ARMS TRANSFERS, DEPENDENCE, AND REGIONAL STABILITY: ISOLATED EFFECTS OR GENERAL PATTERNS?

David Kinsella

School of International Service
American University
kinsell@american.edu

Presented at the annual meeting of the International Studies Association, 16-20 February 1999, Washington, DC. This paper may be obtained from the web at <http://gurukul.american.edu/kinsell/papers.html>.

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Abstract

There are two parts to this paper. The first part examines the impact of arms transfers on the conflictual behavior of third world recipients. I conceptualize conflict as a multiplicative function of total arms imports and the extent to which the recipient is dependent on relatively few arms suppliers. My hypothesis that arms imports encouraged belligerence but that arms-transfer dependence diminished this effect is not widely supported by my time series analyses: only twelve of 86 countries analyzed exhibit this dual pattern. The second part of the paper examines the impact of arms transfers on the aggregate level of military conflict within regional security complexes in the third world. Here I look at both the total amount of arms flows into the region and those arms flows originating with the United States and Soviet Union specifically. Structural hypotheses, which predict the impact of arms transfers based on the characteristics of the regional security complexes, do not receive support from my empirical analysis. Hypotheses that predict regional outcomes based on the source of weapons transfers — US or Soviet — fare better. The empirical patterns are consistent with the notion that Soviet arms transfers, representing a flow of military resources and implied political support from a revisionist power, were more destabilizing than arms transfers from the United States, a status quo oriented power.

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The tale has been told many times. Developed nations supplied hundreds of billions of dollars worth of armaments to the third world during the half century that followed World War II. The United States and the Soviet Union provided most of this equipment, primarily to members of their respective cold war blocs. Arms suppliers claimed they were promoting peace and security by providing recipients the wherewithal to deter armed aggression, while critics asserted that the major powers simply militarized regional tensions and thereby exacerbated armed conflict in the third world. There is good reason for these divergent assessments; quantitative research suggests that the impact of arms transfers to the third world is probably not uniform, across time or across space.

But skepticism attends the contribution, or potential contribution, of a quantitative approach to the study of the arms trade. The sources of this skepticism are both general and specific. Specific reservations include the quality of arms trade data — measurement error, bias, incompleteness — not to mention the quality of the data used to measure interstate conflict, domestic instability, human rights violation, and other hypothesized correlates of international arms flows. A more general reservation, one expressed not only in reference to the study of the arms trade, is that the generalizability of statistical correlations seems suspect without analyses of the particulars of time and space. That is, how widespread are the statistical patterns?

I have the same reservations. However, on the matter of data quality, my conclusion is that although poorly measured, biased, and incomplete data on arms transfers should make researchers wary of their use for descriptive purposes, and especially for cross-national comparison, statistical analysis of these data is really the only means available to separate the "signal" from the "noise." The main risk here is that the noise drowns out the signal, leading researchers to mistakenly conclude that little correlates with arms transfers (type II errors, as statisticians call them). And much of quantitative research to date, certainly mine, does indeed manifest this problem; results are often weak and inconclusive. On the matter of generalizability, my own reservations have steered me in the direction of time-series analysis, which at least preserves the particulars of space, though usually not those of time. Time-series analysis also plays to the strengths of existing arms transfer data, since some series are better as indicators of trends than they are for making cross-national comparisons (Brzoska and Ohlson 1997, appendix 8).

In this paper I want to address the question of generalizability explicitly. Specifically, I examine the relationship between arms transfers and conflict by all third world states for which data are available. I look at the impact of arms transfers and arms-transfer dependence, as well as the regionally aggregated effects of transfers from the United States and the Soviet Union during the cold war. Before conducting the analyses described here, I knew the bottom-line answer to this question. In my previous analyses, which were already confined to a rather narrow empirical domain and one where we might expect the correlations between arms transfers and regional conflict to be strongest, the statistical results were not uniform. Widening the empirical coverage would probably reiterate this heterogeneity, and it did. Still, the results are worth reporting. First I turn to the effects of arms transfers and arms-

transfer dependence on states' conflictual behavior, and then to regional conflict patterns associated with superpower arms flows.

Arms Transfers, Dependence, and Conflict

In an earlier study of arms transfers and arms-transfer dependence, I estimated their effects on foreign policy conflict for nine third world states engaged in enduring rivalries during the cold war period: Israel, Egypt, and Syria, Iran and Iraq, India and Pakistan, and Ethiopia and Somalia (Kinsella 1998). My argument was that a state's dependence on one or a few suppliers of weaponry will diminish its inclination to engage in conflictual behavior with other states. There are two possible reasons for this. First, although a state's military capacity is enhanced by the acquisition of imported weaponry, a greater degree of dependence on foreign suppliers makes the state susceptible to arms embargoes and other restrictions, and dependence on a few suppliers accentuates that susceptibility. Second, the notion that extra-regional powers intentionally fan the flames of regional conflict by supplying arms to potential or actual belligerents, whether for political or economic reasons, is at best an exaggeration, but for the most part just not true. There is ample evidence to suggest that arms suppliers, including the superpowers, sought to contain regional conflict, even if they were not in the end successful (e.g., Kanet and Kolodziej 1991). Even suppliers that might have benefitted politically or economically from regional wars engaged in what SIPRI (1971) called "restrictive" patterns of arms transfer.

