DETERMINANTS OF BILATERAL AID TO FORMER SOVIET CENTRAL ASIA

A Thesis
submitted to the Faculty of the
Graduate School of Arts & Sciences
at Georgetown University
in partial fulfillment of the requirements for the
degree of
Master of Public Policy
in the
Georgetown Public Policy Institute

By

Jett Thomason, B.A.

Washington, DC
April 8, 2009
DETERMINANTS OF BILATERAL AID TO FORMER SOVIET CENTRAL ASIA

Jett Thomason, B.A.

Thesis Advisor: Jennifer L. Tobin, Ph.D.

ABSTRACT

In the general literature on bilateral aid flows, donors’ strategic interests have been found to determine aid amounts. These strategic interests include trade flows, shared cultural and linguistic ties, common ideologies, and geopolitical importance. In the case of Central Asia, the primary strategic interests of donors are energy exports and the geopolitical importance of the region in support of military operations in Afghanistan. I hypothesize that the aid flows to Central Asia will follow general theories of bilateral aid and will be determined by donors’ strategic interests.

I examine OECD donor aid flows to Central Asian countries from the independence of these new states in 1992 to the most recent year of data, 2006. Donors’ strategic interests with regards to the region increase dramatically following September 11th. By examining aid flows before and after this shift, I am able better see how bilateral aid allocation decisions are affected by donor interests.

Using random effects time series regression I find that donor interests in the form of OECD export flows to recipient countries are significant in determining aid flows. The importance of this measure does not change with September 11th. However, need of the recipients is also strongly significant. Following September 11th,
the importance of need is even more significant than before.

I find that while bilateral aid to the region is influenced by strategic interests of the donors, the impact of recipient need is much stronger and significant, especially in the post-September 11th world. This finding leads me to reject the hypothesis that aid to Central Asia is based on donors’ strategic interests. It appears that the aid flows are more needs-based. This conclusion indicates that within the general theories of bilateral aid, certain situations or dynamics might cause regional variation in how aid is allocated. At the minimum, it would suggest that further research on Central Asia focuses on determinants of bilateral aid. This finding might also indicate that donors are changing how they determine their aid decisions by taking into account the development needs within a recipient country.
I would like to thank first and foremost, my thesis advisor Jennifer Tobin. I would not have been able to complete this without her patient explanation of how to construct my research question and vital instruction in Stata. I would also like to thank Mary Gunderson and Ed Willet for their mentoring and support throughout my graduate school experience. Finally, I would like to thank my parents for their contributions to my education and their tolerance for my nontraditional career choices.
# Table of Contents

Section 1: Introduction.................................................................................................... 1
Section 2: Research Question and Hypothesis................................................................. 4
  *Literature Review of Bilateral Aid* ........................................................................ 4
  *Expected Patterns of Bilateral Aid to Central Asia* ................................................. 7
  *Examination of Donor Aid Flows* ......................................................................... 8
  *Research Question* .............................................................................................. 11
Section 3: Analysis ....................................................................................................... 11
  *Model Specification* ........................................................................................... 13
  *Results* .............................................................................................................. 18
Section 4: Conclusion ................................................................................................... 24
  *References* ....................................................................................................... 27
  *Figures and Results Tables* .............................................................................. 31
  *Map of Central Asia* ...................................................................................... 40
Section 1: Introduction

Research has found that bilateral aid is determined by the strategic interests of the donor country rather than by the need of the recipient country (Neumeyer, 2003, 96-97; Radelet, 2006; and Reinhardt & Balla, 2009). In reaching this conclusion, scholars have analyzed various interactions of aid-providing countries and aid-receiving countries. However, apparently alone among the world’s developing countries, former Soviet Central Asia remains unexamined in the literature on the determinants of bilateral aid. Reviews of development processes in this region have been tackled by historians and political economists, relying heavily on interpretations of geopolitical events rather than on quantitative analysis of actual aid flows. These interpretations have not been quantitatively tested outside of large aggregations of aid data. By closely examining Central Asia’s receipt of foreign assistance, this thesis will help build a more complete and nuanced understanding of what determines bilateral aid.

Academic research on Central Asian countries is limited by the relatively young ages of these states. The five countries of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan achieved their independence in 1991 following the collapse of the Soviet Union. These new countries were largely unknown by Western policy makers and scholars when sovereignty was thrust upon them (Cullen, 1994, 130). Since 1991, Central Asia’s strategic importance to the West has grown due to
rising exports of petroleum and natural gas (Ziegler, 2006) as well as due to the region’s proximity to Afghanistan.

