Arms Transfers and Stability in the Developing World: A Causal Model

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Abstract

In recent years, several studies have emerged that seek to understand the nature, scope, and significance of arms transfers in the post-Cold War period. A common theme throughout this literature is the assertion that the collapse of the Soviet Union gave birth to a globalized, commercialized US arms industry dependent upon exports to the developing world in order to survive. Using pooled time-series data, this study tests this assertion via Prais-Winsten panel-corrected standard errors regression. The relationship between such transfers and stability in the developing world is also explored. Using a nonrecursive simultaneous equation model, a new measure of stability is constructed accounting for political, economic and social indicators of stability. The study concludes that the global arms trade has been commercialized and that US producers are increasingly targeting countries in the developing world. Arms transfers are also seen to have a negative relationship to stability, as well as lead to lower levels of democracy in the importing state. These results are discussed with reference to US national security and the stated goals of American foreign policy.

Introduction

The Vietnam War was a watershed moment with regards to both US foreign policy and the global arms trade. This unpopular war brought an end to the post-World War II consensus that the only way to prevent the spread of Soviet communism around the world was to contain it, primarily through the threat and use of American military power (Holsti and Rosenau 1984). Policy-makers began to question the viability of sending American troops around the globe to confront communism militarily in limited theaters of conflict. The political, economic, and social costs associated with such military deployments often far exceeded the perceived benefits, which led policy-makers to reevaluate the direction of US foreign policy. The most widely accepted alternative among policy-makers was that the United States should begin to export arms to regions threatened by communism thereby creating proxy armies capable of confronting communist expansion without direct U.S. involvement (Tirman 1997). This policy would be institutionalized under Nixon and become known as the Nixon Doctrine (Sorley 1983; Wittkopf et al. 2008).

Since the implementation of this doctrine, several aspects of the global arms trade have intrigued scholars from various disciplines, and accordingly a large body of literature has emerged. It addresses not only the political, but also the economic, social, and cultural implications resulting from the exportation of arms. Predictably, there is now a plethora of literature focusing specifically on the consequences of arms for the importing state, as well as studies investigating the economic and political benefits for exporting states. These studies are diverse in terms of the methodological approach, sample size and scope, hypothesis, and the conclusions presented. They range from the quantitative to the qualitative, from studies of the industrialized world to the developing world, from those who argue the utility of such arms transfers to those who articulate the dangers, and so forth. The bulk of these studies were conducted in the midst of the Cold War, but there is a growing body of literature that seeks to understand the nature, scope, and significance of arms transfers in the post-Cold War period.

Such studies are becoming more salient as the reality of the post-Cold War arms trade is becoming more apparent. The decline in military spending worldwide forced the US arms industry to turn to free-market capitalism and the forces of globalization in order to survive. The industry began laying-off workers, selling off their defense operations, seeking consolidation, and reaching out to foreign markets as a means to cope with limited demand at home (Bitzinger 1994; Dowdy 1997; Lansford 2002). In the name of economic growth and prosperity, the Clinton administration enthusiastically supported this industrial strategy and began opening foreign markets that were traditionally off-limits, supporting government subsidies to arms producers, and assigning various governmental

agencies the task of promoting arms sales (Benson 1995; Boucher 1995; Hartung 1995a). Arms exports were viewed by policy-makers "as a means of preserving American jobs and keeping the US industrial base from eroding too quickly" (Blanton and Kegley 1997). In the post-Cold War period, "the invisible hand has become the principal mechanism for allocating potent conventional weapons and associated technologies on a global basis" (Keller and Nolan 1997).

Consequently, US arms exports remained fairly constant as the Cold War came to an end (Brzoska 2004), and following the 1991 Persian Gulf War, arms transfers to the developing world actually exceeded Cold War levels (McKibbiin 1993; Stohl and Stohl 2008). US suppliers dominated the global arms market in the 1990s, both in terms of total exports and exports to the developing world (Brzoska 2004; Grimmett 2003). This trend continued until 2005, when Russian foreign military sales (FMS) to the developing world exceeded that of FMS from US suppliers (Grimmett 2007). However, it is important to note that that the United States re-established itself as the predominant arms supplier to the developing world the following year in terms of FMS. Also, the data did not include direct commercial transfers (DCT) data, which is an unfortunate flaw because of their relevance in the commercially driven post-Cold War arms trade (Boucher 1995; Brzoska 2004).

This increased reliance on foreign markets in the developing world is problematic for a number of different reasons. Arms that find their way to underdeveloped states have been shown to reduce the domestic security of the importing state (Blanton 2001; Cashman 1993), adversely affect civil and political rights (Miller 2003), contribute to the onset of ethnic conflict (Craft 1999; Sislin and Pearson 2001), and produce "political instability, facilitate the outbreak of violence, prolong fighting, increase its severity, prompt the spread of violence into neighboring countries, and raise the cost of, and thus deter, conflict resolution efforts" when exported to states or regions currently engaged in conflict (Sislin et al. 1998). This is significant because the transformation of the US arms industry from a state-sponsored entity to a market-driven enterprise has afforded firms the freedom to export arms to regions currently ripe with conflict. In 1995 for example, a study concluded that weapons produced by US firms were being used in 45 of the 50 largest territorial and ethnic conflicts (Hartung 1995b).

These revelations have led scholars to conclude that arms transfers to the developing world "are basically destabilizing" (Neumann 1995) and will have a "profound impact on the number of national security issues concerning the Western industrialized nations" (Bitzinger 1994). Such conclusions warrant increased research since weak states have been shown to be "close to the root of many of the world's most serious problems, from poverty and AIDS to drug trafficking and terrorism" (Fukuyama 2004). Political and social instability have also been linked to weapons proliferation, regional conflict, pandemic disease, environmental degradation, and energy insecurity (Crocker 2003; Fearon and Laitin 2004). The question, therefore, is whether or not US arms transfers are significantly contributing to the fracturing of social and political structures in the developing world, thus creating episodes of blowback detrimental to US national security.

The purpose of this cross-sectional study is to quantitatively explore this question by constructing a relevant statistical model capable of accounting for variation in political stability, economic well-being, and social stability. In the process of constructing this model, I will also take time to empirically test the common assertion among scholars that the US arms industry has been globalized, and thus commercialized in the post-Cold War period. The likely direction of arms flows will also be examined via a causal model analysis. I will conclude by discussing the results with reference to US national security interests, as well as the stated goals of American foreign policy.

Measuring Stability

Measuring stability is a difficult process due to the highly diverse nature of many of the variables that have been shown to either contribute to stability or adversely affect stability in any given situation. Therefore, in order to effectively devise a measure of stability that is suitable for time-series analysis, I identify so-called common indicators of weak states via a literature review. This review seems to show that a weak state is unable to perform the basic functions of government: protect and promote human security, control its geographical territory, guarantee political freedom and legitimacy, and provide basic social services such as education and healthcare. In addition to these failures, there are usually signs that the elite of the society in question is becoming predatory, and thus begin to loot or destroy the state's assets (Carment 2003; Mazrui 1995; Rotberg 2003; Piazzan 2007).

