United States Arms Transfer Decision-Making: Determinants of Sales versus Aid

The United States is the most prevalent exporter of arms since the end of the World War II, but little quantitative research exists on its decisions to export. Instead, the literature focuses on the effects of their arms transfers (Blanton 2000, 2005; Sanjian 1999, 2001). Of course, a broader literature on arms transfers exists that focuses on United States decision-making from either a historical or qualitative perspective (Hammond et al 1983; Krause 1991; Mott 2002), which is a subset of the general arms transfer decision-making literature (Brauer 1991; Frank 1969; Harkavy 1975; Smith, Humm, and Fontanel 1985). All of the literature agrees upon the broad motivation for exporting arms – security, influence, and economics – which I focus on here.

Strategic arms transfers occur when the exporter believes their overall security is enhanced by providing friendly governments and/or allies with arms (Cahn 1979; Eikenberry 1995; Stanley and Pearton 1972). Influence seeking transfers occur when the exporting government believes they can affect the importer's domestic or foreign policy behavior (Catrina 1988; Krause 1991, 1992; Sanjian 2001). Economic motivated transfers occur because arms industries are not economically efficient without export – states that produce major weapons systems export them (Kapstein 1992; Kinsella 2002; Pearson 1994; Sanjian 1991).

One issue is that it is rare to separate the different types of export – sales and aid. Sales provide direct economic benefits to industries with an influx of hard capital. Aid provides indirect economic benefits to exporters via economies of scale, reduced learning curves, and lower production line start-up costs (Cahn 1979). Historically, the major powers are the largest providers of military aid and the United States and Soviet Union represent a supermajority, but since the end of the Cold War the United States has largely stood alone as a provider of military aid.

In this article, I examine the determinants of United States arms transfers examining sales separate from aid. I begin by discussing factors that affect decision-making of the United States based on security, political, and economic considerations. Then I describe the data and test before reviewing the results.

United States Decision-Making

The security interests of the United States revolve around explicit and implicit ties with other states. Defense pacts are an explicit tie between states where a state is obligated to join another that has been attacked by a third-party. Due to the United States status as a superpower they are desired as an alliance partner, which means they can be selective. They should then seek alliances with states that serve a strategic interest and have greater capabilities to avoid having to join an undesirable conflict with a weak partner. Because allies typically have a larger economy means they also have the resources to purchase arms. Moreover, if alliance partners use the same types of weapons there is an interoperability of forces, increasing the effectiveness of the alliance (Cahn 1979; Pearson 1989). Defense pact members will receive arms from the United States, but transfers will be more likely to be sales rather than aid.

Implicit ties represent the United States strategic interests in states based on geopolitical importance, as opposed to internal characteristics of the state. One indicator that affects United States decision-making is land contiguity with a communist state. During the Cold War weapons

were often transferred to states in order to prevent Soviet incursions if they were deemed too risky to enter a defense pact with. While the United States disdain towards communist states did not end with the Cold War it was reduced overall. With an exception of the European buffer states, communist contiguous states were mostly in less developed regions, which means economic resources were not always available to purchase weapons. States contiguos with communist countries will receive arms from the United States, but more arms will be provided through aid rather than sales.

Political relationships between the United States and potential arms importers are related to implicit ties. Three types of states are considered: democracies, autocracies, and communist states. The obvious expectation is that communist state should not be eligible for arms from the United States because of the bipolar system during the Cold War, but they do receive some over time. The other obvious expectation is that democracies should be more likely to receive arms than autocratic states and in greater amounts, but empirically autocratic states consistently receive arms from the United States – particularly during the Cold War. While there are reasons to provide arms to autocratic states and certain communist states related to gaining influence there is greater motivation to provide democracies with arms in order to support political allies, particularly with sales as these weapons typically possess greater capabilities than donated weapons.

Economics is a driving force in the arms trade for both the exporter and importer; but in a single state study, the economics of the importer are more important. States with larger economies have more interests and greater resources available to protect them. These states should want higher quality weapons, which are often not available through aid. The implication is that states with more resources are eligible for the purchase of arms from the United States and in larger amounts. The alternative explanation, however, is that states with more resources are also more likely to have domestic arms industries. Either way, the United States will expect states to purchase arms if they have the resources to do so.

Data and Method

The dependent variables come from government reports via two different agencies. The Federation of American Scientists website hosts the military sales data that originally came from the now defunct Defense Security Cooperation Agency. The reports measure transfers from the United States in current thousands of US$ between 1950 and 2008. USAID data is used for military aid between 1950 and 2008 that is measured in constant millions 2008 US$. Both sets of data are converted into actual dollars – the military sales data are first converted into 2008 constant US$ for consistency in measurement – before adding one and taking the natural log of the value.

The independent variables come from a variety of sources commonly used in the peace science and conflict research literature. Defense pacts are measured as one if this type of alliance is present and the data come from the Alliance Treaty and Obligation Project (Leeds et al 2002). Communist, autocracy, and democracy are coded as one for the relevant government type. The autocracy and democracy categories are drawn from the Polity IV Project (Marshall, Gurr, and Jagger 2010) and states with a polity score greater than or equal to seven are considered

democracies. Communist contiguity is coded as one if the importer is land contiguous with a communist state. GDP and GDP/pc of the importer are coded using data from Gleditsch (2002). These values are real dollars plus one and the natural log is taken in a similar manner to the arms data.

I include time period, trade, and conflict status as controls. The time periods are Cold War, post-Cold War, and post-9/11. Trade is from Gleditsch (2002) and is transformed in a similar manner as the GDP data. The conflict data for war, conflict, civil war, and civil conflict come from the Correlates of War project. The descriptive statistics of the variables are in Table 1.