Energy Resources of the Region

During the Soviet era, technical limitations restricted the extraction of Central Asia’s oil resources. Exploration by Western firms began in the early 1990’s, especially in Kazakhstan (Pomfret, 2006, 153-4). Some began calling the machinations for access to energy the “New Great Game” (Ehteshami, 1994). While access to the oil itself was open to outsiders, restricted capacity to pump through Russia to Western markets limited the actual sales of the oil in the immediate years of independence (Pomfret, 2006, p. 5).

Major Western energy firms, frustrated by the limits on transport through the Russian pipeline monopoly, began shipping oil in barges across the Caspian Sea for onward transport by the second half of the 1990’s. At the same time, a larger oil pipeline through the Caucasus to Turkey was completed in 2003 (Olcott, 2005, p. 22). With new Trans-Caspian pipeline development expected, the energy resource provisions from Central Asia will likely grow in the coming years (Pomfret, pp. 155-9). The net effect of these efforts has been a steadily increasing importance of the region’s petroleum and gas to world markets.
Geopolitical Importance of Central Asia

The region was thrust into the international spotlight following the attacks of September 11th. The initiation of military operations against the Taliban regime in 2001 was made possible through Central Asian provision of military bases and logistical corridors. Each country in the region was involved in the support efforts. Kyrgyzstan, Tajikistan, and Uzbekistan hosted bases for NATO forces during the war while transport access was provided by Turkmenistan and Kazakhstan (Roy, 2007, ix). Far from being an altruistic gesture, the Central Asian regimes expected an economic boost from the presence of Western military forces as well as the elimination of a shared enemy in the fundamentalist Taliban (Olcott, p. 5).

These sudden developments led scholars to claim that this was a defining moment for Central Asia (Girgosian, 2006). The new attention lavished on the region was unprecedented in the previous ten years of independence. As Olcott (2005) says, “Except for the events of September 11, the international community might well have chosen to leave most of the Central Asian countries to their own devices.”

The participation of the Central Asian states significantly changed their geopolitical relationships with NATO powers. Indeed, the US specifically redefined the region as a ‘key theater in the war on terror’ (Lovelace as cited by Heathershaw, 2007). Visits by Central Asian head of states to Washington were met with new aid
packages for the region (Heathershaw, 2007). Implicit in this observation was the quid pro quo nature of the new aid.

*Bilateral Aid and Central Asia’s Strategic Importance*

The case of Central Asia presents an opportunity for research on bilateral aid. Theories about bilateral aid conclude that donors give their funds strategically. The energy resources of Central Asia are strategic interests for the West. As petroleum and gas exports grow in exports and the strategic interest in these countries increases, so should we see increased bilateral aid flows. The moment of September 11th also provides an excellent marker to see a dramatic shift in aid. The sudden importance of the physical proximity to Afghanistan should also be correlated with a sudden spike in aid flows. The continued operations in Afghanistan and logistical importance of Central Asia should be driving larger and sustained bilateral aid allocations by donors.

**Section 2: Research Question and Hypothesis**

*Literature Review of Bilateral Aid*

Aggregate analyses of bilateral aid have established a general consensus among scholars that aid flows are largely determined by donor country interests, not by recipient country needs (Neumeyer, 2003 and Radelet, 2006). Donor strategic interests appear to trump even “good” policy in recipient countries (Alesina & Dollar, 2000). Specifically, donors prioritize their strategic military interests which trump the levels of recipients’ democratization (Zanger, 2000 and Boschini & Olofsgard, 2004).
In examining Western assistance, certain patterns of self-interested behavior emerge. French aid to Africa favors its former colonies (Quinn & Simon, 2006). The US focuses on geopolitical interests and support to free-market capitalist countries (Schraeder, Hook, & Taylor, 1998). Japan favors countries with which it shares large trade flows (Alesina & Dollar, 2000). And despite a prevailing stereotype of Nordic altruism, even Sweden tends to give more aid to governments espousing similar ideologies of democratic socialism as well as to countries that are economically important for Swedish firms (Schraeder et al, 1998).