A 1995 study came to similar conclusions. The State Failure Task Force attempted to predict the causes of state failure, and thus devised their own list of variables common amongst weak states. The group concluded that there were seventy-five relevant variables. Of these variables three were considered strong predictors of state failure: 1) a closed economic system where international trade is low or nonexistent, which in turn leads to high levels of corruption, 2) unusually high infant mortality rates, and 3) an undemocratic political system. GDP per

capita was also deemed a strong indicator, although not as strong as the three indicators noted above (Esty et al. 1998). These findings have been reiterated by scholars such as Rotberg (2007) who concluded that "corruption is fundamental to failed states," and Feng (2005) who came to the conclusion that democracy reduces political instability, and enhances other variables such as economic freedom, education, and investment.

These studies seem to indicate that nation-state stability does not consist merely of political factors, but also includes economic and social variables. The relationship between the well-being of the citizenry and the governing body seems to be an interdependent one. This is made evident by literature that seems to show that high levels of human development reduce the likelihood of domestic disturbances and, therefore, tend to contribute to political stability (Haq 1995). In turn, countries that lack political stability have a difficult time promoting economic growth and providing essential public services such as education and healthcare to the population (Feng 2005). Therefore, when attempting to empirically measure stability it is vital to account for political, economic, and social factors.

In this study, this is accomplished by constructing an index composed of three separate indicators: human development, quality of governance, and democracy. Human development is a measure consisting of GDP per capita, life expectancy at birth, adult literacy rates, and the number of students enrolled in higher education. The quality of governance measure includes three separate subjective indicators: corruption, law and order, and bureaucratic quality. The measure for democracy includes a political rights score, as well as a civil liberties score. (A more detailed description regarding the construction of this measure is found in the Models section of this paper.)

Human Development, Quality of Governance, Democracy Linkages

As stated above, I theorize that when taken together, political stability, social development, and economic well-being constitutes nation-state stability. In accordance with this theory, I propose the following theoretical linkages among human development, quality of governance, and democracy:

- Democracy promotes higher levels of human development because it allows for the general population to hold government accountable for its failure and/or inability to promote social stability and/or economic well-being.
- Democracy promotes a better quality of governance by spreading political power, which leads to lower levels of political corruption, a system more favorable to judicial equality, and a bureaucracy free from unreasonable political constraint.
- Good governance will increase the level of human development by preventing corruption, providing a sense of security by maintaining law and order, and by supporting a strong bureaucratic structure capable of providing public services. A strong bureaucracy will also provide the government the means necessary to respond to a national emergency.
- Good governance enhances democracy by providing and/or maintaining effective institutions that are capable of implementing public policy. This supports the political stability of the democratic regime in question by giving the government the means necessary to deliver public goods to society.
- High levels of human development lead to a better quality of governance by providing society with the economic and social means necessary to participate politically, which theoretically allows the public to mold the government, thus making the government more responsive to public needs.
- Human development enhances democracy by providing society with the economic and social means necessary to participate fully in the political arena. This allows the citizenry to safeguard their political rights and civil liberties via oversight of public officials.

As implied by the theoretical relationships noted above, there are several interesting causal directions to explore in this analysis. Human development, quality of governance, and democracy form a complex array of relationships that I theorize constitute nation-state stability. Higher levels of human development, good governance, and higher levels of democracy are characteristic of stable states. Low levels of human development, poor governance, and low levels of democracy are characteristic of collapsed states. A combination of high and low degrees amongst these variables is what distinguishes a state as weak or failing.

Models

This study will consist of three separate models, each investigating an aspect of the global arms trade. The first model will be concerned with the assertion that the global arms trade was fundamentally altered by the end of

the Cold War. The second model will be a causal model that will be used to examine the likely direction of arms flows, as well as strengthen my theory regarding the construction of the stability measure. Finally, the last model will test the relationship between arms transfers and stability in the developing world.

To test the hypothesis that the global arms trade has become globalized and thus commercialized following the end of the Cold War, I first divide the pooled cross-sectional dataset used in this study into two separate sets: one is representing the Cold War period (1986-1990), and the second the post-Cold War period (1991-1999). For the years 1986-1990, I will estimate two separate Prais-Winsten panel-corrected standard errors (PCSEs) regression equations to control for possible autocorrelation. In the first, GDP per capita will function as the dependent variable while arms transfers along with seven additional variables will function as the independent variables. The second equation will operationalize arms transfers as the dependent variable and use the same control variables as the first equation with the exception of the arms transfers variable (which will be replaced by GDP per capita). I will repeat this method for the years 1991-1999.

I hypothesize that for the years 1986-1990 there will be a statistically insignificant relationship between arms transfers and GDP per capita, indicating that the ability of a nation-state to actually pay for arms was not part of the decision-making process. This is consistent with the view that during the Cold War arms were seen as a means to confront communist expansion without having to directly commit US forces (Tirman 1997). Between the years of 1991-1999, however, I predict there to be a positive, statistically significant relationship between arms transfers and GDP per capita. This would provide support for the assertion put forth by scholars that the global arms trade has become commercialized and now emphasizes profit rather than a means to protect national security interests (see Bitzinger 1994, Boucher 1995, Lansford 2002). I also hypothesize that the world system position variable will negatively related to arms transfers for the years 1986-1990,and become positive for the years 1991-1999. This will provide support for the claim that US firms are now reliant on foreign markets in the post-Cold War period.

As noted above, the four Prais-Winsten PCSEs regression equations that will be estimated consist of seven control variables other than the arms transfers and GDP per capita measure. Below is a list of these variables, along with a brief theoretical explanation for their use in this analysis:

(a) Democracy: Studies have shown that democracies are more likely to receive arms than non-democracies (Blanton and Kegley 1997; Blanton 2000). There also exists a positive and robust link between economic growth and democracy (Helliwell 1994).
(b) Age Structure: Age structure has been shown to be statistically significant in explaining variation in economic growth (Kogel 2005; see also Bloom, Canning, and Malaney 2000). There is also evidence that the higher the percentage of a population that is outside of the 25-39 years old range, the less severe instances of armed conflict tend to be (Mesquida and Wiener 1999). Therefore, the relationship between age structure (percent of population between 0-14 in this study) and arms transfers is hypothesized to be negative due to the assumed lack of demand for arms.
(c) Oil Reserves: According to Sadowski (1992), oil attracts increased arms imports because of the increased purchasing power associated with the resource. Also, several oil-rich countries reside in volatile regions, a fact that exacerbates the demand for arms.
(d) World System Position: Countries in the developing world are increasingly targeted by arms producers (Brzoska 2004; McKibbiin 1993). World system position is a measure of development, and thus the relationship between states in the periphery and GDP per capita is negative.
(e) Index of Power Resources: According to Welzel, Inglehart, and Kligemann's (2003), there is a relationship between the Index of Power Resources variable and the level of human development in a country. As GDP per capita is a component of the human development measure, I predict there to be a positive relationship between these two variables.
(f) Internal Armed Conflict: Arms are assumed to be in high demand in states currently engaged in internal armed conflict. Thus, the relationship between internal armed conflict and arms transfers is hypothesized to be positive.
(g) Life Expectancy: Arms have been shown to increase the likelihood of armed conflict (see Pearson et al. 1989, Craft 1999, Sislin and Pearson 2001). Also, armed conflict has been shown to have a negative relationship to life expectancy (Li and Wen 2005). Therefore, this relationship is hypothesized to be negative.