This argument leads to a two-sided hypothesis. On the one hand, arms imports encourage a conflictual foreign policy by enhancing the state's military capacity. On the other hand, arms-transfer dependence diminishes that effect. Therefore, I modeled conflictual foreign policy, *C*, behavior as a multiplicative function of arms transfers, *T*, and arms-transfer dependence, *D*:

$$C = \alpha T^{\beta} D^{\gamma} \mu \qquad (1)$$

where α represents some constant or base level of conflict and μ is a random error component. The model is multiplicative because the effects of arms transfers and transfer dependence are hypothesized to interact; the effect, γ, of dependence is to diminish the otherwise positive effect, β, of arms imports. Equation (1) is never negative, which is appropriate since conflict itself can never be negative. That is, I am not concerned here with the effects of arms transfers and dependence on cooperative events (some conceptualize cooperation and conflict as opposite ends of the same continuum), only their effects on the tendency of states to be more or less belligerent.

Empirical Analysis

My earlier study estimated the unknown parameters α, β, and γ from time series data for nine countries. Here I want to extend the empirical analysis to cover 86 third world states for which data

are available. The conflict series are constructed from all conflictual events — whether verbal hostility or full-scale war — registered in the Conflict and Peace Databank (COPDAB) and the World Event/Interaction Survey (WEIS), the latter as updated by Tomlinson (1993). All conflictual actions undertaken by each third world state and directed toward any other state are weighted according to severity and summed for each year covered by the database: 1948-78 for COPDAB, 1966-91 for updated WEIS. For each country, the COPDAB time series is extended from 1979 to 1991 using forecasts based on the WEIS series.[1]

As an indicator of arms transfers, I use the total number of transfer programs in effect per year. These data come from SIPRI's arms trade registers (SIPRI 1975, Brzoska and Ohlson 1987, SIPRI annual). Each entry in the register represents a single program, regardless of the type or number of weapons involved in the transfer, and is counted for each year that the program was underway, from the year of order until the year of final delivery. I use Catrina's (1988, 199) indicator of arms transfer dependence:

$$\left(\frac{t_1}{T}\right)^2 + \left(\frac{t_2}{T}\right)^2 + \ldots + \left(\frac{t_n}{T}\right)^2$$

where t is the amount of arms imported from supplier $i = (1,2,\ldots n)$ and T is the total amount imported from all n suppliers. Each ratio is squared and summed so that the index ranges between zero and one, with numbers closer to one indicating higher levels of source concentration and thus greater degrees of arms dependence.[2]

Although equation (1) is nonlinear, its parameters may be estimated using linear regression once the time series are transformed into natural logarithms. As in my original study, the independent variables were lagged one year on the assumption that temporal order is a reasonable approximation of the causal order suggested by equation (1). Table 1 shows the parameter estimates for each of the 86 countries.

[Table 1 about here]

Data for only twelve of the 86 countries support the dual hypothesis that the positive impact of arms transfers on conflictual behavior is diminished by arms-transfer dependence. The parameter $ is estimated to be positive and (negative for Bolivia, Brazil, Chile, El Salvador, Gabon, Iraq, Libya, Mauritania, Peru, Saudi Arabia, South Africa, and Trinidad and Tobago. It is interesting to note that

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[1] The weighting index for COPDAB is from Azar and Sloan (1976); for WEIS, I use Goldstein's (1992) index. Forecasting parameters were obtained from bivariate regressions of COPDAB on WEIS for the overlapping years 1966-78. Reuveny and Kang (1996) have demonstrated the soundness of 'splicing' COPDAB and WEIS data in this way.

[2] In the earlier study I also used dollar-valued measures of arms transfers. Since the dependence indicator requires bilateral arms-flow data, which SIPRI does not publish in dollar-value form, I used data acquired directly from the institute. I possess such data only for the nine countries examined in the earlier study, so the wider analysis reported here is based solely on program-count data.

five of these twelve are Latin American countries, and although their respective levels of arms-transfer dependence have varied over time, those periods greatest dependence corresponded with heavier reliance on the United States for arms imports. Other than this, no distinct patterns emerge; support for the dual hypothesis is not isolated, but neither is it widespread. Other countries fit one or the other half of the hypothesis. Data for Ecuador, Nicaragua, Sri Lanka, and Syria show a positive impact of arms imports on conflictual behavior without any offsetting effect of dependence, while data for India, Iran, Kuwait, and Senegal suggest that dependence encouraged restraint, but without any exacerbating effects for arms imports generally. Other results flatly contradict my expectations. Israel, Morocco, Somalia, and Taiwan each show a positive relationship between arms-transfer dependence and the tendency to engage in conflictual foreign policy acts. Dependence did not seem to encourage restraint, and the evidence here is most consistent with the notion of the reverse leverage often exercised by arms recipients in patron-client relationships — or "tails wagging dogs" (see Windsor 1991).

