

Containing Rogues: A Theory of Asymmetric Arming

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Weak opponents of a strong state often cannot compete directly with its power and so resort to other means of shifting the balance of power, such as developing weapons of mass destruction, sponsoring foreign terrorism or insurgency, or undertaking regional aggression. I develop a formal model of bargaining between a state that might seek unconventional means to power and another that might try to prevent this by diplomacy, war, or containment. The standard bargaining problems of commitment and asymmetric information give rise to costly conflict, but the form of this conflict is determined by the cost effectiveness of containment versus war. I calibrate the model to the situation of the United States and Iraq after the Gulf War and derive from it a new account of the Iraq War's origins based on evidence that the anticipated costs of containment came to exceed those of war, causing the war.

What can states like Cuba under Fidel Castro, Iran, Iraq under Saddam Hussein, Libya under Muammar Gaddafi, North Korea, Sudan, and Syria do to advance interests that conflict with those of the United States? There is no hope of matching the international political influence, the global economic leverage, the network of alliances, or the military might of the United States. Engaging in a conventional competition for power with the United States would be folly.

Instead, these states sought unconventional means to shift the balance of power in their favor: ones that the United States could not easily overcome. All undertook programs to develop weapons of mass destruction (WMD). Some sponsored terrorist organizations or rebel movements aimed at overthrowing neighbors sympathetic to the United States. Iraq invaded Kuwait and eyed Saudi Arabia, hoping to gain power by consolidating their oil under its control.

In response to these efforts, the United States does not build up its own military, which is already dominant. Instead, it tries to suppress or end these states' pursuit of unconventional means to power. Sometimes the United States negotiates a deal, such as the one recently agreed with Iran; rarely, it launches a preventive attack, like that on Iraq. But most often, the United States resorts to containment, imposing economic sanctions on and stationing forces near these states.

The interactions between the United States and those sometimes labeled as "rogue states" are only the most extreme examples of a very common phenomenon. In the international system, most politically relevant dyads combine a state that is a major power with a state that is not.¹ What does the struggle for power look like in these asymmetric dyads? When does it lead to costly conflict, and what form does the conflict take? When can the two sides avoid the costs of conflict by making a deal? Previous research on arming does not answer these questions because it is primarily concerned with the less common symmetric dyads.

I develop a game-theoretic model of the competition for power between a strong state and a weak state that offers answers to these questions. Because the weak state cannot feasibly match the conventional power of the strong state, I assume that it resorts to unconventional means to power. Its effort to develop these means is a costly gamble: investments are made, which may or may not eventually pay off. But if an effort does succeed, it will shift the balance of power substantially. The weak state will take this gamble, so long as the cost of investment is lower than the shift it will produce, weighted by the probability it will succeed. The weak state thus trades the sure but small impact of conventional arming for the uncertain but potentially large effect of investing in unconventional means.

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Data and supporting materials necessary to reproduce the numerical results in the article are available in the *JOP* Dataverse (<http://thedata.harvard.edu/dvn/dv/jop>). An online appendix with supplementary material is available at <http://dx.doi.org/10.1086/698845>.

1. This is a mathematical consequence of the facts that the major powers comprise a small fraction of all states and that most states have a small number of contiguous neighbors.

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The strong state imperfectly observes this effort and, in the absence of a deal, can respond by tolerating it, imposing containment to suppress it, or attacking to end it. These options vary in the costs they impose on both sides—in the sense of death and destruction or resources wasted—and their efficacy at preventing a shift in power. Toleration has no cost but will eventually result in a shift in power toward the weak state. War is costly for both sides but highly effective at preventing the shift. Containment is also costly and reduces the probability of a shift, but only so long as it is maintained. In equilibrium, the strong state chooses the most cost-effective option.

The two sides can only avoid a shift in power or costly conflict by agreeing to a deal, in which the strong state makes concessions in exchange for the weak state halting its efforts. For such a deal to be viable, first, the weak state's temptation to covertly pursue unconventional means to power cannot be too high relative to its chance of getting caught and the surplus from avoiding costly conflict. Second, for the strong state, containment and war cannot be too cost effective, or else it would prefer costly conflict to offering the concessions necessary to induce the weak state's compliance with the deal.

War can occur in equilibrium, but a different form of costly conflict is also possible: an arms race in which the weak state pursues unconventional means to power and the strong state undertakes containment to suppress it. This is not the familiar symmetric competition in arms that sometimes occurs among great powers. Instead, the weak state arms "unconventionally" in the sense that its investments bolster its power only with some probability and after some delay. The strong state arms "conventionally," in the sense that its investment in containment surely and swiftly preserves or improves its own power.² When both states arm in this way, they are engaged in an asymmetric arms race.

If costly conflict occurs, it is caused by a combination of asymmetric information and a commitment problem. Once it has the unconventional means, the weak state cannot commit not to use its new power against the strong state. The inability of the strong state to perfectly observe the weak state's choice to pursue these means can also make it impossible for the weak state to commit not to do so. Thus, the weak state seeks the unconventional means, and the strong state resorts to war or containment to prevent the success of the weak state's efforts. However, which of war or an arms race occurs is determined not by these bargaining problems but instead

2. While containment does not fit the colloquial sense of arming, I will explain subsequently that it does fit a more theoretically coherent definition of arming.

by which is more cost effective. Thus, bargaining problems are necessary but not sufficient to cause war, even when the costs of war are low and the stakes high.

To demonstrate the empirical value of the theory, I calibrate the model to the situation between the United States and Iraq from 1991 to 2003 and derive an account of their interaction. Costly conflict between these two states began with the 1991 Gulf War, continued in the form of containment through the 1990s, and ended with the US invasion in 2003. The model explains why this costly conflict occurred and why it shifted from limited war, to containment, to decisive war. To demonstrate this, I document that shifts over time in the perceived cost effectiveness of containment and war as responses to Iraq's possible pursuit of unconventional means led to changes in US policy. After Iraq's forces were expelled from Kuwait in 1991, the United States established a policy of containment because it was perceived as more cost effective than conquering Iraq. Containment offered the hope that Saddam's regime would soon be overthrown in a coup or revolt and had strong international support, while war had no such support and risked the use of Saddam's considerable stockpiles of chemical and biological weapons. However, the costs of containment rose over time as the suffering inflicted by sanctions eroded international support and Saddam defeated his domestic opposition. Meanwhile, the costs of war declined as Iraq's conventional forces wasted away, its WMD arsenals were eliminated, and the US military improved. By the early 2000s, independent estimates adjudged the costs of containment to be roughly comparable to those of war, and many elites inside and outside of the Bush administration came to believe that war would be cheaper. Thus, the United States eventually invaded Iraq and overthrew its regime. This account is quite different from previous explanations for the Iraq War and raises doubts about the necessity or sufficiency of the neoconservatives or the 9/11 attacks to explain this war.

