parchin," n.d., <http://www.isisnucleariran.org/sites/detail/parchin/>.
8. Air transfer would present different challenges, given that the air routes would involve flight over China. Yet, it is not in the interest of China to permit nuclear weapons or nuclear weapons material to transit its airspace. If such a transfer were detected, interdiction cooperation from China could be arranged.