After this analysis, I will use a nonrecursive causal model to explore the likely direction of arms flows, as well as strengthen our theory regarding the stability measure. To accomplish these tasks I utilize two separate statistical

techniques in Stata 10. First, I estimate each equation independently using Prais-Winsten panel-corrected standard errors regression (PCSEs) to control for possible autocorrelation in the model. Such a technique is useful in this instance because of the inability of OLS regression to control for autocorrelation in the simultaneous equation environment. This method when paired with the construction of nonrecursive multiple-equation model should provide valuable insight into direction of arms flows to the developing world while creating a process capable of identifying unreasonably high levels of autocorrelation. While this statistical method is not ideal, it represents perhaps the most efficient means available to test this hypothesis in the simultaneous equation, pooled data environment while maintaining the means necessary to investigate the possibility of autocorrelation.

As implied above, the purpose of the nonrecursive simultaneous equation model is to empirically establish a link among the three variables being used to define stability, as well as provide insight into the direction of arms flows. This nonrecursive causal model is presented in Figure 1. It consists of three endogenous variables: human development, quality of governance, and democracy. Arms transfers will be one of eleven exogenous variables present in the model, and will be operationalized in all three regression equations. As is common with nonrecursive models, two-stage least squares with error components (EC2SLS) will be used to estimate this particular model (referred to as XTIVREG in Stata 10).

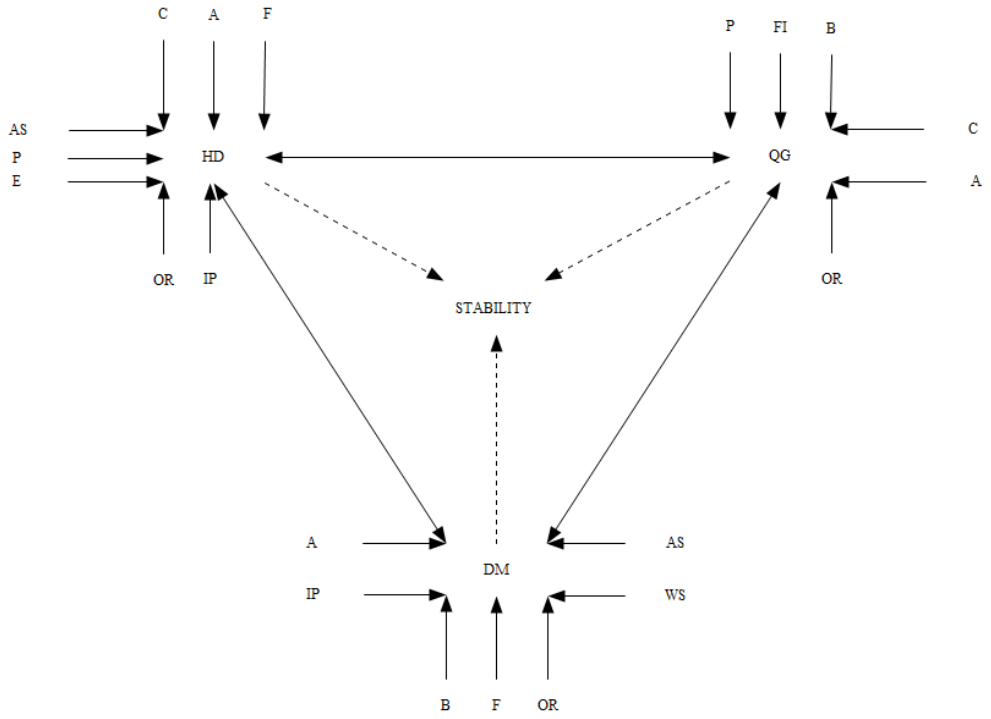

Figure 1. Nonrecursive Model of Human Development, Quality of Governance, and Democracy.

HD = human development; QG = quality of governance, DM = democracy; IP = index of power resources; OR = oil reserves; E = chief executive a member of the military; P = Protestant tradition; AS = age structure of population; C = number of armed conflicts; A = arms transfers; F = ethnic fractionalization; FI = foreign direct investment; B = British colony; WS = world system position.

To begin this analysis, I will estimate the regression equation that seeks to explain human development. It will be operationalized in both the initial Prais-Winsten PCSEs regression analysis, as well as the simultaneous equation system. The hypothesized relationship between human development and the first endogenous variable in the equation, quality of governance, is a positive one. Several contemporary cross-sectional studies have found that there is a statistically significant relationship among the three indicators of human development: GDP per capita, life expectancy, education, and the three indicators that compose the quality of governance measure that is utilized in this study: corruption, law and order, and bureaucracy quality (Gupta, Davoodi, Alonso-Terme 2002; see also Mauro

1995, Tanzi and Davoodi 1997). This relationship is almost always found to be positive, in that the higher the level of human development the better the quality of governance as defined by the three indicators noted above.

The relationship between human development and democracy, the second endogenous variable in this equation, is also hypothesized to be positive. Welzel and Inglehart (1999) argue that democratization is a critical component of human development. They conclude that as human development increases, this allows for a greater access to human resources, which in turn lead to greater liberty aspirations. This contributes to the establishment of democratic institutions by allowing the society in question to pressure the centralized authority, eventually leading to a greater level of democracy. It can be argued, therefore, that the underlying theme of the concept of human development is in fact human choice (Welzel, Inglehart, and Kligemann 2003). The GDP per capita component is a proxy of economic development, which allows society to take part in the democratic process. The education and life expectancy components function as a means to measure the effectiveness of government, as well as the availability of basic social services. Furthermore, low levels of GDP per capita, education, and life expectancy seem to indicate that inner-society is alienated from the decision-making process, thus unable to influence government policy or demand governmental accountability.

The hypothesized relationship between arms transfers and human development is positive, reflecting contemporary literature on the subject that the global arms trade has been globalized following the end of the Cold War (Bitzinger 1994; Lansford 2002; Neumann 1995). It is argued that this has led to the commercialization of the arms trade, affording arms producers the freedom to target wealthier, more developed countries in the developing world (Boucher 1995; Brzoska 2004). In a preliminary analysis of the data to be used in this study, I found there to be a statistically insignificant positive correlation of .087 between arms transfers and human development from 1986-1990. Using data from 1991-1999 however, I found there to be a positive correlation of .190, which is statistically significant at the .01 level. Although more analysis is needed, this seems to affirm what the current literature asserts: that the global arms trade is more commercial and thus beginning to mimic the flow of basic consumer goods (this will be explored further in the Results section of this paper).