Superpower Arms Transfers and Regional Conflict

In other studies I have disaggregated arms imports and examined the effects of American versus Soviet arms transfers to states engaged in lasting interstate rivalries. One of the patterns to emerge from those studies was a tendency for the recipients of Soviet arms to engage in more belligerent behavior and/or incite the same on the part of their rivals, while the reverse tendency seemed to operate among recipients of US arms. The evidence in this regard is not overwhelming, but it is significant in the case of rivalries between Israel and its Arab neighbors and between Iran and Iraq (Kinsella 1994, 1995; Kinsella and Tillema 1995). In this section of the paper I return to this question — does the impact of arms transfers on regional conflict depend on their source? — but here again I expand the empirical scope of my earlier analyses by examining several regions in the third world.

My previous work looked at rivalrous dyads; now I want to look at the level of conflict characteristic of entire regions in the third world. Efforts have been made to define meaningful aggregations of states below the level of the international system. Early examples include the notion of "subordinate systems" (Brecher 1963) and of international or regional "subsystems" (Haas 1970; Thompson 1973; see also Russett 1967; Cantori and Spiegel 1970). The domain of interstate relations encompassed by these conceptualizations is fairly broad, which naturally has led to disagreements over subsystem or regional boundaries. More recent efforts, often by analysts of Third World security, have tended to focus more narrowly on political and military relations, and have in the process achieved some measure of consensus.

Barry Buzan's (1991: chapter 5) framework for analyzing Third World security is built around his notion of "security complexes." A regional security complex is defined as a geographically proximate group of states with closely linked security concerns, and usually entails "a high threat/fear which is felt mutually among two or more major states" (193-194). These complexes typically include an array of minor states, although their impact on regional security dynamics is secondary. Following Waltz (1979), Buzan conceives of security complexes as subsystems — "miniature anarchies" with identifiable patterns of interaction (mostly enmity) and distributions of power (209). Political and military interac-

tion is more intense among the states comprising the complex than between members and nonmembers. Geographical boundaries are thus delineated by the "relative indifference" shown to outside developments (193).

Others have adopted analytical frameworks similar to Buzan's for purposes of Third World security analysis (e.g., Ayoob 1995; Wriggins, et al. 1992). These studies have sought to emphasize, among other things, the role of extra-regional powers, which highlights the distinction between higher and lower level security complexes. Lower level (i.e., regional) complexes consist of states with relatively limited power-projection capabilities, and therefore have relatively little impact on security relations beyond the region. Higher level complexes involve the great powers, and are not perforce geographically bounded. The dynamics of higher level security complexes reverberate throughout the international system, penetrating or impinging upon regional complexes. This may take many forms, but most analysts agree that arms transfers have been "the characteristic tool of intervening great powers in almost every Third World security complex" (Buzan 1991: 213; see also Ayoob 1995: 100-102).

Alternative Predictions

The consequences of arms transfers are not necessarily uniform; regions may differ in response to foreign arms. Buzan (1991), for example, is not terribly specific as to the likely impact of outside intervention in the complexes he identifies. Although he points to arms transfers as the most common means by which lower level complexes are penetrated by higher level ones, he is ambivalent about the net effect. His most precise statement is the following:

> Where penetration from higher to lower levels is unipolar,... the consequence is suppression of local conflicts.... Bipolar penetration suppresses local conflict if it takes the form of overlay, as in Europe; but if it is just alignment, as in much of the Third World, then it amplifies them.... Multipolar penetration... may be messy, but it is less intense, and gives states greater latitude in their political relations with outside powers. (Buzan 1991: 208)

There are two issues to consider here. The first is the *intensity* of outside penetration, which is what Buzan alludes to in contrasting "overlay" (i.e., the direct presence of an external power) and "alignment." The second is the *polarity* of outside penetration, or the number of external powers competing for regional influence.

Another consideration is supplier effect. Arms from one source are not necessarily politically equivalent to arms from another, especially from different superpowers. The Soviet Union was openly committed to help promote revolutionary change during the cold war era; the United States affiliated mostly with the existing world order and with conservative local powers (e.g., see Walt 1987 on alignments in the Middle East). These alignment propensities were reflected rather clearly in the superpowers' arms supply policies, giving rise to a pattern we might call "supplier-recipient congruence" (Kinsella 1994). One of the essential premises of most realist theories of international relations is that the actions of status quo powers like the United States ought to have been more conducive to international stability than those of revolutionary or revisionist states like the Soviet Union. The same

should be true of status quo and revisionist third world states when it comes to regional stability. One expectation might be that typical superpower alignments reinforced these dynamics of local competition. Some (but not all) of the findings from my previous studies are consistent with this proposition in regard to the different effects of the two superpowers' arms supplies.