The theory of arming presented here is unique in that it allows both sides to arm, but asymmetrically. Previous models of arming lack this combination of features and so are not well suited to asymmetric dyads. Some prior models allow both sides to arm but assume that both sides' arming is conventional (Fearon 2011; Jackson and Morelli 2009; Meierowitz and Sartori 2008; Powell 1993, 2006). Equilibrium in these models usually entails either war or a symmetric arms race in which the two sides rapidly build up to a level at which neither could gain a serious advantage by arming further. This fits the context of comparably powerful states well, but it has relatively little to say about the more common asymmetric dyads, in which one state already conventionally dom-

inates the other and no symmetric arms race will occur. Other models allow for unconventional arming—in the form of developing nuclear or other WMD—but assume that only one side can arm (Bas and Coe 2016, forthcoming; Benson and Wen 2011; Debs and Monteiro 2014; Spaniel 2015). Equilibrium then features war, proliferation, or deterrence of any attempt at proliferation. Because they ignore containment, these models cannot explain its routine occurrence in response to nuclear weapons programs and may erroneously predict war in situations in which it is less cost effective than an asymmetric arms race.

By contrast, the extant literature on state sponsorship of foreign terrorism or insurgency does not conceive of it as a form of arming, instead treating it as a substitute for the direct use of force (Bapat 2011; Conrad 2011; Salehyan 2008, 2010). Bapat (2014) and Bapat and Zeigler (2016) explain how sponsorship can be used to shift the balance of power against the targeted state, which if anticipated might lead the target to attack the sponsor preventively. Schultz (2010) studies deals to end one state's support for rebels in another's civil war using a general model of bargaining over imperfectly observed policies. As with the formal models of proliferation, these works ignore the possibility of containment as a response to sponsorship.

MODEL SETUP

Two states, A (the strong state, referred to as feminine) and B (the weak state, masculine), bargain over revisions to a prior division of a composite of disputed issues, represented by the unit interval.³ The two players have linear preferences over the interval and discount future payoffs by a factor $\delta < 1$ per period.

In the first of infinitely many discrete periods of time, A first chooses whether to arm: the choice to arm will be referred to as “containment,” and the choice not to is “toleration.”⁴ If A chooses containment, it imposes costs $c^A > 0$ on her and $c^B \geq 0$ on B ; toleration is free for both sides. A then chooses either to go to war against B or to make a peaceful offer of a settlement $q \in [0, 1]$ for that round, where A receives q and B gets $1 - q$. If A makes an offer, B can reject it,

3. It may seem that the principal disputed issues in interactions like that between the United States and Iraq are precisely the latter's weapons programs, sponsorship of terrorism, and regional aggression. However, these disputes arise only because there are underlying contested issues—such as influence over other states in the region—whose settlement would be affected by Iraq's arming (Pollack 2002, 149–53).

4. If A is instead allowed a continuous choice of the level of containment, the propositions below would be similar but stated in terms of the most cost-effective level of containment.

in which case war results, or accept it, in which case it is implemented for that period.⁵ War ends the game, with consequences to be described shortly.

If A makes an offer and B accepts it, he then chooses whether to invest in unconventional means to power—that is, to start development or continue past efforts. Investment imposes a cost on B of $k > 0$.⁶ Successfully developing the unconventional means is partly a result of chance, so that whether B 's effort will succeed in a given period is stochastic and cannot be perfectly predicted by either player. B 's investment succeeds with probability $\lambda_r > 0$, if A chose toleration, and with probability $\lambda_c > 0$, if A chose containment, and otherwise fails. If the investment succeeds, B acquires the unconventional means, and this immediately becomes common knowledge.⁷ If it fails, then B must invest again in the future to have a chance of his efforts succeeding. The period then ends.

The structure of the game in subsequent periods depends only on whether B has succeeded in developing the unconventional means at some point in the past. Once B has done so, subsequent periods entail only repeated bargaining: in each round, A has only to attack or make an offer that B then accepts or rejects.⁸ If B has not yet succeeded, then each subsequent period until he does is the same as the first, except that it begins with the receipt of intelligence by A on whether B invested in the previous round, in the form of an exogenous, public signal.⁹ If B did invest, then with probability τ A receives a signal that he did, and with probability $1 - \tau$ A receives a signal that he did not. If B did not invest, then A

5. The results depend only on whether a surplus exists, not on how it is divided between the players. Thus, the choice of a take-it-or-leave-it protocol is an innocuous simplification.

6. It is assumed that B 's choice to pursue unconventional means is all or nothing. Empirically, it would be very hard for A to observe the size of B 's investment, as opposed to observing whether it was underway and how likely it is to succeed. If A 's ability to monitor the investment's size is low enough, then B will never choose an intermediate level of investment in equilibrium. For example, Narang (2016) shows that, given the decision to pursue nuclear weapons, states limit their efforts only to the extent necessary to hide them.

7. B has a strong incentive to reveal its new power and can credibly do so, e.g., by testing a nuclear explosive.

8. Allowing A to choose to contain B even after the latter's effort has succeeded would strengthen the results presented subsequently, as it could only raise the surplus that might be gained by attacking rather than tolerating or containing B . The same is true if B can subsequently pursue additional unconventional means.

9. In the equilibria studied here, A never has any incentive to conceal this signal. Empirically, the United States has strong incentives to credibly reveal its intelligence on such efforts in order to build international support for action.

receives a signal that he did not with probability 1. Thus, A 's intelligence on B 's effort is noisy, but for simplicity there are no false positives.¹⁰

War ends the game. Its expected value for each state in a given period depends only on whether A has chosen to arm itself in that period and on whether B 's efforts have succeeded at some point in the past. If B 's effort has not succeeded and A chooses toleration, then the war values are W_t^A and W_t^B . If instead A chooses containment, the war values are W_c^A and W_c^B .¹¹ If B 's effort has succeeded, the war values are W_u^A and W_u^B . All war values are assumed to be nonnegative.¹² War is costly: the value destroyed by it is $D_z^{\text{war}} \equiv [1/(1 - \delta)] - W_x^A - W_x^B > 0$, for any $x \in \{t, c, u\}$.

The main novel feature of this setup is its particular combination of arming capabilities: A can shift the outcome of war deterministically and immediately upon deciding to do so, while B can only shift the outcome of war stochastically and hence possibly after some delay. This splices the key feature of most models of conventional arming (in which one or both sides have A 's capability) into a model of nuclear proliferation, generalized to reflect that nuclear weapons are but one unconventional means a weak state might seek. This combination is crucial to reflect the asymmetric competition for power between a strong and a weak state.

Programs to develop WMD, sponsorship of foreign terrorist organizations or insurgencies, and preparing for regional aggression all share the strategic features the model assigns to unconventional arming. First, each is obviously costly in the sense that resources must be expended on each rather than on consumption. Second, each will succeed only stochastically and after some delay. WMD programs involve scientific and technological trial and error over time, with success uncertain at any given point. Sponsoring a foreign terrorist organization or insurgency leads to internal conflict in the target state that might, after some time, replace a hostile regime with a friendly one. And military forces maintained for the purpose can only be successfully employed in regional aggression during an unanticipated window in which the strong state is distracted or occupied elsewhere, so that the weak state can present the strong state with a *fait accompli*. Finally, the fruition of each of these offers the promise of a substantial shift in power in favor of the weak state.