Along with arms transfers this equation will include seven other exogenous variables, many of which have been shown in previous studies to be statistically significant in explaining variation in human development. Below is a list of these variables, along with a short theoretical explanation for their use in this equation:

(a) Ethnic Fractionalization: In a study by Easterly (2001), higher levels of ethnic diversity were found to have a negative effect on health outcomes and the number of publicly provided health services.
(b) Number of Armed Conflicts: Armed conflict has been linked to economic hardship (Muggah and Batchelor 2002), poor public health (Banatvala and Zwi 2000), and the inability of a society to reconstruct educational infrastructure following conflict (Wessells 1998).
(c) Protestant Tradition: This variable will account for the historically strong positive correlation between countries with a large percentage of Protestants and economic growth (Inglehart 1988). Although this relationship has dramatically weakened over time, it is still of interest to scholars seeking to explain variation in economic performance (see Stulz and Williamson 2003, Thomas and Mueller 2000).
(d) Age Structure: Age structure has been shown to be statistically significant in explaining variation in economic growth (Kogel 2005; see also Bloom, Canning, and Malaney 2000).
(e) Oil Reserves: Oil-rich countries tend to use their oil revenues to "finance diversified investments, and a big push in industrial development" (Sachs and Warner 1997). This implies a positive relationship between the amount of oil in a country and economic growth.
(f) Chief Executive in Military: If the chief executive of a country is a member of the military, it is likely that the individual in power holds different values and/or priorities than that of the general population. I predict that a member of the military is more likely to favor increased military spending over spending on social services that would enhance human development. Thus, this relationship is hypothesized to be negative.
(g) Index of Power Resources: As the relative level and distribution of economic, intellectual, and organizational resources increases, the level of human development should also increase. This is consistent with Welzel, Inglehart, and Kligemann's (2003) view that this measure of "individual resources" is a critical component of human development.

The next regression equation to be estimated in both the initial Prais-Winsten PCSEs regression analysis, as well as the simultaneous equation system, seeks to explain the variation in the quality of governance of a country. The hypothesized relationship between quality of governance and the first endogenous variable, human development, is positive. This reflects the literature noted above that proposes that as the three indicators that compose the quality of governance measure improve, this should be accompanied by a rise in the level of human development as defined by

GDP per capita, access to education, and life expectancy. As corruption decreases, this allows for a higher quality of public infrastructure (Tanzi and Davoodi 1997) and increased foreign investment (Habib and Zurawicki 2002), both of which have a positive relationship to human development (Globerman and Shapiro 2003). An increase in law and order and bureaucratic quality provides society a sense of relative security and affords government the ability to provide public services and implement public policy.

The relationship between quality of governance and the second endogenous variable in the equation, democracy, is also hypothesized to be positive. Democracy is considered a sign of a well-functioning government and allows for state institutions to be modified or adjusted according to the needs of society (La Porta et al. 1999). Democracy and civil liberties have also been shown to have a strong positive relationship to the performance of government with regards to investment projects (Isham, Kaufmann, and Pritchett 1997). Exposure to democracy has also been shown to lower the level of corruption (Sandholtz and Koetzle 2000; Sung 2004; Treisman 2000). It appears therefore, that an effective democratic system creates an environment in which government accountability is commonplace, and public access to governmental infrastructure is not limited, which in turn allows citizens to retain some control over their officials. This leads to a better quality of governance by preventing the institutionalization of corruption, promoting law and order, and by demanding better bureaucratic quality as a means to implement public policy.

The hypothesized relationship between arms transfers and the quality of governance is similar to that of the relationship between arms transfers and human development. It is hypothesized to be positive reflecting the contemporary literature noted above that asserts that the global arms trade has become globalized, and thus commercialized, in the post-Cold War period. In a study examining the causal relationship between globalization and governance, the researchers concluded that openness to trade results in a decrease in corruption and thus better governance (Bonaglia, de Macedo, and Bussolo 2001). In this study, I assume that the flow of arms has been fundamentally altered as asserted by contemporary literature and thus place arms transfers in this conceptual framework. Therefore arms, like basic consumer goods, should have a positive relationship to the quality of governance in the importing state.

This regression equation includes five other exogenous variables, many of which have been utilized in previous studies in an attempt to explain variation in quality of governance. Below is a list of these variables along with a brief theoretical explanation for the inclusion in this equation:

(a) British Colony: It has been asserted that a reliance on a common law legal system, which is found in many former British colonies, results a more egalitarian form of government (La Porta et al. 1999). This has been confirmed by a number of studies who found a statistically significant relationship between former British rule and corruption (see Herzfeld and Weiss 2003, Treisman 2000).
(b) Protestant Tradition: Sandholz and Koetzle (2000) found that the higher percentage of the population that is Protestant, the less corrupt the state in question is. This finding "confirms the hypothesis that the Protestant emphasis on individual responsibility and rectitude carries over into a reduced tolerance for corruption."
(c) Oil Reserves: The more dependent a country is on oil revenue, the more likely it will suffer from several political deficiencies. Government that operates within an oil dependent country tends to act independent of their citizens, be prone to political collapse, be non-transparent in their use of public funds, and have poor functioning bureaucratic structures (Moore 2004).
(d) Foreign Direct Investment: Foreign direct investment tends to flow to countries that exhibit low levels of corruption (Habib and Zurawicki 2002) and are perceived to have a strong bureaucratic structure (Busse and Hefeker 2007).
(e) Number of Armed Conflicts: Armed conflict is assumed to inhibit the ability of a government to provide basic social services to its population due to the constraints placed on government expenditures and human capital. Therefore, it is hypothesized that armed conflict will lead to a breakdown in law and order and also weaken the bureaucratic structure. This is consistent with Nafziger and Auvinen's (2002) conclusion that war and violence result in social disruption and the spread of hunger and disease.

The last regression equation to be estimated in both the Prais-Winsten PCSEs model, as well as the simultaneous equation system seeks to explain variation in democracy. The relationship between democracy and the two endogenous variables in the model, human development and quality of governance, has already been discussed in this section. Both relationships are hypothesized to be positive, which reflects contemporary literature that seems to indicate that higher levels of democracy are associated with higher levels of human development and better governance (see Welzel and Inglehart 1999, La Porta et al. 1999, Sung 2004).

The hypothesized relationship between the exogenous variable of interest, arms transfers, and democracy is negative. While several recent studies have shown that democracies are more likely to receive arms than non-democracies (Blanton and Kegley 1997; Blanton 2000), it is important to make the distinction between who receives arms and what kind of effects these arms have on the governmental and societal structure of the importing state. I predict that the simultaneous equation model will reveal a causal relationship between arms transfers and democracy that will indeed be negative, implying perhaps that in the context of the developing world arms function as a means to preserve the status-quo, thus preventing the growth of democratic institutions.