In short, we have two alternative sets of predictions. Buzan's propositions are essentially structural: the impact of arms transfers depends on whether the region is characterized by outside interference by major powers, the intensity of that interference, and the number of major power involved. A second set of predictions is what Waltz (1979) would call "reductionist": the impact of arms transfers depends on the nature of the state supplying them. Given that the United States and Soviet Union sought out certain types of allies or clients in the third world, and that certain types of third world states sought out them, we expect that the regional effects of arms flows varied according to their superpower source.

Empirical Analysis

In examining regional effects it becomes possible to test the relationship between arms transfers and military conflict per se, as opposed to the whole spectrum of conflictual behavior from verbal hostility to full-scale war. The more inclusive measure of conflict used in the previous section was necessary because most states in the third world were unlikely to be involved in overt military conflict in any given year. When tallying the incidence of specifically military conflict, annual regional aggregates do not present us with the long series of zeros that complicates the same kind of analysis at the state level.

I estimate two simple additive models of the initiation of military conflict:

$$M_I = \alpha + \beta t + \gamma A_T + \delta M_O + \mu \quad (2)$$

$$M_I = \alpha + \beta t + \gamma_1 A_A + \gamma_2 A_S + \delta M_O + \mu \quad (3)$$

Equation (2), which I will call model A, can be used to evaluate the structural propositions. Initiated military conflict, M_I, is expressed as a function of total arms-transfer programs, A_T. As before, I suspect that the acquisition of arms, generally speaking, increases the propensity of recipients to engage in conflictual behavior, but the net effect at the regional level may depend on the nature of outside involvement in the region. Therefore I do not attach any *a priori* expectation as to the estimate of γ, which should vary according to the structural characteristics of the region under examination.

Equation (3), model B, treats initiated military conflict as a function of American programs, A_A, and Soviet programs, A_S, and thus allows me to evaluate the source-based (reductionist) propositions. Taking a cue from my previous results and an admittedly cursory application of realist theorizing on status quo and revisionist states, I expect that the estimate of γ_1 will be negative and γ_2 positive. Finally, while I do not attempt to account for the various grievances which give rise to armed conflict, both models do control for ongoing military conflict, M_O, and thereby make some allowance for recently high levels of interstate hostility, whatever the cause. The models also include both a constant

and a trend term, *t*, the latter to account for any linear increase or decrease in the propensity of states to engage in military intervention.

Buzan (1991), Ayoob (1995), and other students of Third World security have argued that the intensity of state interaction within certain regions of the Third World qualifies them as subsystems or security complexes. These, they suggest, may serve as useful units of analysis. Such interaction patterns do not apply to all geographic regions composing the Third World, but Buzan has identified five which together do in fact encompass most states: South America, the Middle East, Southern Africa, South Asia, and Southeast Asia. I adopt this framework as a guide for my regional analysis (see Table 2).

[Table 2 about here]

Arms transfers are measured in the same way as they were in the previous analysis, i.e., as program counts. Measures of military conflict come from Tillema's (1991) Overt Military Intervention (OMI) database, which includes 385 interventions initiated by third world states between 1950 and 1991. An overt military intervention represents combat-ready military operations openly undertaken by a state's regular military forces withing a foreign territory. Annual time series are constructed for each of the five regions. Table 3 shows, for the entire 1950-1991 period, numbers of arms transfer programs initiated with Third World states, with separate tallies for American and Soviet programs, as well as numbers of overt military interventions undertaken by Third World states. The Middle East is characterized by both the highest level of arms-transfer activity and the most frequent incidence of military intervention. Of course, it is also the largest of the security complexes identified by Buzan (1991). Southeast Asia too has experienced rather high levels of both arms transfers and military intervention. South America is noteworthy for the lopsidedness of American involvement in arms supply, and for its relatively few interventions.

[Table 3 about here]

Recalling Buzan's suggestion that arms transfers have been the "characteristic tool of intervening great powers," the regional totals reported in Table 3 give a rather crude indication of the degree of outside penetration. One-sided penetration is most evident in the case of US transfers to South America, although "overlay" may be overstating the American role somewhat. Still, if arms transfers have a stabilizing effect on regional conflict, then, following Buzan, that effect is more likely in South America. The Middle East, on the other hand, approximates bipolar penetration: American and Soviet transfers to the region have occurred at high levels, and have been relatively balanced. Here we expect arms transfers to be particularly destabilizing. Patterns displayed by the other three security complexes are less stark, but superpower penetration of Southeast Asia has been rather unbalanced in favor of the United States whereas penetration of South Asia is more balanced. Southern Africa is the least penetrated security complex.