10. False positive signals may lead A to end a deal she mistakenly believed B had cheated on. If anticipated, this lowers the value of a deal for both, making it less likely to be viable.

11. For notational convenience, the war values under containment are assumed to include the costs of containment for the period in which war occurs.

12. This is necessary only to avoid a surfeit of quantities like $\max\{W_t^B, 0\}$ in the exposition.

Containment here is a costly, unilateral action undertaken by the strong state to maintain a favorable balance of power. Thus, while it does not fit the colloquial sense of arming, containment is nonetheless theoretically a form of arming. For example, the US policy of containment toward Iraq consisted of a package of costly measures intended for this purpose (Pollack 2002, xxv–xxvi, chaps. 2, 3). Economic sanctions were imposed on Iraq to starve its regime of hard currency, and this together with an arms embargo made it difficult for Iraq to reconstitute the formidable military it had possessed before the Gulf War or support foreign terrorism or insurgency.¹³ US forces were stationed at bases near Iraq to reduce its ability to engage in regional aggression, and no-fly zones were enforced to protect groups hostile to Iraq's regime and to suppress its air defenses. Intrusive monitoring of Iraq's WMD infrastructure and occasional strikes to compel its compliance with inspections impeded its programs to develop these unconventional means. Such measures suppress the weak state's present ability to fight a war with the strong state and reduce the costs of war, so that $W_c^A > W_t^A$ and $W_c^B < W_t^B$. They also suppress the weak state's ability to improve its future prospects in a war, so that $\lambda_c < \lambda_t$.¹⁴

There are two other notable differences between this setup and that of models of nuclear proliferation. First, unlike in Benson and Wen (2011) and Debs and Monteiro (2014), A cannot instantly detect and react to B 's effort to develop unconventional means—if A forgoes the current opportunity to contain or attack B , there is some chance that B 's effort will succeed before A has another opportunity to do so. Empirically, this seems realistic insofar as war would be delayed by the need to deploy additional forces to the region and to complete other preparations. Analytically, it ensures that the equilibria are in pure strategies: B will not randomize over whether to pursue the unconventional means, and A will not choose at random whether to attack him, as they do in the equilibrium of some previous models. Second, counter to Bas and Coe (2016, forthcoming), the probability that B 's investment succeeds does not increase over time. This seems plausible under containment for the reasons just discussed.

13. McCormack and Pascoe (2017) analyze a model in which the imposition of sanctions can reduce the target's military power. Similar to our model here, if sanctions lessen an adverse shift in power that would otherwise occur, then a state may use sanctions as a substitute for war to stop the shift. However, McCormack and Pascoe focus on the implications for understanding sanctions rather than arming and arms races.

14. Containment might also increase the cost of investment (k) or the accuracy of intelligence on B 's efforts (τ). The first would bias equilibrium away from toleration and toward containment or war, strengthening the results, because it decreases the surplus of any equilibrium in which B invests. The second is irrelevant to the results, because in equilibrium any uncertainty about whether B invests will not affect A 's behavior.

Allowing it to occur under toleration would only strengthen the results, as it biases equilibrium away from toleration.¹⁵

ANALYSIS

The model has two kinds of equilibria, to be analyzed in turn.¹⁶ In a “no-deal” equilibrium, each side assumes the other will seek advantage by any means that is cost effective, and so does the same itself. I will show that this equilibrium always exists and is generally unique. If this equilibrium features behavior that is costly—investment in unconventional means to power, containment, or war—there might also be “deal” equilibria in which the sides agree to refrain from at least some costly behavior and share the resulting surplus and revert to the no-deal equilibrium if either side is caught cheating. I will focus on whether there is an efficient deal equilibrium—one in which the two sides refrain from any costly behavior.¹⁷

First consider whether B will seek unconventional means in a no-deal equilibrium.

Proposition 1. If A tolerates B in a no-deal equilibrium, then B will invest in unconventional means if and only if $k < \delta\lambda_t[W_u^B - W_t^B]$.¹⁸ If instead A contains or attacks B in equilibrium, then B will invest (given the chance) if and only if $k < \delta\lambda_c[W_u^B - W_c^B]$.

The two inequalities specify that the benefits B anticipates gaining from the unconventional means outweigh the budgetary costs of pursuing them, under toleration and containment respectively. The left side is B 's cost of investment (k). The right side is the benefit to B from the unconventional means (W_u^B), relative to not having them but being tolerated or contained by A ($-W_t^B$ or $-W_c^B$), weighted by the probability that the investment succeeds (λ_t or λ_c), and discounted since B will not receive this benefit until the next period. In the absence of a deal, A will only concede to B the minimum settlement that he would accept rather than go to war over.

15. This model also ignores any relevant third parties, such as a local ally of A who is most directly threatened by B . So long as the interests of A and these third parties with respect to B are close enough, incorporating them would not change the results.

16. Here, equilibrium refers to a Perfect Bayesian Equilibrium. The two kinds of equilibria are defined formally in the appendix, available online.

17. The conditions under which a deal to refrain from some but not all costly behavior exists are analytically similar and substantively less interesting.

18. Throughout, I ignore knife-edge cases of equality, in which typically two equilibrium outcomes are possible. Incorporating these cases does not alter the substance of the results.

Thus, with or without the unconventional means, B will receive only the value he could expect to achieve from war. The benefit of these means is that with them, B expects to do better in war, and so A must make greater concessions to avoid war.

The proposition says that a weak state invests in an unconventional means to power only if it is cost effective. Afghanistan under the Taliban and postrevolution Iran both supported foreign terrorism, but only the latter pursued nuclear weapons. Because Afghanistan lacked Iran's technological sophistication, a nuclear weapons program probably offered too low a chance of success to justify its cost. North Korea developed nuclear weapons but has, in recent decades, ceased supporting terrorism, presumably because South Korea's now-entrenched and popular democracy would be too hard to overthrow from within.

Next we will see how A responds to B 's behavior in a no-deal equilibrium. Let V_t^B and V_c^B be B 's equilibrium continuation values under toleration and containment, respectively. Let K_t and K_c be the expected cost of B 's investments under toleration and containment. For instance, K_t is zero if B would not invest under toleration and is $k/[1 - \delta(1 - \lambda_t)]$ if he would invest repeatedly until his effort succeeded. Finally, let C be the expected costs of containment, including B 's investments if he would make them, summed across both players. If B would not invest under containment, then C is just $(c^A + c^B)/(1 - \delta)$; otherwise, it is $(c^A + c^B)/[1 - \delta(1 - \lambda_c)] + K_c$.