I use Heckman models to account for the selection effects that are present in arms transfer decision-making. Selection models are appropriate as Blanton (2005) states that with foreign military sales the United States approves states to be eligible for exports before determining the amount of the sale. The first stage of the model is a binary probit where a value of "1" represents that weapons were transferred in the relevant form; "0" represents no transfer. The observations from the first stage where a transfer occurred are the sample for the second stage. The second stage is an OLS where the dependent variable is the value of the transfer that accounts for the selection effects in the first. The same set of variables cannot be used in both stages due to correlation issues with the inverse Mills ratio that accounts for the selection effects between the two stages.

Results and Conclusion

The results of the tests are presented in Table 2. The transfer stage variables representing strategic interests – defense pact and communist contiguous – generally match expectations. The presence of a defense pact increases the likelihood of a transfer for both sales and aid, but the substantive effect is stronger for sales. Communist contiguity is only significant in the aid model, which is consistent with the argument. Aid is typically older models or used weapons and the United States has a motivation to support these states, but not necessarily with modern arms. In the amount stage, the defense pact coefficients show the same pattern in sign and substantive effect. Communist contiguity shifts, however, where the aid coefficient is insignificant and the sales coefficient is negative. The implication is that if a communist contiguous state is eligible for a sale they will receive lower amounts of arms than sales to non-communist contiguous states.

The baseline category for the regime variables is democracy. The transfer stage shows that autocracies and communist states are less likely to be approved for sales than democracies, which is expected. With aid, however, autocracies are statistically indistinguishable from democracies while communist states are less likely to receive aid. In the amount stage both communist coefficients are insignificant while only the autocracy aid coefficient is significant and positive. The latter result is interesting as it shows that if an autocratic state makes it past the gatekeeping stage for military aid, the amount they will receive is larger a democracy will, all else equal. The implication is that while democratic regime similarity leads to pacific relationships (e.g. the democratic peace), it does not necessarily lead to a strong arms relationship, which is surprising. Alternatively, by providing aid to autocratic states the United States may be trying to exert influence over the importer's domestic or foreign policy behavior.

With the importer economic variables, GDP is insignificant in both models in the transfer stage while GDP per capita is negative and significant. The explanation for the effect of GDP per capita for sales in the transfer model is not that states with wealthier societies are not eligible for United States arms, but that these states are also more likely to have their own arms industries. The negative relationship in the aid model suggests that either the United States does not want to give away weapons to states that can afford them or the importer wants better quality weapons. In the amount stage, the GDP coefficients are positive and significant showing that even though there is no effect in the first stage, if states with greater economic resources are eligible for sales or aid they will receive more weapons than other states, all else equal. A similar effect happens with GDP per capita in the sales model – even though states with wealthier societies are less likely to purchase arms from the United States, if they do they will purchase larger amounts than poorer states all else equal.

This article shows that are some clear differences between in the decision-making process of the United States to transfer weapons as sales or aid. The next step beyond looking at sales and aid is to look at the type of sale (e.g. weapons versus construction) and the type of aid (e.g. weapons versus training or education) in order to determine the differences in decision-making and how the provision of one type may lead to the provision of another type.

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Table 1: Descriptive Statistics

	Minimum	Maximum	Mean
Military Sales	0	30.96	8.93
Military Aid	0	23.03	7.74
Defense Pact	0	1	0.31
Communist Contiguous	0	1	0.16
Autocracy	0	1	0.53
Communist	0	1	0.10
GDP (Log)	18.68	29.86	24.14
GDP/pc (Log)	4.89	13.36	8.23
Cold War	0	1	0.63
Post-9/11	0	1	0.16
Trade (Log)	0	27.08	19.08
War	0	1	0.04
Conflict	0	1	0.20
Civil War	0	1	0.05
Civil Conflict	0	1	0.10

N= 7868

Table 2: Heckman Model of United States Arms Transfers

	Transfer Stage		Amount Stage	
	Sales	Aid	Sales	Aid
Defense Pact	0.42**	0.37**	2.26**	1.41**
	(0.04)	(0.04)	(0.33)	(0.12)
Communist Contiguous	0.08	0.25**	-1.84**	0.12
	(0.05)	(0.04)	(0.36)	(0.12)
Autocracy	-0.19**	-0.02	0.02	0.31**
	(0.04)	(0.04)	(0.31)	(0.11)
Communist	-1.52**	-1.18**	-0.05	-0.57
	(0.07)	(0.08)	(1.32)	(0.38)
GDP (Log)	0.02	-0.02	0.82**	0.59**
	(0.01)	(0.01)	(0.12)	(0.04)
GDP/pc (Log)	-0.22**	-0.37**	1.08**	-0.11
	(0.02)	(0.02)	(0.16)	(0.07)
Cold War	-0.09*	-0.29**	4.75**	1.19**
	(0.04)	(0.04)	(0.33)	(0.12)
Post-9/11	-0.60**	-0.09	-13.30**	0.62**
	(0.05)	(0.05)	(0.45)	(0.14)
Trade (Log)	0.12**	0.09**	0.79**	-0.06
	(0.01)	(0.01)	(0.10)	(0.03)
War	-0.41**	-0.48**		
	(0.09)	(0.09)		
Conflict	-0.17**	-0.25**		
	(0.04)	(0.04)		
Civil War	0.10	-0.03		
	(0.07)	(0.07)		
Civil Conflict	0.13*	0.18**		
	(0.06)	(0.05)		
Constant	-0.35	1.95**	-33.15**	0.56
	(0.25)	(0.24)	(2.06)	(0.70)
Log Sigma	2.20**	1.04**		
	(0.01)	(0.01)		
Observations	7868	7868	5043	4066

* p<0.05 ** p<0.01 Std. Errors in Parentheses