I test these structural propositions by estimating model A for each of the five regions. Since application of linear regression to analyze event counts yields inefficient parameter estimates, I use a Poisson regression model in which maximum likelihood estimates are based on a probability distribution

more appropriate to event count data (King 1989).[3] Table 4 lists the parameter estimates; for model A they appear in the left column under each regional heading. The results are not what we expect based on Buzan's statements. If arms programs helped to suppress the incidence of military belligerency in South America due to the predominance of a single outside power, the United States, then the estimated coefficient should be negative. In fact, it is positive and statistically significant, suggesting the exact opposite effect. For the Middle East, where arms transfers should have encouraged the initiation of military intervention due to competitive involvement by both superpowers, the results again suggest the opposite: transfers from all sources had a pacifying effect. And in Southern Africa, where outside penetration was not substantial in any form, arms programs do seem to have had an impact on military intervention, a positive one. Only in the case of Southeast Asia do we find support for these propositions. Arms programs, ongoing in the context of relatively unbalanced outside involvement, served to dampen the incidence of military intervention.

[Table 4 about here]

Overall, then, there is merely limited support for so simple a structural explanation of arms transfer effects as I have considered. Examination of such characteristics of outside penetration as intensity and polarity yields expectations about the impact of arms transfers which are inconsistent with, and even contradict, the empirical evidence. What if we examine American and Soviet transfer programs separately? Although Buzan's discussion does not suggest that the source of outside interference (or, specifically, the source of arms supplies) matters much for regional security dynamics, the difference between American and Soviet arms programs is quite apparent in this regard. Judging from the estimates for model B, in every region except for South America, Soviet arms programs exacerbated the incidence of military intervention. In South America, of course, the Soviets were hardly active at all in supplying weaponry, so it is not surprising that Soviet transfers had no impact there one way or the other. American programs, on the other hand, while substantial in number in all regions except Southern Africa, had no exacerbating effect on regional conflict. The impact was nil in all regions but Southeast Asia, and there the effect was a stabilizing one.[4]

Although equations (2) and (3) are linear (unlike equation (1)), the Poisson regression model does impose a nonlinear (exponential) form appropriate for count data.[5] Interpreting the parameter

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[3] Recall that the analysis in the previous section also used an events-based measure of conflict behavior, but that these were weighted according to severity. King (1989) has stated that Poisson regression is also appropriate when analyzing weighted events, but, frankly, I am as yet uncertain about its appropriateness for estimating a nonlinear model like equation (1). Given my ignorance on this score, I decided to stay with ordinary least squares regression when conducting my examination of arms-transfer dependence and conflict.

[4] My previous studies uncovered similar differences in the impact of U.S. and Soviet arms upon some, but not all, enduring rivalries (Kinsella, 1994, 1995; Kinsella and Tillema, 1995). Enduring rivalries represent narrowly defined, persistently hostile communities of two or a few neighboring states. Therefore, the "supplier effect" is manifest at this lower level of aggregation and not merely among regional security complexes as Buzan defines them.

[5] That is, $E(M_I) = \exp(\alpha + \tau t + \beta_1 A_A + \beta_2 A_S + \gamma M_O)$. This function is never negative, making it an appropriate model for event counts, which are also never be negative.

estimates is therefore not as straightforward as with linear regression, but we can compute the effects of "typical" changes in the independent variables, assuming that we equate these with standard-deviation changes and that we hold other independent variables constant at their mean values. The most pronounced effect of Soviet arms transfer programs occurred in the Middle East, where the average number of military interventions initiated per year was 4.1. A standard deviation increase in the number of Soviet programs (28.3) is associated with an additional 1.2 interventions, or an increase of 28 percent. For Southern Africa, South Asia, and Southeast Asia, standard deviation increases in Soviet arms programs are associated with 0.3, 0.4, and 0.6 additional military interventions, respectively. While smaller in absolute terms than the impact in the Middle East, these changes constitute roughly 50 percent increases relative to the means for the three regions. In Southeast Asia, the effect of Soviet arms is offset by that of American arms: a standard deviation increase is associated with about one fewer intervention in a typical year (an 83 percent decrease).

Conclusion

My analysis of arms transfers and all forms of conflictual behavior at the state level suggests that the effects of arms imports are not widespread in the third world, but where they do have an impact it is to increase the belligerency of recipients. There is a countervailing effect, however: for twelve of the sixteen countries inclined to strike more conflictual foreign policy postures, that tendency was diminished with increased levels of arms-transfer dependency. This suggests that the fear that sanctions will be imposed by important arms suppliers exercises a restraining influence on states otherwise encouraged by arms acquisitions to engage in hostile behavior.