Six other exogenous variables are operationalized in this regression equation. Below is a list of these variables along with a brief theoretical explanation for their use in this particular equation:

(a) Ethnic Fractionalization: The more ethnically diverse a country is, the less democratic it tends to be. Such a result has been confirmed in cross-sectional studies conducted by Burkhart (1997, 2007).
(b) British Colony: It is commonly argued that countries that were once under British rule are likely to inherit democratic intuitions and social values sympathetic to democracy from their former ruler. Lipset et al. (1993) argues that such a colonial experience provides a critical learning experience in the ways of democratic governance.
(c) Age Structure: I hypothesize that the younger the population, the less democratic the state in question will be. Such an assumption is predicated on the view that since the young tend vote less frequently, emerging democratic infrastructure in the developing world will be more open to political exploitation, thus undermining the democratic process.
(d) Oil Reserves: In the developing world, oil tends to have antidemocratic properties. In a study, Ross (2001) found that in more developed countries oil brings wealth and democracy, while in under-developed states it tends to prevent the birth of democratic institutions.
(e) World System Position: Several studies have indicated that states that reside in the periphery are less democratic than states that reside in the semi-periphery or in the core (see Burkhart 1997, Gonick and Rosh 1988). This is hypothesized to be a negative relationship in this analysis as well because the variable utilized in this study will be a dummy variable coded 1 if the country is in the periphery and 0 if it resides outside of the periphery.
(f) Index of Power Resources: As the relative distribution of economic, intellectual, and organizational resources increase, the level of democracy should also increase. The concentration of power resources in the hands of a few tends to lead to the centralization of political power, while an equal distribution of these resources contributes to the sharing of political power, thus promoting the construction of democratic institutions (Vanhanen 1997).

When expressed in full equation form, the model is as follows. It will be estimated on pooled data from 88 countries in the developing world between the years 1986-1999 (the countries used in this study are listed in the Appendix section of this paper).

HD = f(QG*, DM*, A, F, C, P, AS, OR, E, IP)
QG = f(HD*, DM*, A, B, P, OR, FI, C)
DM = f(HD*, QG*, A, F, B, AS, OR, WS, IP)

Theory being:
Stability = f(HD, QG, DM)

Where: HD = human development; QG = quality of governance; DM = democracy; HD* = instrument for human development; QG* = instrument for quality of governance; DM* = instrument for democracy; A = arms transfers; F = ethnic fractionalization; C = number of conflicts; P = Protestant tradition; AS = age structure; OR = proven oil reserves; E = chief executive member of military; IP = index of power resources; B = British colony; FI = foreign direct investment; WS = world system position.

(In the Prais-Winsten PCSEs estimations, the instruments for the endogenous variables used in the equations are replaced by the actual variable.)

To test the hypothesis that there is a negative relationship between arms transfers and stability in the developing world, it is first necessary to construct the empirical measure that will be used to define stability. This is accomplished by estimating each regression equation operationalized in the simultaneous equation system

independently of one another via OLS regression. This provides the unstandardized predicted values of each dependent variable. The measure of stability used in study is simply the summation of these predicted values. This stability variable will function as the dependent variable in a Prais-Winsten PCSEs regression equation. The model will consist of eight control variables, as well as the independent variable of interest, arms transfers.

The primary hypothesis of this study, therefore, will be estimated on pooled data from a sample of 88 countries in the developing world between the years of 1986-1999. The reason for each variable's inclusion in this equation has been discussed previously and does not warrant further discussion. The regression equation is as follows:

ST = f(A, IC, GDP, E, F, T, IP, WS, OR)

Where: ST = stability; A = arms transfers; IC = internal armed conflict; GDP = GDP per capita; E = chief executive member of military; F = ethnic fractionalization; T = political terror scale (state department); IP = index of power resources; WS = world system position; OR = proven oil reserves.

Data

The data for arms transfers was taken from the World Military Expenditures and Arms Transfers (WMEAT) report, which is published by the Department of State (formerly the Arms Control and Disarmament Agency). This data source is preferable to other data sources because it includes government-to-government arms transfers as well as direct commercial transfers (enterprise-to-government). Small arms are also included, which is essential given this study's focus on the developing world. The various sources of the data are also clearly defined. According to the report, arms transfers include:

> … military equipment, usually referred to as "conventional," including weapons of war, parts thereof, ammunition, support equipment, and other commodities designed for military use. Among the items included are tactical guided missiles and rockets, military aircraft, naval vessels, armored and nonarmored military vehicles, communications and electronic equipment, artillery, infantry weapons, small arms, ammunition, other ordnance, parachutes, and uniforms. (US Department of State 2000)

This data source has rightfully been criticized for a number of different reasons. Scholars feel that the data underestimates actual arms deliveries (Craft and Smaldone 2002) and suffers from a number of data discrepancy issues (Brzoska 1982; Levine et al. 1998). Although such criticism seems justified, the WMEAT data is arguably the best source available to researchers seeking to construct quantitative models exploring the global arms trade. This is due to the inclusion of small arms in the dataset, something the Stockholm International Peace Research Institute (SIPRI) database fails to account for.

In order to account for variation in human development, the United Nation's Human Development Index is not an appropriate measure with regards to this study. While the data does go back to 1985 as required, country coverage is limited and would require a significant reduction in the sample size utilized in this study. Also, for the years prior to 1990 the index was computed in five-year increments, which is problematic with regards to time-series analysis. Therefore, using the UN's theoretical framework, I construct a human development measure for all 88 countries from 1986-1999. Like the UN's index, the measure consists of GDP per capita and life expectancy at the time of birth, albeit from different sources. Due to data availability problems, I replace adult literacy rates and the combined gross enrolment ratio for primary, secondary and tertiary schooling with Vanhanen's (1997) Index of Knowledge Distribution. Vanhanen's index is the arithmetic mean of the percentage of students enrolled in higher education institutions per 100,000 inhabitants of the country and literates as a percentage of the adult population.

This new measure is calculated the same way as the UN's Human Development Index. Each one of the three variables (GDP per capita, life expectancy, knowledge index) is converted into a measure between 0-1. This is accomplished by subtracting the minimum value for the year in question by the actual value observed in the country in question. This value is divided by the difference between the maximum value and the minimum value. In the case of GDP per capita, the log of GDP per capita is used. The summation of these three values (after each is multiplied by 1/3) is the measure that will be used to account for variation in human development in this study. Therefore, the scale is between 0-1, the closer to 1 having a higher level of human development. It is a valid and reliable substitution, as evident by the nearly perfect correlation of .968 (N=150) between this measure and the U.N.'s Human Development Index.

