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ARMS BUILDUPS AND THE USE OF MILITARY FORCE

During his tenure as British Foreign Secretary (1905–1916), Sir Edward Grey witnessed the destabilizing effect arms races had on great power politics in Europe. This prompted him in 1914 to famously proclaim that

great armaments lead inevitably to war. If there are armaments on one side there must be armaments on the other sides. While one nation arms, other nations cannot tempt it to aggression by remaining defenceless.... Each measure taken by one nation is noted and leads to counter-measures by others.... The enormous growth of armaments in Europe, the sense of insecurity and fear caused by them—it was these that made war inevitable.
(Grey 1925, pp. 89–90)

Since Grey's declaration, the question of whether arms races contribute to the use of

military force or the outbreak of war has been the subject of much discussion. As defined by Huntington (1958, p. 41), an arms race is "a progressive, competitive peacetime increase in armaments by two states or coalitions of states resulting from conflicting purposes and mutual fears." Bull (1961, p. 5) has defined an arms race as an "intense competition between opposed powers or groups of powers, each trying to achieve an advantage in military power by increasing the quantity or improving the quality of its armaments or armed forces."

Many policymakers shared Grey's perspective in the aftermath of World War I. This is demonstrated by the League of Nations' push for disarmament during the 1920s and 1930s. In an effort to actualize the ideology of disarmament, League of Nations member states took a number of steps including organizing the Conference for the Reduction and Limitation of Armaments (1932–1937). However, the effort ultimately failed because of disagreements between France and Germany, prompting Hitler to withdraw from both the conference and the League of Nations in October 1933. The following year, Hitler announced that he planned to ignore the provisions of the Peace Treaty of Versailles (1919) that had placed restrictions on German military strength at the end of World War I (see Articles 159–213). An arms race subsequently ensued, followed by the outbreak of World War II in 1939.¹

Guided by their experiences in the First and Second World Wars, many statesmen and policymakers of the early- and mid-20th century believed that arms races played a significant role in the outbreak of war. However, the topic did not garner much scholarly attention until the early Cold War period. Since then, a growing body of literature has evaluated whether arms races influence the use of force. Those who believe an arms race–conflict relationship exists point to the general stimulus-response and conflict spiral theories (see Cashman, 2013, p. 296). A staple of the behaviorist

school of psychology, the stimulus-response theory of individual behavior suggests that "most actions are a response by the actor to a set of stimuli in the environment" (Cashman, 2013, p. 280). The conflict spiral theory of international relations mirrors the stimulus-response theory by suggesting that the behaviors of states are often reactionary and interdependent. A buildup of arms by one state tends to be viewed as a hostile maneuver by rival states, which often interpret the move as offensive rather than defensive. From the conflict spiral perspective, rival states will reciprocate with hostile actions of their own to include the accumulation of increasing numbers of weapons. As aggressive responses accumulate, the eventual outcome may be the outbreak of war (Leng & Goodsell, 1974).

The more recently developed rivalry framework provides further insight into arms races and conflict. This framework suggests that states enter into armed conflict with one another, in part, because of their shared history of past conflict (Diehl & Goertz, 2000; Thompson & Dreyer, 2012). These past tensions result in mistrust and fear, which can lead to future conflict and prevent attempts at conflict resolution. As a result, a cycle of repeated interstate violence ensues that can be difficult to break free from. Research has provided empirical support for the notion that previous disputes between rivals make later disputes more likely and that a growing number of disputes increases the likelihood of an escalation to war (Colaresi & Thompson, 2002; Hensel, 1994; Leng, 1983). However, the relationship between rivalry and arms races remains unclear. While some studies find that the former is a common precursor for the latter, other studies suggest that arms races and conflict can appear outside of rivalry (Rider, Findley, & Diehl, 2011; Sample, 2012).

Much additional research explores the arms race–conflict nexus. Before reviewing this literature, it is important to first highlight the study that laid the groundwork for much of

our contemporary understanding of arms races and interstate conflict. Huntington (1958) advanced two major arguments. First, he posited an inverse relationship between the length of arms races and the probability of war. Based on an analysis of 13 cases, he determined that longer arms races tended to have a stabilizing influence on interstate relations. As the arms race continues, the interaction pattern between states becomes more predictable and, thus, more stable, producing a situation of "dynamic equilibrium." Although each state increases its armaments, a relative balance remains. The rival states will eventually come to accept the relative balance and reach a mutual understanding. As a result, a sustained arms race is much more likely to result in peace instead of war.