At a higher level of aggregation, one at which it becomes possible to examine the relationship between arms transfers and overt military interventions, the consequences of arms flows to regional security complexes is not uniform either. The sum total of arms imports by regional states does not affect regional stability in any consistent way. Taken as an aggregate, two regions appear less stable, two more stable, and one unchanged as a result of external interference in the form of arms supply. Moreover, these regional patterns do not accord with what limited structural theorizing has been done regarding the likely impact of outside interference in regional security complexes — i.e., recipient behavior encouraged or checked by the intensity and polarity of major power involvement.

Predictions deriving from realist propositions about the foreign policy behavior of status quo and revisionist states fare better in light of the empirical evidence. The tendency was for the United States and Soviet Union to align with, and supply arms to, like minded states in the third world. From this comes the expectation that American arms transfers ought to have been more conducive to regional stability; Soviet transfers, the opposite. There is some support for this notion. Although weapons flows from the United States did not actually enhance stability in most regions, they seemed to do no further harm. Soviet supplies, on the other hand, were associated with subsequently increased levels of military conflict in four of the five regions analyzed.

There is not much evidence, at the state level of analysis, that arms imports are associated with a reduction in recipients' hostility toward other states. Rather, where there is in fact an increase in

hostility (and this is not widespread), this seems to have been offset somewhat by the recipients' dependence on a fewer number of arms suppliers. Presumably, had I disaggregated arms transfers and examined the effects of American and Soviet arms transfers on recipient behavior (as opposed to regional outcomes), the results would have pointed in the same direction. This analysis is worth doing, at least for states that have received weapons from the superpowers, but the implication is that one or both of two state-level processes account for the findings at the regional level. First, it could be that, among those states that tended to adopt more conflictual foreign policies in part due to arms acquisitions, the countervailing restraints deriving from dependence on the United States were more pronounced than those deriving from dependence on the Soviet Union. If the net effect among U.S. dependents was on balance a wash, then my findings at the regional level are readily interpretable in this light.

Another possibility is that the illuminating state-level processes are to be found not among recipients, but among those states most likely to clash with them. If arms imports deter aggression, which of course is what arms merchants tell us (and may even believe), then the net effect on conflict at the regional level could in fact be a decrease in armed conflict. It could also be an increase in conflict if the deterrence of non-recipient aggression remained less important than the incitement of aggression by recipients; or the impact on the regional level of conflict could be nil if these two effects balanced out. Deterrence is consistent with my regional results, but this state-level process remains hidden from view when the unit of analysis is the security complex, and my state-level analysis examined only the behavior of arms recipients, not their rivals or potential rivals. Studying the effects of arms transfers on non-recipients is also worth doing; initial forays have been suggestive but far from conclusive given persistent data limitations and a confined empirical scope (e.g., Kinsella and Tillema 1995).

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Table 1 Arms Transfers, Dependence, and Conflict, 1948-1991

country	*transfers* $\hat{\beta}$	(p)	*dependence* ζ	(p)	*constant* ln(σ)	(p)
Afghanistan	0.698	(.18)	-0.511	(.41)	2.806	(.01)
Algeria	-0.337	(.31)	0.562	(.21)	6.297	(.00)
Argentina	0.808	(.11)	-0.180	(.82)	3.204	(.00)
Benin	0.777	(.62)	-0.611	(.72)	0.797	(.60)
Bolivia	**0.970**	**(.01)**	**-1.189**	**(.01)**	**2.213**	**(.01)**
Botswana	0.040	(.97)	0.388	(.80)	5.081	(.09)
Brazil	**1.202**	**(.00)**	**-1.666**	**(.00)**	**-0.562**	**(.68)**
Burma	-0.227	(.80)	0.305	(.79)	1.564	(.51)
Burundi	2.633	(.23)	-2.917	(.22)	-0.615	(.78)
Cambodia	-0.054	(.89)	0.064	(.90)	6.169	(.00)
Cameroon	0.547	(.40)	-0.878	(.29)	1.335	(.39)
Central African Republic	0.943	(.60)	-0.721	(.70)	2.033	(.11)
Chad	0.487	(.48)	-0.325	(.68)	4.122	(.00)
Chile	**0.835**	**(.03)**	**-1.343**	**(.01)**	**1.397**	**(.36)**
Columbia	0.843	(.45)	-1.720	(.12)	1.123	(.56)
Congo	0.641	(.42)	-0.579	(.51)	3.494	(.00)
Costa Rica	-0.096	(.95)	0.324	(.84)	3.762	(.01)
Cuba	0.821	(.13)	-2.111	(.40)	3.245	(.00)
Dominican Republic	-0.178	(.86)	0.098	(.93)	1.735	(.29)
Ecuador	1.039	(.00)	0.192	(.61)	2.443	(.01)
El Salvador	**2.196**	**(.05)**	**-2.146**	**(.09)**	**0.811**	**(.61)**
Gabon	**2.048**	**(.02)**	**-3.119**	**(.00)**	**-3.324**	**(.10)**
Ghana	0.399	(.30)	-0.388	(.39)	3.774	(.00)
Guatemala	-0.136	(.86)	0.196	(.82)	3.980	(.00)
Guinea	-0.403	(.73)	0.253	(.84)	2.327	(.06)