The data for quality of governance is an index comprised of subjective indicators taken from the International Country Risk Guide dataset constructed by the PRS Group. The PRS Group is a private firm that provides political risk analysis to overseas lenders and investors. The measure consists of three variables: corruption, law and order, and bureaucratic quality. Corruption refers to corruption within the political system, law and order to the strength and impartiality of the legal system and popular observance of the law, and bureaucratic quality refers to the institutional strength and quality of the bureaucracy. Each variable is measured on a scale from 0-1, with the arithmetic mean of these variables comprising the index. Therefore, the scale is 0-1, the closer to 1 having a better quality of governance as measured by the indicators noted above.

The data for democracy is a combination of the Freedom House civil liberties and political rights measure, and the POLITY IV dataset. The average of the Freedom House civil liberties and political rights score is transformed into a scale 0-10, as is the POLITY measure. These two values are averaged together to form the democracy variable that will be operationalized in this study. Missing POLITY values were imputed by regressing POLITY on the average Freedom House measure. This democracy measure has been shown by Hadenius and Teorell (2005) to perform better both in terms of validity and reliability than its constituent parts.

Control variables

(a) Ethnic Fractionalization: Reflects the probability that two randomly selected people from a given country will not belong to the same ethnolinguistic group. The higher the number, the more fractionalized the society in question (Alesina et al. 2003).
(b) Number of Conflicts: The number of conflicts in which the government of the country is involved (Gleditsch et al. 2002).
(c) Protestant Tradition: Protestants as percentage of the population in 1980 (La Porta et al. 1999).
(d) Age Structure: The percentage of the population that is between the ages of 0-14. Data from the International Database (IDB) maintained by the United States Census Bureau.
(e) Proven Oil Reserves: The amount of proven oil reserves measured in the thousand million barrels (BP Energy 2008).
(f) Chief Executive Member of the Military: This is a dummy variable coded 0 if the chief executive is not a member of the military, and a 1 if he/she is a member of the military (Beck et al. 2001).
(g) Index of Power Resources: Computed as the product of Index of Occupation Diversification (arithmetic mean of urban population as a percentage of the population and non-agricultural population also as a percentage), Index of Knowledge Distribution (arithmetic mean of students in higher education as a percentage of the population and literacy also measured as a percentage of the population), and Index of Distribution of Economic Power Resources (arithmetic mean of family farms as percentage of the population, and the decentralization of non-agricultural economic resources). The higher the score, the greater the relative distribution of power resources (Vanhanen 1997).
(h) British Colony: A dummy variable coded 0 if the country has not been colonized by the British since 1700 and 1 if the country has been colonized by Britain since 1700.
(i) Foreign Direct Investment: Foreign Direct Investment inflows in current U.S. dollars, measured in millions (UNCTD, various years).
(j) World System Position: A dummy variable coded 0 if the country does not reside in the periphery, and 1 if the country does reside in the periphery (Burkhart and Lewis-Beck 1994).
(k) Internal Armed Conflict: Conflicts that occur between the government of a state and internal opposition groups without intervention from other states. Coded 0 if there is no internal armed conflict, 1 if there is minor internal armed conflict, 2 if there is intermediate internal armed conflict, and 3 if there is internal war (Gleditsch et al. 2002).
(l) GDP per capita: GDP levels in million 1990 International Geary-Khamis dollars, a hypothetical unit of currency with purchasing power equal to that of the U.S. dollar in the United States at a given point in time (Maddison 2007).
(m) Political Terror Scale: A human rights score on a scale 1-5. A rating of 1 indicating that countries are under a secure rule of law and 5 indicating high levels of politically motivated murder, disappearances, and torture (Gibney et al. 2008). Therefore, the higher the number the more political terror is being inflicted on the citizenry of the country in question.

Methods

To test the model constructed to explore the transformation of the US arms industry following the end of the Cold War, as well as the model intended to examine the relationship between arms transfers and stability in this study, I utilize Prais-Winsten panel-corrected standard error regression in the Stata 10 software package. This technique is useful for models that are utilizing pooled time-series data because of the ability to estimate a separate autocorrelation coefficient for each country in the model. As the dataset used in this study falls into this category, this is an ideal method to estimate the models constructed for the purpose of this analysis.

In estimating the second model used in this study, the nonrecursive multiple-equation model, I assume that human development, quality of governance, and democracy have a causal relationship to one another and thus interact simultaneously. Evidence of this assumed relationship is found in contemporary literature referenced in the Models section of this paper. There appears to be a robust relationship between these three indicators of stability. Higher levels of human development appear to be associated with better quality of governance and more democratic countries. Better quality of governance seems to be associated with higher levels of human development and democracy, and higher levels of democracy are seen in countries that exhibit strong governance and high levels of human development.

The endogenous variables (human development, quality of governance, and democracy) in the model are represented by instrumental variables in two-stage least squared modeling. The technique referred to as XTIVREG in the software package Stata 10 is used for model estimation.

Results and Discussion

The model constructed to test the relationship between GDP per capita, world system position, and arms transfers performed as expected. As shown in Table 1, during the time period 1986-1990 there was a statistically insignificant relationship between arms transfers and GDP per capita. This result remained consistent regardless of which dependent variable was operationalized in the regression analysis. Also noteworthy is the relationship between states that reside in the periphery and arms transfers. This relationship proved to be a statistically significant negative relationship, indicating that during the years 1986-1990 arms tended flow to countries outside of the periphery. These results confirm the first part of our hypothesis: that GDP per capita did not play a significant role with regards to arms flows in the Cold War period. Also, the negative relationship between world system position and arms transfers indicate that in the Cold War period U.S. arms producers were not dependent upon exports to the developing world. The adjusted r-squared statistics of .769 and .527 respectively, indicates that both models are effective in explaining variation in the dependent variables utilized in each equation.

Table 1. Prais-Winsten Regression Results: Cold War Arms Transfers versus post-Cold War Arms Transfers

Variables	DV: GDP (1986-1990)	DV: AT (1986-1990)	DV: GDP (1991-1999)	DV: AT (1991-1999)
A	-.455 (1.414)	----------	.132** (2.158)	----------
GDP	----------	-440.52 (1.414)	----------	470.07** (2.158)
DM	37.83** (2.230)	-25.98* (1.909)	-65.76 (.020)	10.09 (1.165)
AS	-91.27** (5.116)	-2.363 (.345)	-83.28** (6.565)	-16.53** (3.694)
OR	29.68** (5.442)	21.67** (15.901)	11.41** (2.091)	24.55** (28.948)
WS	-1732.37** (5.993)	-275.45** (2.450)	-2030.51** (5.570)	303.22** (4.011)
IP	39.67* (1.894)	-1.25 (.190)	137.44** (9.981)	7.50* (1.791)
IC	-277.46** (3.236)	108.25** (3.169)	-435.14** (2.935)	41.54* (1.717)
LE	73.69** (16.078)	5.028 (.849)	45.26** (16.590)	-10.63** (3.005)
N	439	439	791	791
R^2	.769	.527	.769	.624

A = arms transfers; GDP = GDP per capita; DM = democracy; AS = age structure; OR = oil reserves; WS = world system position; IP = index of power resources; IC = internal armed conflict; LE = life expectancy. Figures are unstandardized coefficients; absolute z-scores in parentheses. ** = significant according to two-tailed test of significance; * = significant according to one-tailed test of significance.