Proposition 2. In a no-deal equilibrium, A 's behavior depends only on which of $K_t + [V_t^B - W_c^B]$, $C + [V_c^B - W_c^B]$, and D_c^{war} is least. If the first is least, A tolerates; if the second is least, A contains; and if the third is least, A attacks.

B would like to pursue unconventional means, because in the absence of a deal, acquiring them is the only way he can extract more concessions from A . In the absence of a deal, A has three options for responding to the potential for B to shift the game in his favor: toleration, containment, or war. The proposition implies that A chooses the most cost effective of these.

To see why, it is important to be clear about what “cost effective” means here. “Cost” does not refer to the cost to A of a given option but to the total value destroyed by a given option, for both sides. This is the first term of each quantity in the proposition. “Effective” refers to how close each option gets to reducing the value B will receive to the minimum A could possibly hold him to, his war value under containment (W_c^B). The second term in each quantity that has one

is the amount above his minimum that B will receive under each option. Thus, each quantity is the difference between the cost and the effectiveness of the corresponding option, so that the option with the smallest quantity is the most cost effective.

Tolerating B imposes only the cost of the expected net present value of B 's investments (K_t), but it may lead to B quickly acquiring the unconventional means and extracting additional concessions from A ($V_t^B - W_c^B$), so that this option is not very effective. Attacking B is the most effective option, as it guarantees B will be held to his minimum, but it is more costly because of the value lost in war (D_c^{war}). The cost and effectiveness of containing B depends on whether, under containment, B would still find investment worthwhile. If he does, then this option imposes both the cost of containment and of B 's investments, but only until B 's efforts succeed ($C = (c^A + c^B)/[1 - \delta(1 - \lambda_c)] + K_c$), and may only be partially effective ($V_c^B - W_c^B$). If B will not invest under containment, then the costs of containment itself will be paid in perpetuity ($C = (c^A + c^B)/(1 - \delta)$), but it will be just as effective as war in holding B to his minimum value (V_c^B will equal W_c^B , so that $[V_c^B - W_c^B] = 0$).

For example, consider the US response to Iraq's invasion of Kuwait in 1990. If tolerated, this might have given Iraq a base from which to subsequently invade Saudi Arabia. This in turn would enable Iraq to use consolidated oil supplies as an economic weapon, a shift in power seen as large enough to justify a costly response to prevent it. Containment would not have been as effective at preventing this consolidation, so long as Iraq controlled Kuwait's territory, so the most cost-effective option was attack. By contrast, in recent years, India has tolerated Pakistan's support of terrorism because war to stop it might risk nuclear escalation and containment might not be effective enough to justify its cost.¹⁹

Observe that two forms of costly conflict can occur in equilibrium. First, a war can happen, in which A attacks B to prevent his acquisition of the unconventional means to power. Second, an arms race might instead occur, in which B seeks the unconventional means (or would, if it were not so effectively suppressed) and A undertakes containment to suppress his efforts. This behavior does not correspond to the standard notion of an arms race, wherein two states compete over the balance of power by sustaining escalated military spending. It does not resemble, for instance, the Anglo-

German naval arms race of the early twentieth century or the US-Soviet nuclear arms race later that century. These races are symmetric and feature mostly conventional arming: conscripting more soldiers; building more armored vehicles, combat aircraft, and warships; deploying more forces to a contested area. Here, the arming is not symmetric. One side (the weak state) arms unconventionally, where "unconventional" is taken to mean that its costly investments will alter the balance of power only stochastically and after some delay. The other side (the strong state) arms conventionally through containment. Containment is theoretically a form of arming because it is a costly, unilateral measure undertaken by the strong state to improve its power. It is "conventional" in that it results surely and quickly in an improved balance of power for the strong state, just as conscripting more soldiers, building more weapons, or deploying more forces would. Thus, what occurs in this model is still an extended competition for power that imposes costs on both sides: an arms race, albeit an asymmetric one.

Rather than pursuing unconventional means and resorting to costly conflict to end or suppress it, A and B might instead agree to a deal to avoid the costs of investment and conflict. The next result specifies when such a deal is viable. Let \widehat{V}_{nd}^A and \widehat{V}_{nd}^B be defined as the values A and B receive in the no-deal equilibrium and $S \equiv [1/(1 - \delta)] - \widehat{V}_{nd}^A - \widehat{V}_{nd}^B$ be the value that would be lost to both sides as a result of whatever investment, containment, or war would occur in the absence of a deal.

Proposition 3. There is a deal equilibrium if and only if $\widehat{V}_{nd}^A + W_t^B \leq 1/(1 - \delta)$ and $\delta[\lambda_t + (1 - \lambda_t)\tau]S \geq -k + \delta\lambda_t(W_u^B - \widehat{V}_{nd}^B)$.

For a deal avoiding containment, war, or proliferation to be viable, two conditions must be met. First, the deal must be at least as good for A as containment and war, or else she would rather contain or attack than abide by it, and at least as good for B as war under toleration, since the deal involves A tolerating B . Second, the rewards for B of compliance must outweigh his temptation to covertly seek unconventional means under the deal.

Whether the first condition holds depends on the military advantages of containment for A and of toleration for B . If these are small enough, then A will be willing to forgo containment and accept a settlement generous enough to B to leave him better off than war under toleration. If instead the military advantages are too large, then it is simply not possible for any deal to give A as much value as her preferred option without a deal and B at least his war value under tol-

19. Carter (2015) argues that India does not respond harshly because doing so might only destabilize Pakistan's government and lead to its replacement with a more extreme one.

eration. Essentially, containment cannot be too cost effective: it cannot reduce B 's power too much at too little a cost to A . When it does, A would renege on any deal B would accept, preferring instead to contain B and either attack him or make lower offers. Any deal that A would accept and comply with by ending containment would lead B to renege by demanding larger concessions or attacking. In effect, A and B cannot commit not to exploit the advantages of containment and toleration (respectively), and this commitment problem prevents any deal.

This condition will be hardest to satisfy for the most asymmetric dyads. For example, the United States can often radically alter the balance of power with an adversary through containment: basing its forces nearby and imposing sanctions that impair that state's military. Moreover, containment is often relatively inexpensive for the United States because of support from regional allies and the international community. In such a situation, the United States will not give up the cheap military advantages that come with containment unless the adversary makes very large concessions in a deal. Even if the adversary agreed to do so, as soon as the United States ended sanctions and withdrew forces, the adversary would be sorely tempted to retract these concessions. Perhaps this is why the "grand bargains" sometimes suggested to resolve all issues between the United States and states like Iran and North Korea are so rarely struck.

The second condition is that B prefers compliance with the deal to cheating on it. The right side is the temptation for B to cheat by investing covertly: the cost of the investment ($-k$) plus the concessions from A it will bring over and above those B would receive in the absence of a deal ($W_u^B - \widehat{V}_{nd}^B$), weighted by the chance the investment succeeds (λ_i). The left side is the maximum reward A could offer B for compliance while still leaving herself with at least the value she would receive in the absence of a deal: the entire surplus from avoiding containment or war (S), weighted by the chance that B 's investment is detected ($\lambda_i + (1 - \lambda_i)\tau$). If the left exceeds the right, A is able to offer enough to win B 's compliance.