*Bilateral Aid and Central Asia*

The majority of aid to the developing world comes in the form of bilateral assistance (OECD Website, 2009). The 22 members of the Development Assistance Committee of the OECD represent the largest collection of bilateral aid donors in the world (OECD, 2007, 2). The volume of data provided by this organization presents a uniquely comprehensive source to analyze bilateral aid to Central Asia. However, despite the data’s relevance in examining the region, there have been no studies looking at OECD aid flows to Central Asia. In fact, there have been very few scholarly articles looking at aid for Central Asia at all (Auty, 2006).

Most research on bilateral aid involves long periods of time which would naturally exclude the newly independent republics of the former Soviet Union. Data availability has also tended to favor examination of larger, regionally dispersed blocs
of countries. While the specific analyses for other developing regions may not be exactly replicable for the former Communist states, this should not preclude analysis of aid flows to Central Asia as previous scholars have managed within the same constraints to understand the determinants behind bilateral aid to Eastern Europe.

Cold War patterns of aid-giving may have given way following the collapse of communism, but the basic principle of donor interests determining bilateral aid has remained. Europe in the 1990’s did not have a specific, common policy for determining its aid to former communist states (Holdar, 1995). Even still, it appears that a common preference to act on donors’ strategic interests still influenced the European Union in its aid allocation decisions to East European states. Ivanova (2007) claims that Western Europe immediately gave aid to bordering countries because it wanted a stable buffer between the EC and Russia. Kostadinova (2004) found that former communist European aid recipients’ actually got more money the farther they were from Vienna, hypothesizing that the EU wanted to buttress the countries that were expected to border a future, enlarged EU. The same study was unable to find any significance of basic recipient need in the aid allocations. It would appear that while the specifics of donors’ interests may have changed following the Cold War, the underlying power dynamics did not. The problem with extrapolating these results to non-European former Soviet states is that Eastern Europe had a legitimate potential to join the EU while none of the five Central Asian states harbored such hopes. The
relationship between the OECD and Central Asia is likely to be less defined by internal EU politics. This limits our ability to extrapolate conclusions from the context of former Communist Europe regarding bilateral aid to the policy environment facing Central Asia. However, the data and shorter time frame have not been a restriction for other scholars and should not preclude the analysis of this thesis.

**Expected Patterns of Bilateral Aid to Central Asia**

Theories of bilateral aid suggest that donors make their aid decisions based on their own strategic interests, not on the needs of the recipient countries. Academics have identified multiple donor strategic interests including geopolitical importance, economic ties, cultural and linguistic bonds, and shared ideologies between donor and recipient governments. In the case of Central Asia, few of these interests would apply. The primary strategic interests concerning Western countries are Central Asia’s energy exports and its shared regional border with Afghanistan.

If the theory of bilateral aid holds true in the case of Central Asia, aid flows dating from independence should be increasing as the economic interests, in the form of petroleum and gas exports, are increasing for the donor countries. The growth of energy exports is not a sudden and dramatic event, nor should aid flows that are driven by this strategic interest increase suddenly.

In contrast, the change of military and geopolitical importance should be quite different. Central Asia was relegated to the strategic periphery in Western powers’
planning. Following September 11th, the region was suddenly host to multiple Western military bases. Based on the theories that bilateral aid relates to donor interests, when donor strategic interests changed dramatically following September 11th, we should see a similar dramatic change and sustained increase in bilateral aid.

In sum, there are two principal expectations of how bilateral aid should behave in the Central Asian context. Energy and geopolitical importance are the two relevant donor interests for the region. Bilateral aid theories suggest that donor strategic interests drive aid flows. Since energy interests grow over time and geopolitical interests spike in 2001, I expect to see aid patterns that grow over time with specific, sharp jumps in 2001. In the first examination of aid, I will look to see if these patterns are immediately visible.

**Examination of Donor Aid Flows**

In the first review of whether the expected aid patterns match the real aid patterns, I plotted the total amounts of OECD bilateral aid to the region from 1992-2006. In figure 1, the bar graph shows total levels of bilateral aid. At a broad level, aid does appear to be increasing. I expected to see a slow, positive rise of aid with a spike in 2001. Instead of a smooth rise over time, there two sharp spikes in 1994 and 2001 which are both followed by multiple years of decline.

The first spike of total aid in figure 1 occurs in the years immediately following the independence of these countries and their transition from a command economy to a
free-market system. The second spike in 2002 corresponds to the immediate attention paid to Central Asia because of the war in Afghanistan. On average, the aid is positive and increasing, matching my expectations based on theories of bilateral aid. At the same time however, it is the subsequent drops in aid following these spikes that are difficult to reconcile with theoretical expectations.