Second, Huntington recognized the importance of separating arms races into quantitative and qualitative categories. While *quantitative arms races* refer to increases in the overall number of soldiers and weapons at a state's disposal, *qualitative arms races* refer to developments such as weapons improvements and technological innovations (e.g., nuclear missile capabilities). In his analysis, Huntington found that quantitative arms races were more likely to result in the outbreak of war. He theorized that the cost of arms races are the central reason for this outcome. Arms buildups require significant resources, and the resulting resource drain may eventually become burdensome to the state. In order to generate popular support to incur these burdens, governments must increasingly paint a hostile picture of their rival. "Prolonged sufficiently, a quantitative race much necessarily reach a point where opinion in one country or the other will demand that it end, if not by negotiation, then by war" (Huntington, 1958, p. 76).

Contrarily, although qualitative arms races require resources to be continuously allocated, increased spending is not necessary. Huntington thus concluded that, while quantitative arms races are likely to end in the outbreak of

war, this is not true of qualitative ones. In fact, qualitative arms races may have a deterring effect on the outbreak of armed conflict. An example of a qualitative arms buildup deterring the use of force is the South American naval armament race that occurred at various periods during the 20th century. Although countries consistently upgraded their naval fleets, none of the capital ships were ever sunk as a result of hostility. Lambelet (1975, p. 125) attributes this to the fact that "these vessels were so enormously expensive and laden with so much prestige and symbolic meaning that no one was willing to risk losing them."

Huntington (1958) drew attention to the fact that arms races can be multi-dimensional, as states will often fluctuate between quantitative and qualitative buildups. This also has implications for the use of force. If a state develops a greater capacity for technological advancement, a quantitative arms race can shift into a qualitative one. If, however, one of the states in a qualitative arms race decides to alter their approach and engage in a quantitative buildup of soldiers and/or weapons, Huntington suspects that this would be a "fairly clear" signal to the rival state that it was soon intending to go to war.

Critiquing Huntington's work, Glaser (2000) has claimed that it is unclear why the costs of quantitative arms races have to increase with time and why the costs of qualitative arms races do not. He postulated that quantitative races could flatten out before qualitative ones because "[o]nce both countries have built up to a level at which their forces are adequate to defend and deter, increases in force size could stop. Under these conditions, qualitative conditions could then have the effect of restarting this race and making it more expensive" (p. 261). It has also been suggested that Huntington's discovery that quantitative arms buildups increase the probability of war could be the result of endogeneity, as arms increases may be the result of growing tensions between states or the belief

that war is inevitable (Buzan & Herring, 1998; Mueller, 1969).

Others have argued that the study of arms races should include additional characteristics. Hammond (1993), for example, characterized arms races by their type (qualitative or quantitative) but also assessed a number of other dimensions including their medium (air, land, or sea), goals, and intensity. He found that while arms races sometimes ended in war, this was not always the case. He argued that arms races will often serve as a surrogate for war because a willingness to participate in a buildup of arms is a clear signal of a state's resolve to protect its interests. An increase in armaments ultimately bolsters the credibility of deterrent threats.

There has thus been considerable academic discussion surrounding the significance of arms races and the outbreak of war and other forms of interstate violence such as militarized interstate disputes (MIDs), much of which was generated in the aftermath of Huntington's 1958 article. The following section provides a brief review of the evolution of the empirical literature on the topic since Huntington and others' early contributions. Following this review, we outline directions for future research. As will become apparent, the topic remains fertile ground for scholarship. A host of theoretical and empirical questions must be answered before we develop a reliable empirical understanding of the relationship between arms buildups and the use of military force.

THE EMPIRICAL LITERATURE

Richardson (1960) was the first to develop a formal model of reciprocity in his analysis of arms expenditures. He argued that states will respond in kind to increases in military spending by potential adversaries. Like Huntington (1958), he found that these increases will not always result in the outbreak of war between rival states. Richardson postulated that, while arming against each other, powers can also simultaneously engage in cooperative

activities like trade. These cooperative activities can counteract the grievances that inspired the rival powers to initially arm against one another. Richardson's model shows that the volume of trade is a critical component in this respect. If trade between rival powers is minimally disproportionate to arms expenditures, the armament race will become *unstable* and military spending will grow to infinity, inevitably resulting in the outbreak of war. If the opposite is the case, however, military spending will become stabilized and peace between states will ensue. In other words, only arms races that are not counterbalanced by peace-inducing ties will result in the outbreak war between states.