This condition may help to explain why some kinds of deals are easier to make than others. Supporting terrorism typically involves only the transfer of easily concealable funds and perhaps arms, while a nuclear weapons program involves constructing large facilities that require carefully monitored equipment and expertise. Moreover, while a state can end its nuclear program at will, it may be unable to stop foreign terrorism it created even if it ends its support (Bapat 2011). Thus, the former unconventional means is cheaper to pursue (lower k) and more difficult to detect (lower τ), and a deal to

end it creates less surplus than the latter. These factors may explain why deals to stop nuclear weapons programs seem to be made more frequently than deals to end sponsorship of terrorism. For instance, Iran, Libya, and North Korea all sought both unconventional means. All eventually made deals to halt their nuclear programs, but only Libya also made a deal to cease its support for terrorism.

Observe that for costly conflict to occur, both asymmetric information and a commitment problem must be present. The commitment problem is that the weak state cannot commit not to use the unconventional means, once acquired, to extract concessions from the strong state. The asymmetric information lies in the strong state's inability to perfectly observe the weak state's pursuit of unconventional means. If there was no commitment problem, the two sides could make a mutually preferable deal in which the weak state committed not to use the unconventional means and therefore had no incentive to pursue them, so that whether the strong state could observe this would be irrelevant. If there was no asymmetric information, the two sides could make a mutually preferable deal in which the weak state refrained from pursuit in order to avoid certain punishment from the strong state, so that the weak state's inability to commit not to use the unconventional means once acquired would be irrelevant. If the asymmetric information and commitment problem are severe enough that the weak state cannot commit not to pursue the unconventional means and the strong state cannot tolerate its unfettered pursuit, then war or an arms race will result.

However, these underlying bargaining problems do not determine the form the costly conflict takes. The commitment problem motivates the strong state to pay to prevent a shift in power, and the asymmetric information eliminates the possibility of simply paying off the weak state under a deal, so that the strong state must pay the costs of either war or containment. But if war occurs, it is not directly because of a commitment problem: even if the strong state does not attack, the weak state might be able to commit not to arm because containment renders him unable or unwilling to do so. And it is not directly because of asymmetric information: although the strong state cannot observe the weak state's investment, this uncertainty is irrelevant if containment makes the weak state unwilling to try or so unlikely to succeed that the strong state does not care whether it invests. Instead, in equilibrium, the more cost-effective option occurs, because the other destroys too much value in exchange for too little efficacy in preserving a favorable balance of power.

These results generalize and synthesize the key findings from previous models of arming. In models of unconven-

tional arming, war occurs in equilibrium if and only if there is a sufficiently severe combination of asymmetric information and a commitment problem—there is no arms race and no mention of cost or effectiveness.²⁰ The difference is due to these models' assumption that only one side can arm, so that (in the absence of a deal) war is the only option the other side has to prevent this. The model here is more general because it allows both sides to arm, and so yields the generalization that costly conflict occurs if and only if there is a sufficiently severe combination of bargaining problems, but this is not sufficient to cause war, which only happens if it is more cost effective than an arms race. By contrast, models of conventional arming allow both sides to arm, so that either war or an arms race can happen, but which occurs is determined by which is less costly—there is no mention of effectiveness.²¹ The difference is due to these models' assumption that arming can be as effective as war at preventing an adverse shift in power. The model here is more general, in that arming by the strong state may or may not be as effective as war, and so yields the generalization that which occurs is determined by which is more cost effective.

The model elucidates the distinctive forms that a competition for power may take in an asymmetric dyad. Models of conventional arming appear to envision a more or less symmetric, quantitative race to build more arms, like those that have taken place among major powers. The anticipated costs of continuing these races might have contributed to wars among these powers, although this has not been demonstrated empirically. But such a race is unlikely to take place in an asymmetric context. It is not feasible for a weak state that cannot afford the large, sophisticated military forces strong states can field, and it is not needed for a strong state whose superiority in arms is already assured but potentially limited to a conventional war. Instead, an arms race here entails attempts to develop unconventional weapons met with costly efforts to suppress these.

By contrast, models of nuclear proliferation recognize that one state may seek unconventional weapons to redress conventional inferiority but restrict the other to either diplomacy or war in response. They thus ignore the availability of options other than war, such as containment, which might suppress proliferation at lower cost. The analysis here incor-

porates these other options and clarifies the conditions under each will be selected. It thus more closely resembles the interactions between strong and weak states and has the potential to provide more satisfactory accounts of the historical record of these interactions.

THE UNITED STATES AND IRAQ, 1991–2003

The theory of asymmetric arming developed here yields predictions for whether any given asymmetric dyad should feature a deal, tolerated pursuit of unconventional means, war to end it, or an arms race entailing its suppression through containment, as a function of parameters like the cost and effectiveness of toleration, containment, and war. In principle, these predictions can be tested by estimating the statistical associations between the outcomes and these parameters, as measured across asymmetric dyads over time in the historical record. In practice, this would require the use of relatively rough proxies. Instead focusing on a single case enables me to make more accurate measurements of the key parameters.

I examine the interaction between the United States and Iraq from 1991 to 2003. This important case features a clearly asymmetric dyad that exhibited variation in the form of costly conflict over this period, and the many excellent primary and secondary sources now available on both sides eases parameter measurement. I first calibrate the model to the context of the United States and Iraq, in order to generate predictions for this case. The result of this calibration is that whichever of containment or war is cheaper will occur. I then document the anticipated and actual costs of containment and war for both sides and show that the evolution of these over time corresponded to the form of costly conflict between the United States and Iraq. The exercise sheds light on the origins of the Iraq War of 2003, exposing important causes that are largely ignored by previous rationalist accounts of the war.

Model calibration

To calibrate the model, I specify four assumptions about relationships among model parameters and evaluate the evidence that these held between the United States and Iraq. These assumptions narrow what can happen in equilibrium and enable the model to generate specific predictions for the character and evolution of the US-Iraq interaction. Wherever possible, I document that these relationships were perceived to be true by the United States at the time and also that they were objectively true. For the former, I rely on the thorough prewar explication of the interaction between the United States and Iraq presented by Haass (2009) and Pol-

20. Debs and Monteiro (2014) point out that arming can lead to war only in the presence of this combination, which also causes war in Bas and Coe (2016, forthcoming) and Benson and Wen (2011).

21. Powell (1993) was the first to yield this result, but Fearon (2011) and Powell (2006) do too.

lack (2002), in addition to other sources. For the latter, I draw from several authoritative commission reports that were based on detailed investigations conducted after the war, as well as other sources. For brevity, this documentation is relegated to the appendix.