Table continues

Table 1 continued

country	*transfers* $\hat{\$}$	(p)	*dependence* ζ	(p)	*constant* ln(ϖ)	(p)
Guyana	0.279	(.76)	-0.465	(.65)	2.199	(.12)
Haiti	-0.682	(.63)	0.378	(.80)	-0.481	(.76)
Honduras	1.025	(.26)	-0.186	(.86)	1.283	(.37)
India	-0.346	(.22)	-1.023	(.06)	6.910	(.00)
Indonesia	0.203	(.54)	0.267	(.49)	5.316	(.00)
Iran	0.099	(.78)	-1.235	(.01)	4.877	(.00)
Iraq	**0.665**	**(.00)**	**-0.767**	**(.00)**	**4.458**	**(.00)**
Israel	0.198	(.49)	0.666	(.02)	7.993	(.00)
Ivory Coast	1.686	(.21)	-2.322	(.13)	-1.077	(.59)
Jamaica	-0.054	(.97)	-0.305	(.87)	-2.746	(.13)
Jordan	0.161	(.11)	-0.109	(.42)	6.100	(.00)
Kenya	-0.249	(.49)	0.481	(.15)	6.317	(.00)
Kuwait	-0.353	(.13)	-1.058	(.00)	5.191	(.00)
Laos	-0.299	(.69)	0.994	(.26)	4.104	(.00)
Lebanon	0.316	(.15)	-0.188	(.60)	5.927	(.00)
Lesotho	-0.303	(.90)	0.589	(.81)	4.223	(.04)
Liberia	0.352	(.79)	0.131	(.93)	2.513	(.16)
Libya	**1.207**	**(.00)**	**-0.433**	**(.00)**	**1.275**	**(.33)**
Madagascar	0.308	(.78)	-0.486	(.69)	0.019	(.99)
Malawi	0.621	(.29)	-0.781	(.23)	2.537	(.00)
Malaysia	-5.661	(.01)	-2.389	(.25)	13.808	(.00)
Mali	-0.496	(.68)	0.437	(.73)	2.563	(.07)
Mauritania	**1.572**	**(.06)**	**-2.009**	**(.04)**	**-0.538**	**(.76)**
Mexico	0.640	(.38)	-1.536	(.12)	2.625	(.02)
Mongolia	1.189	(.44)	-1.713	(.31)	-2.914	(.07)

Table continues

Table 1 continued

country	*transfers* $\hat{\$}$	(p)	*dependence* ζ	(p)	*constant* ln(ϖ)	(p)
Morocco	0.634	(.31)	1.909	(.03)	5.883	(.00)
Nepal	0.728	(.59)	-0.582	(.69)	2.751	(.07)
Nicaragua	1.582	(.00)	-0.923	(.18)	1.643	(.16)
Niger	-0.966	(.17)	1.211	(.49)	2.721	(.17)
Nigeria	-0.278	(.84)	-1.881	(.31)	2.779	(.19)
North Korea	-0.076	(.88)	0.427	(.79)	5.710	(.00)
Oman	-0.609	(.83)	-1.249	(.66)	3.109	(.67)
Pakistan	0.221	(.32)	0.231	(.51)	5.765	(.00)
Panama	-0.407	(.67)	0.660	(.57)	4.033	(.04)
Paraguay	0.825	(.34)	-1.092	(.28)	-0.297	(.85)
Peru	**0.630**	**(.09)**	**-0.904**	**(.07)**	**1.965**	**(.15)**
Philippines	0.185	(.52)	-0.102	(.79)	4.576	(.00)
Rwanda	-1.621	(.22)	1.770	(.22)	3.034	(.06)
Saudi Arabia	**0.148**	**(.10)**	**-0.266**	**(.08)**	**4.861**	**(.00)**
Senegal	0.943	(.12)	-1.139	(.10)	2.631	(.00)
Sierra Leone	0.177	(.92)	.04986	(.97)	3.525	(.11)
Singapore	-0.022	(.98)	3.245	(.39)	4.417	(.15)
Somalia	-0.324	(.12)	0.465	(.08)	6.055	(.00)
South Korea	0.140	(.64)	-0.070	(.86)	5.498	(.00)
South Africa	**1.477**	**(.01)**	**-1.964**	**(.02)**	**-0.969**	**(.64)**
Sri Lanka	0.932	(.06)	-0.676	(.24)	2.310	(.04)
Sudan	0.215	(.59)	-0.329	(.53)	4.768	(.00)
Taiwan	0.302	(.29)	2.231	(.00)	5.076	(.00)
Tanzania	0.026	(.80)	-0.018	(.88)	5.850	(.00)
Thailand	0.379	(.21)	-0.310	(.47)	3.608	(.00)