Although he did not explicitly test the hypothesis that arms races can, in some instances, prevent the outbreak of war, Lambelet (1975) outlined a few historical cases to illustrate this possibility. Acknowledging that most wars (most notably World War I and World War II) were preceded by a period of competitive arms buildup, he pointed to the Korean War as a significant exception to this rule. He notes that the outbreak of the Korean War occurred soon after the United States had completed the process of unilateral disarmament. Thus, the war may not have occurred had the United States "maintained a military capability more commensurate to that of the other side" (Lambelet, 1975, pp. 124-125). Lambelet also provided a general framework for a theory of the relationship between arms races and the outbreak of war, which helped to inspire later empirical research.

In an influential study, Wallace (1979) identified 99 great power disputes that occurred between 1816 and 1965 and found that, of the 26 that eventually escalated to war, 23 were preceded by arms races. Conversely, of the 73 disputes that did not escalate to war, only 5 were preceded by arms races. Wallace used annual aggregate military expenditures (excluding unexpended appropriations, military pensions, and expenditures on frontier guards, police, and reserves) to measure mili-

tary capabilities in his study and assessed their rates of change from year to year. He emphasized that his findings did not necessarily imply that arms races result in war but rather showed that competitive military growth is strongly associated with the escalation of disputes into war. Because Wallace looked at the outcome of military disputes instead of the results of arms races per se, it was quickly pointed out that the relationship could be spurious (Houweling & Siccama, 1981).

Wallace's study was criticized by Weede (1980), who drew attention to the fact that the arms race-war relationship differs depending on the time period under analysis. There were four periods between 1816 and 1965 where escalation to war never occurred regardless of the arms race index (1816 to 1852, 1871 to 1904, 1919 to 1938, and after 1946). He posited that war weariness and/or international system variables may explain these periods of peace. Weede (1980) further criticized Wallace's decision to treat all arms races and wars as dyadic in his study. Of the 23 cases of war that were preceded by arms races, 9 resulted from World War I and 10 from World War II. As a result, more than 80% of the confirmatory evidence was derived from two wars. In turn, Weede aggregated all dyads that resulted in a single war, which weakened the association between arms races and war. However, his results still showed that 55% of arms races escalated to war, while dyads not preceded by arms races only resulted in war 3% of the time.

Diehl (1983) also retested Wallace's work by making a number of modifications. He included additional disputes in his analysis and extended the temporal domain by five years (1816 to 1970). Diehl further created a new arms race index based on changes in defense expenditures. He defined a "mutual military buildup" as any instance in which both dispute sides increase their military expenditures at a rate of 8% or greater for three years before the dispute. Contrary to Wallace, Diehl found no meaningful covariation between

mutual military buildups and the escalation of disputes. While 25% of the disputes that were preceded by a mutual military buildup escalated to war, 77% of major power wars were preceded by periods in which no mutual military buildups occurred. Building upon this earlier work, Sample (1997) controlled for different dispute dyads and measures of mutual military buildups in her analysis. Although the findings were not as strong as Wallace's, using bivariate tests she presents evidence of a positive and significant relationship between arms buildups and the escalation of disputes among major states.

While the aforementioned studies have clearly advanced our knowledge of the subject, most used bivariate models that did not control for additional influences. Among others, Buzan and Herring (1998, p. 88) called attention to this shortcoming, arguing that other variables should also be taken into consideration when analyzing the impact of arms races on conflict. Omitted variable bias may thus have explained the prevalence of mixed results in the literature to that point, with the hope being that properly identified models would produce consistent results.

Sample conducted a multivariate analysis in her 2000 study. Analyzing major power dyads between 1816 and 1993, she demonstrated that her earlier bivariate findings (Sample, 1997) held when controlling for several variables. Included in these variables was whether the states had a territorial dispute, which previous research had shown to have a significant impact on the outbreak of war (Vasquez, 1993, 1996). Sample (2000) found that arms races increase the chances of both MIDs and the likelihood that an MID will escalate to full-scale war. However, she discovered that this was only the case in disputes that occurred before World War II. Similarly, territorial disputes were no longer found to be associated with escalation in the post-World War II era. Sample suggested that the presence of nuclear weapons was a possible explanation for why arms races in the

post-war era were found to be less likely to result in the outbreak of war than those that occurred prior. She introduced a nuclear weapons variable to test this and found that the probability of war decreased to .05 when nuclear weapons were present during a mutual military buildup. Sample's discovery of the potential pacifying effect of nuclear weapons was an important contribution to our understanding of how quantitative and qualitative arms race-war relationships differ. The nuclear weapons-as-deterrent finding is consistent with Huntington's (1958) early research that suggested qualitative arms races may decrease the likelihood of armed conflict.