For the purposes of this calibration, I focus on Iraq's pursuit of nuclear weapons. Iraq pursued all of the unconventional means to power discussed in this article at various points. It undertook programs to develop biological, chemical, and nuclear weapons; sponsored terrorist organizations that sought to overthrow US-allied regimes in Kuwait and Saudi Arabia; and engaged in regional aggression against Iran and Kuwait. However, while US policy toward Iraq was designed to address all of these threats, the United States considered Iraq's development of nuclear weapons the most dangerous of these. Moreover, it is clear that Iraq saw nuclear weapons as the most important of the unconventional means it might pursue.

Calibrating assumptions.

1. $k < \delta\lambda_t[W_u^B - W_t^B]$: in the absence of a deal, if the United States would tolerate Iraq's program, then Iraq would try to get nuclear weapons.
2. $K_t + V_t^B - W_c^B > D_c^{\text{war}}$: in the absence of a deal, the United States would not just tolerate Iraq's nuclear weapons program.
3. $\delta[\lambda_t + (1 - \lambda_t)\tau]S < -k + \delta\lambda_t[W_u^B - \widehat{V}_c^B]$: Iraq would covertly pursue nuclear weapons under any deal the United States would be willing to offer.
4. $k > \delta\lambda_c[W_u^B - W_c^B]$: containment slows Iraq's program enough that Iraq is not willing to continue it under containment.

The first assumption guarantees that the expected budgetary costs of a nuclear weapons program are not enough to deter Iraq from pursuing one, so long as the United States does not interfere. The second implies that the United States would be willing to pay some cost to prevent Iraq from becoming nuclear armed. This could come in the form of war, containment, or concessions to Iraq in exchange for abandoning its nuclear program under a nonproliferation deal. The third assumption rules out such a deal. It guarantees that in equilibrium, the interaction between the United States and Iraq will feature costly conflict, whether in the form of war or containment (which might also include Iraq investing). The final assumption means that containment would retard Iraq's nuclear weapons program so much that it would render him unwilling to invest in one: the chance of success is low enough

that the investment is not worth its cost. This in turn means that containment is as effective as war: both enable the United States to hold Iraq to its war value under containment.

Corollary 1. War occurs if $D_c^{\text{war}} < C$; containment occurs otherwise.

These four assumptions identify a clear prediction for the interaction between the United States and Iraq. War will occur if it is anticipated to be less costly than containment; otherwise, containment will occur. Thus, to explain the character and evolution of this interaction, we must examine the costs of containment and war and how these changed over time.

The costs of containment and war

I will argue that the United States initially opted for containment over (decisive) war because it perceived the former to be equally effective at ending the threat Iraq posed but less costly. However, the initially small costs of containment grew rapidly over time and were set to escalate further, while the initially large anticipated costs of war steadily declined. Eventually, the costs of containment and war crossed, and so, as corollary 1 predicts, the United States went to war. I substantiate these claims by measuring the costs of containment and war faced by the United States and Iraq and how these changed over time, both as perceived by the United States at the time and as revealed after the fact. For brevity, I provide only summary descriptions here: extensive documentation of this evidence can be found in the appendix.

Initially, containment was cheaper. Near the end of the Gulf War, the Bush Sr. administration had to make a decision about how to proceed. It could extend the ongoing military campaign in order to invade the rest of Iraq and overthrow Saddam's regime, or it could instead halt the war and then attempt to contain Iraq. Simply tolerating Iraq under Saddam's rule was not seriously considered, given the threat his WMD programs posed. Consistent with corollary 1, the administration chose the latter precisely because they believed it would be cheaper than a decisive war but equally effective at addressing the threat Iraq posed.

The United States believed that containment would lead swiftly to Saddam's overthrow and replacement with leadership more amenable to US interests, so that containment would soon achieve the same result as war but without its costs. Moreover, because containment had strong support within the region and globally, its costs would be widely shared. By contrast, an expanded war to change Iraq's regime was expected to lead to chemical and biological weapon use against US forces and Iraq's neighbors, far more US and Iraqi

casualties than had been suffered to date, and severe damage to both sides' economies given the extended disruption of the oil market. Such a war had little international support, and thus the United States would be forced to bear much of its costs.

Thus, the options for the United States came down to a militarily risky, economically disruptive, widely unsupported war or a safe, cheap, temporary, popular, and effective containment. In its early years, the Clinton administration took a similar view toward war and containment. In retrospect, while containment did not lead to Saddam's overthrow, many attempts were made. It therefore seems that the anticipation that containment would be cheaper than war and equally effective was objectively reasonable and made the choice of containment rational for the United States. Pollack (2002, 211–13) argues precisely this: containment was chosen over war because it was seen as effective and less costly, and containment was chosen over toleration because, although it cost more, it was much more effective at suppressing the threat.

Over time, the costs of containment rose and those of war fell. Perhaps most important, the United States came to believe that containment would have to be continued indefinitely. Despite the United States' best efforts, Saddam survived and, over time, eliminated much of the organized opposition that might overthrow him. The United States thus came to believe that containment would not lead to his replacement anytime soon and perhaps not ever. This would greatly raise the expected total cost of containment, even if its per-period costs were to remain constant.

Instead, the continuing cost of containment also ballooned. Comprehensive sanctions destroyed Iraq's economy and lessened the supply of Iraq's oil even as the price of oil rose. Iraq's people were rendered destitute and suffered increasingly lethal repression as the regime sought to crush internal opposition. In the face of this catastrophe, regional and global support for containment collapsed. International compliance with sanctions and support for thorough inspections eroded. The United States bore more and more of the costs as other countries ceased to approve strikes to enforce inspections and violated sanctions with increasing abandon, and its forces in the region suffered an increasing risk of terrorist attack. After 9/11, Iraq's sponsorship of terrorism and possession of WMD posed an increasing risk of terrorist attacks with WMD, and together with its deepening repression, Iraq was increasingly seen as a lost opportunity to reform the Middle East. Overall, the per-period costs of containment, as well as the expected duration for which these costs would have to be born, rose quite substantially between 1991 and 2003, so that the anticipated total cost of persisting in containment exploded.

Now consider the anticipated costs of war and how these changed over time. Iraq's military decayed rapidly under containment, while the US military became ever more powerful. The economic and humanitarian costs of war fell, because the war was expected to be waged surgically and lead to a rapid victory for the United States. Moreover, the immiseration of Iraq under containment reduced the potential for further suffering and disruption due to war. The diplomatic costs of war were not seriously affected: the states that bore more of containment's costs grew more supportive of war, while those that benefited from containment grew more opposed to war. While a quicker, safer war would reduce the political costs of war domestically and abroad, it also ran the risk of being seen as further persecution of the Muslim world. The overwhelming capabilities of US forces also offered increasing confidence that Iraq could be prevented from striking its neighbors. Finally, a war in Iraq might draw terrorist organizations to concentrate on fighting the United States there rather than in its homeland.

Thus, most of the components of the anticipated costs of war with Iraq declined considerably from 1991 to 2003. It seems plausible to assume that, by the end of this period, the combined fall in the military, economic, humanitarian, and security costs of war overwhelmed the possible rise in political costs.