Neumeyer (2003) suggests that percentage of total aid is a better measure of bilateral aid programs. The line graph portion of figure 1 plots the percentage of OECD bilateral aid Central Asia received relative to the OECD members’ global aid budgets. In the case of Central Asia, the plotted results of percentage share appear dramatically different than the plotted results of total aid flows. Both plotted results show a jump in aid in the early 1990’s with the emergence of these new states. In percentage terms, Central Asia initially receives more than 2% of all OECD aid. However, the resulting decline in percentage share of aid is in complete disagreement with theoretical predictions of an overall positive increase in aid. By the end of the time period examined, aid drops to 0.25% of OECD aid. Even the massive surge in military interaction following September 11\textsuperscript{th} barely registers on this measure of bilateral aid. The average increase in aid flows appears to be more an artifact of rising OECD aid budgets rather than actual increases in donor largess to the region (Radelet, 2006). The unambiguously negative direction of OECD aid to Central Asia is completely at odds with the theoretical expectations.
Potential Concern of Afghanistan and Iraq within OECD Global Aid Data

There have been arguments that in the aftermath of the 2001 war in Afghanistan and the 2003 invasion of Iraq, the massive assistance rendered to these post-conflict situations drained other regional aid budgets (Woods, 2005). It is possible that by including Iraq and Afghanistan into the calculations, aid as a percentage of global assistance is skewing my interpretation. It could be that the new drain on global aid budgets would unfairly depict Central Asia to be losing out in the bilateral aid allocations. It might simply be the case that Afghanistan and Iraq are demanding a disproportionate share of aid, leaving all other recipients to compete for a piece of the smaller aid resources. Central Asia may still be preferred over these other countries as an aid recipient.

In order to account for this possibility, in figure 2 I compare the relative percentage share of OECD aid for Central Asia as one group, and Afghanistan and Iraq as another. The change in the relative aid shares is dramatic. In contrast to Central Asia’s decline from 1992-2006, Afghanistan and Iraq are barely registering in 2000, but have jumped to 5% of global aid receipts in 2003. This observation led me to calculate what the percentage of aid to Central Asia would have been without the distorting effect of Afghanistan and Iraq.

Figure 3 plots Central Asia’s percentage of OECD global aid to all recipient countries against Central Asia’s percentage of OECD global aid minus Afghanistan.
and Iraq. If those conflict situations really were shrinking the available aid funds for the rest of the world, then perhaps Central Asia would emerge as a winner among needy countries of a necessarily smaller pot of OECD money. In fact, the two lines in figure 3 are nearly indistinguishable. Removing Iraq and Afghanistan from the data does not appear to affect Central Asia’s percentage of bilateral aid in any way.

**Research Question**

The theoretical expectations of bilateral aid do not appear to fit actual observations in the context of Central Asia. The first pattern I expected to find in the observed data was a steady growth in aid receipts in line with steady growth in energy exports. If anything, the time period covering this growth of Central Asia’s role in energy markets shows a decline in aid. The disconnect between what I expected to see and what actually was plotted requires further analysis.

**Section 3: Analysis**

Bilateral aid flows to Central Asia have not been examined as a regional unit. Theories of bilateral aid have clearly shown that aid is given strategically by donors. In examining the interests of aid donors, energy resources and military importance are the two strategic interests that would apply to Central Asia. These interests have grown over time with a sharp jump in 2001. If bilateral aid flows are strategically allocated, then the actual aid amounts should parallel these developments. It appears that this
might not be the case for Central Asia. In order to determine the validity of generally accepted theories on bilateral aid for this region, I will test the following hypothesis:

*Bilateral aid from OECD countries is determined by donor strategic interests.*

Testing this hypothesis against the actual data will help illuminate why the observed pattern of bilateral aid to Central Asia does not appear to be behaving according to theoretical expectations. If bilateral aid to Central Asia is indeed failing to agree with the accepted theories, then an excellent opportunity to test this is through the post-September 11th world. Sudden and massive military intervention in neighboring Afghanistan and a sustained demand for logistical access through Central Asia is a clear strategic interest of the OECD donor countries. Theories of bilateral aid would lead us to expect more aid due to heightened donor strategic interests. Even if there were aid flows that may have been needs-based prior to 2001, theory would suggest that these will diminish in the wake of September 11th. As part of testing the determining factors behind Central Asia’s receipts of bilateral foreign assistance, I will focus on the post-September 11th period to see what changes take place in donor allocations.