The advent of nuclear weapons thus appears to have changed the arms race-conflict relationship. It is important to note in this regard that many policymakers seem to place nuclear weapons in a different conceptual category than conventional weapons. As Sagan (1996, p. 55) has argued, nuclear weapons "are more than tools of national security; they are political objects of considerable importance in domestic debates and internal bureaucratic struggles and can also serve as international normative symbols of modernity and identity." There have also been attempts to explain "nuclear reversal" cases by which states forgo or give up on their programs (Campbell et al., 2004; Levite, 2003; Paul, 2000; Reiss, 1995; Rublee, 2009). Research has shown that the possession of such weapons is contingent upon both willingness *and* opportunity (Jo & Gartzke, 2007). While security concerns and technological capabilities are significant determinants of whether states pursue the development of nuclear weapons, the possession of such weapons is dependent upon such factors as domestic politics and international considerations (Jo & Gartzke, 2007). Furthermore, states are heavily dependent upon sensitive nuclear assistance from more advanced nuclear states when attempting to develop a nuclear arsenal (Kroenig, 2009a, 2009b).² The nature of nuclear weapons acquisition is thus multifaceted and may not

always be motivated by arms races. Once acquired, however, nuclear capabilities seem to impact the likelihood of conflict escalation and disputes between states.

Nuclear weapons aside, a critique of the arms race-war literature up to the turn of the century was that it largely focused on arms races between major powers. Sample (2002) addressed this shortcoming in an additional study by analyzing whether arms races impact conflict escalation between minor states and mixed dyads (those between minor and major states). She revealed that mutual military buildups increase the probability of escalation for both major and minor state disputes, but this relationship does not hold for mixed dyads. Consistent with her earlier research (Sample, 2000) it was found that results were dependent upon the historical era in which the conflicts occurred. Following World War II, no pattern of escalation was identified among major power states, while the patterns of escalation between minor states and mixed disputes were substantially altered. Also consistent with her previous research (Sample, 2000), the possession of nuclear weapons was shown to diminish the likelihood of escalation for both major state disputes and mixed disputes. Although this finding could be attributed to the potential deterrent effect of nuclear weapons on state decisions to go to war, Sample (2002) acknowledges that a more complex change in the international system in the post-World War II era may also explain the finding.

Gibler, Rider, and Hutchison (2005) add to the literature by addressing a potential selection bias present in many studies. They attribute this to the unit of analysis—a dispute—which presupposes that deterrence has already failed. In an attempt to resolve this, they identify arms races independently of dispute occurrence and use this to test if arms races either deter or escalate MID. Using a sample of strategic rival dyads between 1816 and 1993, it was shown that arms races increase the probability of both disputes and war. Specifically, they

found that the presence of an arms race between strategic rivals increased the chance of a MID occurring from 16 to 35%, while the probability of war increased from 1 in 100 to 1 in 20 during arms race years. Their multivariate analysis controlled for several variables previously demonstrated to be predictors of conflict in a dyad. Among these was the joint presence of nuclear weapons, which was shown to prevent the outbreak of war (as no war has occurred in a dyad where both states possessed nuclear weapons). However, if both states had nuclear weapons, this was found to actually increase the probability of MID onset. Subsequent research has shown that nuclear dyads have engaged in a large number of militarized disputes short of war and may be even more likely to engage in MIDs than non-nuclear states or asymmetric pairs of states (see, e.g., Beardsley & Asal, 2009; Rauchhaus, 2009).

Gibler et al.'s (2005) discovery that nuclear dyads are less likely to engage in all-out war between rivals but more likely to engage in MIDs and hostile action short of war contributes to the broader understanding of the role nuclear weapons play in state decisions to use military force. Although a detailed discussion of nuclear deterrence is outside the scope of this article, it is important to highlight a key debate within this context. Among those who believe that nuclear weapons can serve as a deterrent (often referred to as "proliferation optimists"), some have argued that possession can deter aggression at *all* levels (Jervis, 1989; Waltz, 1990). Others, meanwhile, have contested that possession secures states from high-level conflict escalation (e.g., war) but increasingly contributes to lower-level hostile action (e.g., MIDs) (Snyder, 1965; Snyder & Diesing, 1977). This concept is known as the "stability-instability paradox," which states that "to the extent that the military balance is stable at the level of all-out nuclear war, it will become less stable at lower levels of violence" (Jervis, 1984, p. 31). The Cold War, for example, never broke out

into a full-scale war. Proxy wars were nonetheless fairly common between the two superpowers for much of the period of rivalry.³