The control variables also performed as expected in the first regression equation. When GDP per capita is operationalized as the dependent variable, every variable with the exception of the arms transfers variable is found to be statistically significant. During the years 1986-1990, I find there to be a positive relationship between the dependent variable, GDP per capita, and four of the control variables: democracy, the amount of proven oil reserves, index of power resources, and life expectancy at time of birth. A negative relationship is found to exist between the dependent variable and two control variables: age structure and the internal armed conflict variable. These findings are consistent with several contemporary studies referenced in the Models section of this paper.

When estimating the second equation representing the years 1986-1990, only three of the six control variables remains statistically significant: democracy, proven oil reserves, and internal armed conflict. The relationship between the dependent variable and democracy is negative, while I find that arms transfers have a positive relationship to the amount of proven oil reserves inside of a country as well as the presence of internal armed conflict. This seems to indicate that during the Cold War period arms found their way to nondemocratic states. It also seems to show that oil-rich states, as well as states involved in conflict, demanded and thus received arms from U.S. suppliers.

During the post-Cold War period which is represented by the years 1991-1999, we find a statistically significant positive relationship between arms transfers and GDP per capita. The z-score of 2.158 is significant according to the two-tailed test of significance and seems to show that as the Cold War came to an end, arms producers began to target more economically developed countries. Such a finding is consistent with the literature referenced in this Models section of this paper. Interestingly, the world system position variable remained statistically significant but changed directions. The relationship between this variable and arms transfers during the years 1991-1999 was strongly positive as indicated by the z-score of 4.011, significantly different from the statistically significant negative z-score of -2.450 during the years 1986-1990. This seems to indicate that following the end of the Cold War, U.S. arms producers began to target foreign markets as a means to survive in the post-Cold War period. Again, this result is consistent with the contemporary literature on the subject referenced in the Models section of this paper. Both models constructed to test the post-Cold War period were effective in explaining variation in the dependent variables as indicated by the adjusted R-squared values of .769 and .624 respectively.

The control variables used in both regression equations constructed to test the years 1991-1999 remained statistically significant whether the dependent variable was GDP per capita or arms transfers. I find there to be a positive relationship between the dependent variable GDP per capita and three of the control variables: proven oil

Table 2. Prais-Winsten Regression Results: Human Development, Quality of Governance, and Democracy

Variables	DV: Human Dev.	DV: Quality of Gov.	DV: Democracy
HD	----------	.288** (4.42)	1.176 (1.02)
QG	.036 (1.17)	----------	.819 (1.39)
DM	.002* (1.89)	.002* (1.61)	----------
A	5.26e-06 (1.42)	.001** (3.03)	-.001** (3.02)
OR	.001** (5.72)	-.000 (0.77)	-.018** (4.20)
E	-.008* (1.69)	----------	----------
P	-.001* (1.78)	.001 (0.67)	----------
AS	-.012** (9.32)	----------	-.010 (0.29)
C	-.009** (3.84)	-.013** (3.49)	----------
IP	.004** (2.26)	----------	.105** (4.54)
F	-.162** (6.75)	----------	-.730 (0.73)
FI	----------	2.47e-06** (2.42)	----------
B	----------	.028* (1.71)	-.191 (0.49)
WS	----------	----------	-.411 (0.93)
constant	.935** (16.26)	.312** (7.21)	3.815** (2.22)
N	1232	1232	1232
R^2	.849	.766	.310

HD = human development; QG = quality of governance; DM = democracy; A = arms transfers; OR = oil reserves; E = chief executive member of the military; P = Protestant tradition; AS = age structure; C = number of armed conflicts; IP = index of power resources; F = ethnic fractionalization; FI = foreign direct investment; B = British colony; WS = world system position. Figures are unstandardized coefficients; absolute z-scores in parentheses. ** = significant according to two-tailed test of significance; * = significant according to one-tailed test of significance.

reserves, index of power resources, and life expectancy at birth. A negative relationship was found to exist between GDP per capita and two control variables: age structure and internal armed conflict. When arms transfers are operationalized as the dependent variable we find that there is a positive relationship between the dependent variable and three control variables: proven oil reserves, index of power resources, and internal armed conflict. A negative relationship exists between arms transfers and two control variables: age structure and life expectancy at birth. The democracy variable was found to be statistically insignificant in both models.

Prior to estimating the nonrecursive simultaneous equation model, I first tested each equation via Prais-Winsten panel-corrected standard error regression. The first equation significantly explains variation in human development as evident by the adjusted R-squared value of .849. With the exception of the quality of governance and arms transfers variable, all independent variables in the equation are shown to be statistically significant. There exists a positive relationship between human development and three independent variables: democracy, proven oil reserves, and index of power resources. Negative relationships were found in the case of the remaining five independent variables: chief executive a member of the military, Protestant tradition, age structure, number of conflicts, and ethnic fractionalization. The only variable that deviated from its hypothesized relationship to human development was the Protestant tradition variable. Such a finding seemingly supports the assertion that while a historically positive relationship did exist between this variable and economic growth, this variable has significantly changed over time (Inglehart 1988). The results of this study seem to show that in the case of the developing world, the higher the percentage of the population that is Protestant the lower the level of human development.

The second equation performed as expected. With an R-squared value of .766, the model significantly explains variation in quality of governance. Two of the independent variables were found to be statistically insignificant: Protestant tradition and proven oil reserves. There exists a positive relationship between quality of governance and five of the independent variables: democracy, arms transfers, human development, British colony, and foreign direct investment. Negative relationships existed between the dependent variable, quality of governance, and the number of conflicts the state in question was currently involved. Every variable performed as hypothesized in the Methods section of this paper.

The third and final equation seeks to explain variation in democracy. With an R-squared value of .310 this model proves to be somewhat weak, perhaps resulting from several statistically insignificant variables: human development, ethnic fractionalization, British colony, age structure, and world system position. While these variables were found to be effective in explaining variation in democracy is several previous studies noted in the Models section of this paper, this study seems to indicate that in the case of the developing world, their significance may not be as strong. Of the three statistically significant variables in the model two were negative: arms transfers and proven oil reserve. The only positive relationship was that between democracy and the index of power resources variable.

As seen in table 3 (below), when estimating the nonrecursive simultaneous equation model we find statistically significant relationships among the three indicators of stability. This confirms the theory that there exists a causal relationship among these three indicators. With regards to the first equation, the model reveals a positive relationship between human development and democracy. This supports the assertion made by Welzel and Inglehart (1999) that democracy is a critical component of human development. There is however a negative relationship between human development and the quality of governance instrument. This result contradicts my hypothesis that this relationship would be positive in accordance with contemporary studies that have concluded that there is a positive relationship between the three variables that comprise the human development measure and the three indicators of good governance (see Mauro 1995, Tanzi and Davoodi 1997).