Eventually, war was (anticipated to be) cheaper. That the costs of containment increased and those of war decreased over the years of containment does not imply that they ever crossed, so that containment became more expensive than war. To know whether this occurred, we need estimates of the absolute costs of each.²²

Importantly, if the goal is to understand the US decision to go to war, then estimates based on information that became available after the war began are irrelevant and potentially misleading. Whether the actual consequences of the war and subsequent occupation should have been predicted beforehand is an important question, but it is distinct from the question of what was predicted. All that matters for this purpose are estimates of the costs of war and containment based on information available before the war.

There are two comprehensive studies available that are based only on *ex ante* information. Nordhaus (2002) combines estimates from government sources and other economists with original calculations, based on information available late in 2002, to estimate the cost of war. This study has

22. All estimates of the cost of war discussed here include the cost not only of the war itself but also of the subsequent US occupation and reconstruction of Iraq.

been praised for the soundness of its predictions and its frank treatment of uncertainty by the most comprehensive study of the war's actual (*ex post*) costs and also by a postwar review of the prewar estimates (Krueger 2007; Stiglitz and Bilmes 2008). It includes military and economic costs and, indirectly, some of the security costs described previously. Davis, Murphy, and Topel (2006) assemble a wide range of prewar estimates of the costs of war and containment with original calculations, all based solely on information available before the war, to estimate the costs of a range of scenarios for both containment and war. It is the only study to estimate costs for both, and its figures include military, economic, humanitarian, and security costs.

According to Nordhaus (2002), the costs of war are predicted to range from approximately \$100 billion to \$2 trillion. According to Davis et al. (2006), the costs of war would be predicted to range from \$100 to \$870 billion, and the costs of containment would be from \$300 to \$700 billion. Thus, it seems that by 2002, objective estimates held that the measured costs of war were comparable to those of containment.

Four characteristics of these estimates must be taken into account in weighing the costs of containment against those of war. First, by focusing on the situation just before the war, these estimates take account of the decline in the costs of war over the 1990s. However, they do not account for the upward trend in the future costs of containment. Davis et al. (2006) instead assume that the costs of containment in the future will be as they were in the past, averaged over those years, although their estimated range does include a low probability of unprecedented events such as the internal overthrow of Saddam. If containment's costs were expected to continue rising, as I argued above, the balance would be tipped in favor of war.

Second, both studies ignore the components of costs that are the most difficult to measure, including all of the diplomatic and political costs, and both freely admit that these other costs might well be of comparable magnitude to those they do estimate. If these components moved as described above, they would strengthen the case for war.

Third, both estimates focus mainly on the costs of war and containment to the United States alone, so that the bottom-line figures do not include Iraq's costs. However, Davis et al. (2006) estimate that a war would improve the economic well-being of most Iraqis and their survival chances relative to containment. Since these were the largest components of the cost of containment for Iraq, this finding implies that war would be cheaper for Iraq than containment.

Finally, these estimates feature large ranges that suggest a high degree of uncertainty in the anticipated costs of each option. Krueger (2006) takes a nihilistic view of these and

other estimates, observing that "all costs and benefits can be contested as wildly inaccurate—in either direction" and dismissing the exercise as "little more than educated guessing by other means" about "imponderables." But whether these represent good estimates of the true costs of war and containment does not matter for our purposes. The large uncertainty in the estimates suggests that the underlying distribution of opinions among the expert community about these would be diffuse, ranging from strong support for war to strong support for containment. Nonetheless, the considerations discussed here suggest that, by 2003, experts who concluded that the total costs of containment had come to exceed those of war had a rational basis for their conclusion.²³

Overcoming the uncertainty about costs. Empirically, uncertainty over the costs of containment and war did generate a wide range of opinions over their relative merit. Throughout its time in office, the Clinton administration included doves who favored containment, moderate hawks who favored containment with covert support for overthrowing Saddam, and extreme hawks who favored regime change by any means necessary (Pollack 2002, 55–58, 66). Even the Bush Jr. administration, although well stocked with neoconservatives who had openly advocated regime change before Bush's election, featured a range of views on the best policy toward Iraq (105).²⁴ Initially, the doves were dominant, precisely because containment offered a lower-cost but equally effective alternative to war (Haass 2009, 157–59; Pollack 2002, 65, 211–13).

As efforts to overthrow Saddam collapsed and containment became more costly, views began to change (Haass 2009, 164–67; Pollack 2002, 78–79, 86–87, 91, 92). Congress became openly hawkish, passing the 1998 Iraq Liberation Act that publicly established regime change as the US policy toward Iraq (Haass 2009, 166).²⁵ Within the Clinton administration, the balance of opinion shifted so that even the moderate hawks, such as Vice President Gore and high-ranking military officers, began to support war (Haass 2009, 167; Pollack 2002, 94–96, 100, 103, 105–6). By 2002, only the State

23. This does not mean those experts were correct. The war was far costlier than anticipated, and although it appears to have ended Iraq's interest in WMD, it may also have given rise to ISIS. Carter (2015) models the potential for coercive measures to backfire in this way.

24. Mann (2004, 238) lists the neoconservatives that held important offices in the Bush administration. Daalder and Lindsay (2003, 132–33) discuss the range of views within the Bush administration on the costs of the war's aftermath.

25. This bill was widely supported, passing by 360 votes to 38 in the House and by unanimous consent in the Senate before being signed into law by President Clinton. The vote counts are available at <https://www.congress.gov/bill/105th-congress/house-bill/4655>.

Department under Secretary Powell, “realists” such as George Bush Sr. and Brent Scowcroft, and some Democrats in Congress still preferred containment to war.²⁶ Harvey (2011) documents in exhaustive detail the breadth of support for war in the early 2000s. Most of the national security experts likely to have staffed a Gore administration, Gore himself, and many Democrats in Congress supported war both publicly and privately. Consistent with the theory, this mounting support for war was driven by the growing evidence that containment had become less cost effective. Pollack (2002) advocates war over toleration (which he calls “deterrence”) on the grounds that the former’s effectiveness was worth its cost (244–47, 279, 281, 415–17) and over containment because it was no longer cost effective (213, 218–42, 282–91, 413–14).

Other explanations for the Iraq War. Previous accounts of the Iraq War trace its origins variously to the ideologies, personalities, or irrationalities of particular individuals such as the neoconservatives or President Bush and to public and elite reactions to the 9/11 attacks.²⁷ They thus focus overwhelmingly on the immediate prelude to the war and largely ignore the previous history between the United States and Iraq. By contrast, the account given here emphasizes the role of this prior interaction in creating the conditions for war well before 9/11 occurred or the Bush administration entered office. It therefore raises doubts about the necessity or sufficiency of these factors in explaining the war’s occurrence.