Important empirical literature has also placed arms racing in a broader theoretical context to improve comprehension. The “steps-to-war” approach introduced by Vasquez (1993) includes arms races as one of a number of factors that contribute to an escalation of violence between states. A good deal of empirical work has tested this approach in the decades since it was first introduced (Colaresi & Thompson, 2005; Senese & Vasquez, 2008; Vasquez, 1996, 2000, 2004, 2009; Vasquez & Henahan, 2001). The steps-to-war approach is not a general theory of war applicable in all cases, but rather identifies the most common paths to war between states of relatively equal power. The theory posits that there are underlying and proximate causes of war. It is argued that territorial disputes are the primary underlying cause of war, as they are less likely to be resolved than other disputes. Meanwhile various manifestations of “power politics” such as alliances, recurring disputes, and arms races are viewed as proximate causes of war. These proximate causes increase the perception of threats and hostility between states, thus reducing the likelihood of reaching a compromise.

Beginning with Sample’s (2000) multivariate analysis, research on the arms race–war relationship has accounted for territorial disputes and other factors that may influence the outbreak of war. The literature had not, however, examined the relationship between arms races and other steps to war. Vasquez (2004) and Senese and Vasquez (2005, 2008) address this and find that other power politics practices (e.g., alliances and rivalry) do not eliminate the arms race–war relationship. Senese and Vasquez (2008) discover that, in the presence of the other steps to war, arms races during the period between 1816 and 1945 increase the probability of war to .90 for territorial disputes, .85 for policy disputes,

and .78 for regime disputes. As with previous studies (Sample, 2000, 2002; Weede, 1980), the arms race–war relationship was not found to be significant after World War II.

Building upon these earlier findings, Sample (2012) conducted another analysis that divided the temporal domain into three separate eras: 1816 to 2001, 1816 to 1944, and 1945 to 2001. She further controlled for state rivalries—dividing the data into disputes within rivalry and disputes outside of rivalry—and used three different measures of rivalry to compare the findings. The results showed that mutual military buildups had a substantial impact on conflict escalation to war, between both rivals and non-rivals. This suggests the relationship between arms races and war is not an artifact of rivalry (see Rider et al., 2011, for a contrary view). However, although these results held for the 1816 to 2001 and 1816 to 1944 periods, they were once again found to be insignificant in the post–World War II era. Furthermore, while a high defense burden was associated with an increased probability of war through World War II, high defense burdens actually reduced the likelihood of war between states after World War II.

In sum, our understanding of the arms race–war relationship has advanced significantly since early work by Huntington, Richardson, and others. However, limitations in the current body of literature do exist. One of these is the limited theoretical ground upon which much of the debate has been fought. Although arms races may be correlated with the escalation of disputes, the reasoning behind this relationship is not fully understood. Diehl and Crescenzi (1998, p. 112) have identified three causal structures that may define the linkage between arms races and war: (1) the structure of the relationship is direct as well as causal; (2) an indirect and causal association exists; or (3) the relationship may be spurious and therefore non-causal. The inferences from empirical research therefore varies. If there is a theoretical basis for assuming a direct and causal relationship between arms

races and the outbreak of war, it derives from the general stimulus-response or conflict spiral theories mentioned at the beginning of this article (see also Cashman, 2013, p. 296). However, the literature rarely articulates these theories and never tests them directly (Diehl & Crescenzi, 1998, p. 112). Empirical research has also rarely attempted to spell out the various indirect connections that may link arms races and interstate conflict theoretically, much less test them empirically.

Furthermore, although Huntington (1958) drew attention to the importance of analyzing both quantitative and qualitative arms races, the latter have received relatively little attention in the literature outside the inclusion of nuclear capabilities in recent years. Unlike the growing body of empirical work assessing the quantitative arms race-war relationship, notably absent are studies that analyze the impact of qualitative buildups. The aforementioned studies have typically used some form of defense outlays to account for the buildup of arms, and most researchers rely solely on data from the Correlates of War Project. It would no doubt be difficult to develop reliable data on significant qualitative changes within arms races, but doing so also has the potential to add considerable insight. It may be the best way to build a holistic understanding of changing relative state capabilities.