Table continues

Table 1 continued

country	*transfers* $\hat{\$}$	(p)	*dependence* ζ	(p)	*constant* ln(η)	(p)
Syria	0.483	(.00)	-0.099	(.74)	5.974	(.00)
Togo	-0.352	(.80)	0.973	(.57)	3.453	(.25)
Trinidad and Tobago	**4.420**	**(.00)**	**-5.272**	**(.00)**	**-6.002**	**(.00)**
Tunisia	-0.157	(.30)	0.199	(.30)	5.727	(.00)
Uganda	0.103	(.44)	-0.140	(.40)	5.525	(.00)
Uruguay	-0.965	(.29)	-1.306	(.17)	4.686	(.00)
Venezuela	0.533	(.38)	-0.838	(.32)	2.108	(.36)
Yemen	-0.213	(.50)	0.246	(.53)	5.683	(.00)
Zaire	0.097	(.21)	-0.095	(.36)	5.468	(.00)
Zambia	-0.039	(.59)	0.058	(.51)	6.201	(.00)
Zimbabwe	0.076	(.52)	0.090	(.61)	5.028	(.00)

Note: Exact period covered for each country depends on data availability. Results in boldface are those that support dual hypotheses. P-values associated with the hypothesis tests appear in parentheses.

Table 2 Security Complexes in the Third World

Security Complex	Member States
South America	Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Guyana, Paraguay, Peru, Suriname, Uruguay, Venezuela
Middle East	Algeria, Bahrain, Chad, Djibouti, Egypt, Ethiopia, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Mali, Mauritania, Morocco, Niger, Oman, Qatar, Saudi Arabia, Somalia, Sudan, Syria, Tunisia, United Arab Emirates, North Yemen, South Yemen
Southern Africa	Angola, Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Zambia, Zimbabwe
South Asia	Afghanistan, Bangladesh, India, Nepal, Pakistan, Sri Lanka
Southeast Asia	Brunei, Cambodia, Indonesia, Laos, Malaysia, Philippines, Singapore, Thailand, North Vietnam, South Vietnam

Note: Classification is based on Buzan (1991: Figure 5.1).

Table 3 Arms Programs and Military Interventions in the Third World, 1950-1991.

	All Programs	American Programs	Soviet Programs	Military Interventions
Third World	10,452	3554	1913	385
South America	1700	765	27	13
Middle East	3766	967	975	174
Southern Africa	439	29	139	22
South Asia	774	155	217	33
Southeast Asia	1341	639	144	53
Other Third World	2432	999	411	90

Note: Cell entries are totals for the 1950-1991 period. Arms transfer programs are compiled from SIPRI (1975), Brzoska and Ohlson (1987), and SIPRI (annual). Military interventions are compiled from Tillema (1991).

Table 4 Arms Transfers and Regional Conflict, 1950-1991

	South America		Middle East		Southern Africa		South Asia		Southeast Asia	
	Model A	Model B	Model A	Model B	Model A	Model B	Model A	Model B	Model A	Model B
All Programs ($\hat{\$}$)	0.017**		-0.010**		0.050**		-0.005		-0.020**	
	(0.007)		(0.004)		(0.018)		(0.012)		(0.013)	
American Programs ($\hat{\$}_1$)		0.017		0.002		-0.117		0.005		-0.064**
		(0.020)		(0.008)		(0.233)		(0.029)		(0.039)
Soviet Programs ($\hat{\$}_2$)		0.114		0.010*		0.055**		0.044**		0.060**
		(0.109)		(0.008)		(0.031)		(0.026)		(0.031)
Ongoing Interventions ($\hat{.}$)	-7.540**	-7.118	-0.022	-0.043	0.353*	0.343*	-0.089	-0.090	-0.015	-0.042
	(0.000)	(17.018)	(0.041)	(0.044)	(0.247)	(0.239)	(0.181)	(0.179)	(0.069)	(0.076)
Constant ($"$)	4.152**	1.374	-4.625**	1.685*	-1.218	-1.888	-0.244	2.701*	-0.902	-1.348
	(0.108)	(2.411)	(1.927)	(1.323)	(2.399)	(2.036)	(1.652)	(2.031)	(1.501)	(1.452)
Trend ($\hat{*}$)	-0.098**	-0.046*	0.113**	-0.009	-0.019	0.003	0.004	-0.052*	0.035	0.045*
	(0.012)	(0.035)	(0.036)	(0.025)	(0.038)	(0.031)	(0.029)	(0.037)	(0.033)	(0.035)
Log-likelihood	-25.1	-25.7	81.9	76.2	-26.6	-27.3	-40.3	-39.3	-37.7	-33.4
N	42	42	42	42	42	42	42	42	42	42

Note: The dependent variable is the number of military interventions initiated. Numbers in parentheses are heteroskedastic-consistent standard errors.

** .05 significance * .10 Significance