Support for war was not necessarily driven by ideology, personality, or irrationality. In aggregate, beliefs responded rationally to events that weakened the initially strong case for containment and strengthened the initially weak case for war, so that by the early 2000s, a majority of experts and officials favored war, in line with the objective estimates discussed earlier. The officials of the Bush administration were not peculiar in this respect. Vice President Cheney supported

26. Mann (2004, 333) asserts widespread support for war within the Bush administration even before 9/11. On Powell, see Haass (2009, 215); for Bush Sr., see Woodward (2006, 114); for Scowcroft, see Woodward (2002, 331). The October 2002 Authorization for Use of Military Force against Iraq passed the House 296 to 133 and the Senate 77 to 23. Slightly more than half of the Democrats in the House and 21 Democratic Senators opposed it. The counts are available at <https://www.congress.gov/bills/107/congress/house-joint-resolution/114>.

27. This is true of all but one of the published accounts of the causes of the Iraq War of which I am aware. The most recent account that focuses on particular individuals is Lake (2010); for reviews of other such accounts, see Flibbert (2006) and Harvey (2011). For recent accounts focused on reactions to the 9/11 attacks, see Debs and Monteiro (2014) and Jervis (2003). For the sole exception, based on the argument that the United States engaged in coercive diplomacy that led to war because of asymmetric information about US resolve, see Harvey (2011).

ending the Gulf War without overthrowing Saddam as Secretary of Defense in the Bush Sr. administration and through the early 1990s, and Secretary of Defense Rumsfeld was a key participant in US engagement of Iraq in the 1980s, but both had become fierce advocates for war by the early 2000s.²⁸ The neoconservatives’ ideology—emphasizing the United States’ power to unilaterally transform the Middle East and the unique dangers of a nuclear-armed Iraq—may explain why they were the first to support war (Flibbert 2006). But this ideology simply implied a particular estimate of the relative cost effectiveness of war and containment, and the neoconservatives phrased their arguments for war in these terms (Project for a New American Century 1998a, 1998b).

This argument implies that particular individuals were neither necessary nor sufficient for the war to occur. Harvey (2011) amasses a mountain of evidence that a Gore administration would very likely also have led the United States to war with Iraq, convincingly demonstrating that Bush, Cheney, and the neocons were not necessary for war to occur. Moreover, even given that such strong supporters of war rose to power, their views did not initially win out.²⁹ Instead, the administration attempted to rejuvenate containment (Pollack 2002, 106, 218–19). Thus, these particular individuals were not sufficient to cause war either.

It also means that the 9/11 attacks were insufficient to cause war. To see why, suppose that containment had remained low cost and so was not allowed to erode from 1996 onward or that it could somehow be rejuvenated in 2002 at its initial, low cost.³⁰ Then, before 9/11, few experts would have concluded that containment was no longer cost effective and subsequently begun to support war. Even if the neocons still advocated war, there would be little support for this among Democrats and the many non-neocons in the Bush administration, presumably including Cheney and Bush, so that even after 9/11, the neocons would continue to be overruled, as they had been initially. Thus, the 9/11 attacks precipitated the push for war only because the case for it was already widely, although not universally, shared.

28. Cheney argued that the costs of a decisive war would have been too high, in an April 15, 1994, interview with C-SPAN. The relevant footage is available at <https://www.youtube.com/watch?v=6BEsZMvrq-I>. For Rumsfeld’s role in engaging Iraq, see Battle (2003).

29. See Haass (2009, 174–75) and Pollack (2002, 104–6) for the neocons’ failure to implement a policy of regime change before 9/11. Harvey (2011) documents that even after 9/11, the neocons’ preferred approach to war—without UN approval, Congressional authorization, or new inspections—was overruled in favor of the approach supported by Powell and Blair as well as Gore and many other Democrats.

30. Haass (2009, 179, 234) and Pollack (2002, 213, 218–42, 282–91) make clear that it was possible to reconstitute effective containment, but only at even higher cost than before.

Finally, interpreted strictly, this account implies that the 9/11 attacks were not necessary for the war's occurrence, either. Once the perceived costs of containment exceeded those of war, war should occur. However, it should be borne in mind that the model on which this account is based ignores domestic politics by taking the United States to be a unitary actor. In reality, the high immediate costs of war might well cause the US government to defer it, preferring instead the low immediate (but high long-run) costs of the status quo policy of containment. The 9/11 attacks might well have been needed to shock the government and the public into a drastic change of policy, as many Bush administration officials argued (Jervis 2003).

BROADER IMPLICATIONS

Although costly conflict in the theory presented here is driven by the usual bargaining problems, they are only distant causes of war in particular. War's proximate cause is the lower cost effectiveness of arming. The relevant bargaining problems between the United States and Iraq were in place by 1991, but war did not occur until 12 years later. By contrast, most previous bargaining models predict that war will follow immediately from any sufficiently severe commitment problem or asymmetric information. As a result, the most obvious approach to applying and testing the bargaining theory of war investigates whether a bargaining problem arises just before a given war. If, as the theory predicts and the US-Iraq case demonstrates, severe bargaining problems may arise long before war erupts, then the extant empirical work may be unduly focused on the immediate prelude to war. Future work might profit from looking further back in a case's history for the underlying bargaining problems.

This study suggests a broader definition of arming than the colloquial one. Arming is any unilateral, costly action that might alter the balance of power (i.e., the expected outcome of war). This includes measures of conventional arming, such as conscripting soldiers, building warships, and even imposing sanctions to constrain an opponent's military spending. These measures all have relatively quick, sure effects that are proportional to their cost—a small increase in cost has a small effect on the balance of power. But arming also includes unconventional means to power, such as developing WMD, sponsoring foreign terrorism or insurgency, and regional aggression aimed at delivering a *fait accompli*. These measures only succeed stochastically, usually after some delay, but they promise effects that are disproportionate to their costs. This more theoretically informed definition can speak to the various forms arming takes in both symmetric and asymmetric dyads, and indeed to the contest for power in any context where power matters.

This in turn suggests a different approach to measuring arming. The empirical arming literature invariably relies on data on military spending and military personnel (e.g., Nordhaus, Oneal, and Russett 2012). These are readily available and at least somewhat commensurable measures of conventional arming, but they ignore unconventional arming. For the many politically relevant dyads in which a weak state faces a strong potential adversary, unconventional means to power are far more strategically consequential. Given the modest budgetary costs of these means, their pursuit may not even correlate with military spending, much less military personnel. Thus, these measures of arming may lead empirical analyses seriously astray in asymmetric dyads. It would be valuable to develop new measures that integrate both conventional and unconventional arming.

For their part, empirical analyses of WMD proliferation (e.g., Singh and Way 2004) or sponsorship of foreign terrorism or insurgency (e.g., Cunningham, Gleditsch, and Salehyan 2013) treat each in isolation from the other and from conventional arming. Because these behaviors have the same strategic features and the same underlying causes, there is potentially much to gain from instead studying them together. An analysis of how these different forms of arming covary or jointly lead to war or deals might yield important insights.

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