MOVING FORWARD: ADVANCING OUR KNOWLEDGE OF ARMS RACES AND THE USE OF ARMED FORCE

Empirical theory on and testing of the relationship between arms races and the use of force can be advanced in a number of ways. Returning to some of the insights of Huntington and other early empirical scholars of the phenomenon would be valuable. Specifically, our understanding would be improved by rigorous analysis of Huntington's distinction between qualitative and quantitative arms buildups. Quantitative data on qualitative arms

races would be challenging to develop since the qualitative advantages provided by technological change will alter over time. Weapons that provide qualitative advantages in one decade may be rendered commonplace in later decades. But similar temporal challenges beset a range of studies, and researchers have nonetheless been able to rely on the scholarly consensus on qualitative change to produce widely utilized and valuable data. Data produced by the system leadership school of thought on economic innovation and naval strength offer one such example (Modelski & Thompson, 1988; Rapkin & Thompson, 2013). The development of reliable quantitative data on qualitative arms races will provide considerable insight, but such knowledge also needs theoretical structure to further understanding.

Arguably, the theoretical framework with the greatest potential to advance knowledge on arms races and the use of force is bargaining theory. Arms buildups can be considered a relatively costly signal sent to an opposing side, which may preclude conflict and increase the chance a compromise can be reached before the outbreak of hostilities (see Kydd, 2000). Rider (2013) provides a valuable theoretical perspective on arms races as blunt and costly signals and finds empirical evidence suggesting that leaders are only likely to initiate them under conditions of uncertainty. At the same time, arms buildups may also change dyadic power balances and lead to commitment problems, which may increase the probability of conflict (Morrow, 1989). The bargaining approach also provides context for Huntington's finding that longer arms races are less likely to result in conflict because a stable distribution between the two sides is reached and Hammond's (1993) contention that arms races can be surrogates for conflict.

As theory on arms races and the use of military force is refined, it is important to map out specific theoretical mechanisms that connect arms buildups to the use of military force. The indirect and conditional effects

that arms races may have on forceful foreign policy seem particularly important in this regard. Conditional relationships can be challenging to tease out, but it is important to further our understanding of such nuances. The attempts by Rider et al. (2011) and Sample (2012) to theoretically and empirically disentangle the rivalry–arms race relationship offers a good example, as do the multiple, interacting influences analyzed in studies such as Colaresi and Thompson (2005).

We must also marshal advanced statistical techniques to provide adequate empirical tests of new theoretical propositions. For example, endogeneity has been an issue that has plagued the study of arms races and conflict for decades (Buzan & Herring, 1998; Houweling & Siccama, 1981; Mueller, 1969). Do tensions, rivalry, and small scale uses of force produce arms races? Or do arms races precipitate such behavior? The answer is not always easily determined and may be historically contingent. Recently refined quantitative analyses, such as generalized methods of moments estimation, can offer more robust controls for endogeneity and can therefore sharpen our understanding of military force and arms racing. The literature would also benefit from a return to qualitative studies of the phenomenon. Rigorous, focused qualitative studies will enhance our understanding of the endogeneity and selection effects that have affected some quantitative analysis, and they may also shed new light on the dynamics of qualitative and quantitative arms races.

Improved understanding should also be extended to the use of force short of war. As this article has highlighted, much of the literature on arms races and conflict has focused on full-scale war rather than the use of low-scale force. Some studies have used MIDs to grasp the relationship with low-scale force, but more needs to be done in this area. Alternative measures of the use of military force, such as data on military intervention (Pickering & Kisangani, 2009; Sullivan & Koch, 2009), would be valuable. As Fordham and Sarver

(2001), Bell and Long (2016), and others have pointed out, the MID collection has notable strengths, but it also has limitations when analyzing national decisions to use military force.

In sum, our empirical knowledge on arms races and conflict has advanced considerably over recent decades. The role that arms buildups play in the emergence of interstate conflict has been brought into sharper focus. However, much work remains to be done before we develop a comprehensive understanding of the relationship. Empirical theory that includes conditional and indirect relationships will advance our understanding, as will new approaches that control for methodological concerns that have hampered previous analyses.

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NOTES

1. See Maiolo (2010) for an overview of this arms race and how it impacted the outbreak of World War II.
2. See also Fuhrmann and Sechser (2014) on why countries deploy nuclear weapons abroad.
3. See Krepon (2003) for a discussion of the stability-instability paradox in South Asia.

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