The endogenous variables in the second equation performed as expected. In seeking to explain variation in quality of governance, the instruments for democracy has a positive relationship to governance. This seems to show that higher levels of democracy are associated with a better quality of governance as defined by the three variables that compose the measure. Such a finding is consistent with the view that democracy is a sign of well-functioning government because it allows for the governing institutions to be readily adjusted to meet the needs of society (La Porta et al. 1999). The model revealed a positive relationship between quality of governance and the instrument for human development. Such a finding is consistent with the literature noted in the Models section of this paper.

Table 3. Nonrecursive Causal Model Results: Human Development, Quality of Governance, and Democracy

Variables	DV: Human Dev.	DV: Quality of Gov.	DV: Democracy
HD	----------	.233** (4.02)	2.708* (1.70)
QG	-.419** (2.30)	----------	8.111** (5.29)
DM	.025** (2.19)	.027** (7.04)	----------
A	.001** (3.59)	.001** (2.22)	-.001** (3.39)
OR	.001 (0.62)	.001 (0.28)	-.022** (5.09)
E	.052** (2.32)	----------	----------
P	-.002 (0.88)	-.001 (0.91)	----------
AS	-.010** (3.34)	----------	.155** (6.07)
C	-.016** (2.71)	-.035** (6.24)	----------
IP	.001 (0.80)	----------	.113** (5.33)
F	-.213** (2.34)	----------	-1.464** (3.40)
FI	----------	2.31e-06** (2.02)	----------
B	----------	.070** (3.88)	-.728** (4.04)
WS	----------	----------	-1.003** (3.83)
constant	1.041** (7.01)	.231** (8.53)	-5.359** (2.94)
N	1232	1232	1232
R^2	.369	.177	.239

HD = human development; QG = quality of governance; DM = democracy; A = arms transfers; OR = oil reserves; E = chief executive member of the military; P = Protestant tradition; AS = age structure; C = number of armed conflicts; IP = index of power resources; F = ethnic fractionalization; FI = foreign direct investment; B = British colony; WS = world system position. Figures are unstandardized coefficients; absolute z-scores in parentheses. ** = significant according to two-tailed test of significance; * = significant according to one-tailed test of significance.

The third equation that seeks to explain variation in democracy performs as expected. The model shows a positive relationship between democracy and the instrument for human development, the first endogenous variable in the equation. This provides support for our hypothesis that higher levels of democracy are associated with higher levels of human development. The second endogenous variable, the instrument for quality of governance is also found to have a positive relationship to democracy. The z-score of 5.29 provides robust support for my hypothesis that more democratic regimes tend to have a better quality of governance as measured by lack of corruption, the ability of the government to ensure law and order, and bureaucratic quality.

The arms transfers' variable also performed as hypothesized in the simultaneous equation environment. It appears that arms tend to flow to highly developed, well governed countries in the developing world. This is evident by the z-score of 3.59 in the equation seeking to explain variation in human development, and the z-score of 2.22 in the equation seeking to explain variation in quality of governance. However, in the third equation the model shows that there is a negative relationship between democracy and arms transfers. The z-score of -3.39 indicates that high levels of arms transfers are associated with lower levels of democracy. Arms seem to have antidemocratic properties when transferred to countries in the developing world.

As seen in table 4 (below), the model constructed to test the relationship between arms transfers and stability in the developing world performed as hypothesized. Utilizing the stability measure as the dependent variable, I find that there is a statistically significant relationship between arms transfers and stability in the developing world. The z-score of -1.63 seems to indicate that high levels of arms transfers are associated with lower levels of nation-state stability. While the arms transfers' variable is significant according to the one-tailed test of significance, these results should not be considered robust. As evident by the large z-score values of the control variables used in the equation, the fact that the stability measure was constructed using many of these variables as predictors may have inflated the z-scores in the model. Therefore, while there may indeed be a negative relationship between arms and stability, the strength and significance of this relationship warrants further research.

Table 4. Prais-Winsten Regression Results: Arms Transfers and Stability in the Developing World, 1986-1999

Variables	HD: Stability Measure
GDP per capita	.001** (15.81)
Internal Armed Conflict	-.324** (13.14)
Arms Transfers	-.001* (1.63)
Chief Executive Member of Military	-.497** (9.65)
Ethnic Fractionalization	-3.934** (27.96)
Political Terror Scale	-.039** (2.22)
Index of Power Resources	.255** (22.75)
World System Position	-1.649** (10.66)
Proven Oil Reserves	-.029** (22.20)
constant	14.640** (52.25)
N	1232
R^2	.986

Figures are unstandardized coefficients; absolute z-scores in parentheses. ** = significant according to two-tailed test of significance; * = significant according to one-tailed test of significance.

Of the eight control variables operationalized in the equation, three variables were not used as predictors when constructing the stability measure: GDP per capita, internal armed conflict, and the political terror scale. All of these variables proved to be statistically significant in explaining variation in stability. The relationship between stability and GDP per capita was positive, while the relationship between stability and the other two control variables were seen to be negative. This is consistent with what would be expected; high levels of GDP per capita promote stability, while internal armed conflict and high instances of political terror have an adverse effect on nation-state stability.

The remaining five control variables also performed as expected. Stability was found to have a positive relationship to the index of power resources. A negative relationship was seen between stability and the four remaining control variables: chief executive a member of the military, ethnic fractionalization, world system position, and proven oil reserves. The model was effective is explaining variation in stability as evident by the R-squared statistic of .986.

Conclusions and Implications

The results from the 88 countries sampled in this study seems to provide robust support for the assertion in contemporary literature that the global arms trade was fundamentally altered by the collapse of the Soviet Union. It appears that in the post-Cold War environment U.S. defense firms are turning to foreign markets located in the developing world in order to survive. The results of the simultaneous equation model provide support for this conclusion. The model seemed to show that arms flow to countries in the developing world that are highly developed (capable of paying for arms) and well-governed. However, it also indicates that arms tend to bring with them antidemocratic properties.

Arms transfers were found to have a negative relationship to nation-state stability, although this relationship should not be considered robust. Given the nature of the stability measure it is possible that this result was inflated and thus is not as strong as indicated by the z-score value. For now, one can conclude that this relationship is negative, although the strength of this relationship is in question. Consequently, the central question of this research remains unanswered. Whether nor not U.S. arms transfers are significantly contributing to the fracturing of social and political structures in the developing world remains a question of importance, both in terms of US national security and the well-being of the importing state.

Further research in this area should explore the relationship between democracy and arms transfers. The antidemocratic properties of arms when paired with the increased flow of arms to the developing world begs one to question whether or not such an industrial strategy and American foreign policy centered around the spread and promotion of democracy can coexist. Also, further research is necessary to determine how strong the relationship between arms and nation-state stability truly is. This question warrants further research given the national security consequences associated with weak states in the developing world.

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