The principal information on aid flows comes from a time series dataset that covers the OECD DAC bilateral aid flows from 1992-2006 to former Soviet Central Asia. Testing my hypothesis requires the use of several models. Donor interests can be determined along military, economic, and political-ideological lines. A recipient’s need
can be accounted for as a measure of its economic welfare. The key moment of September 11th will also be analyzed in relation to these sets of variables.

**Model Specification**

*Random Effects Time Series Model*

The first model (1) takes the following form: the natural log of aid to country $i$ in a given year $t$ depend on the needs of the recipient country ($need$), the interests of the donor ($interests$), control variables ($controls$), a binary variable for the post-September 11th, 2001-2006 time period, fixed time effects ($\tau$), and an error term ($\varepsilon$).

\[
OECD_{Aid} = \alpha_i + \beta_{i,need} + \gamma_{i,interests} + \delta_{i,controls} + \eta_{September 11^{th}} + \tau_i + \varepsilon_{i,t}
\]

In similar studies, interacting a dummy variable for the Cold War period has helped understand how the political situation of that era affected aid flows before and after the collapse of the USSR (Simon & David, 2006). The first model does not take into account the interaction between September 11th and $need$ or September 11th and $interests$. Model (2) and (3) allow for an interaction term with donor interests. This tool will allow analysis of the actual impact of post-September 11th donor behaviors.

\[
OECD_{Aid} = \alpha_i + \beta_{i,need} + \gamma_{i,interests} + \delta_{i,controls} + \eta_{September 11^{th}} + \lambda (interests \ast September 11^{th}) + \tau_i + \varepsilon_{i,t}
\]
Model (4) tests the interaction of just September 11th and need.

\[
OECD_{\text{Aid},i,t} = \alpha_{i,t} + \beta_{i,\text{need}} + \gamma_{i,\text{interests}} + \delta_{i,\text{controls}} + \eta_{i,\text{September 11th}} + \theta_{i,t}(\text{need} \times \text{September 11th}) + \tau_{i} + \varepsilon_{i,t}
\]  

The final model (5) includes all relevant interaction terms.

\[
OECD_{\text{Aid},i,t} = \alpha_{i,t} + \beta_{i,\text{need}} + \gamma_{i,\text{interests}} + \delta_{i,\text{controls}} + \eta_{i,\text{September 11th}} + \theta_{i,t}(\text{need} \times \text{September 11th}) + \lambda(\text{interests} \times \text{September 11th}) + \tau_{i} + \varepsilon_{i,t}
\]  

**Dependent Variable:** OECD_Aid is a modified variable. It is the log value of the total aid dollars given by each of the 22 DAC member donor countries to each Central Asian recipient in a single year from 1992-2006.

**Variables for Recipient Need:** The variable for recipient need is based on the UN Human Development Index (HDI). The HDI provides the best way for this model to proxy for recipient need in Central Asia (Wolf & Spoden, 2000). HDI is measured from 0 at the worst to 1 at best. OECD countries are largely in the 0.900 range while low income countries like many Sub-Saharan countries rate less than 0.500. The Central Asian states largely range from 0.600 to 0.800. To help clarify the results, I multiplied the HDI by -1 to obtain a value that would allow me to proxy for recipient need. This variable, Need, increases as the recipient country’s level of human development decreases.
Donor Interest Variable for Economic Importance: Trade flows have been shown to be significant indicators of the level of aid from a donor to a recipient. Lundsgaarde, Breunig & Prakash (2006) found a 2.7% increase in trade with a donor to be correlated with a 6.5% increase in aid from the donor in the following year. Because of Central Asia-specific problems in ensuring complete and accurate data, I have limited the donor economic interest proxy to the OECD-reported export flows to Central Asia. In the thesis dataset, the level of OECD exports to Central Asian partners corresponds to the value of total exports in US Dollars (2000) of one donor to one recipient in one year. The value was logged to provide the variable \textit{OECD Exports} (Lundsgaarde et al, 2006).

Donor Interest Variable for Political Rights and Civil Liberties: OECD DAC members are all democratic countries with preferences for protection of political rights and civil liberties. Democratizing aid recipients tend to receive more bilateral aid from donors (Alesina & Dollar, 2000). In official statements from the West with regards to Central Asia, mention is often made of using aid funds to support good governance (Warkotsch, 2006 and Tarnoff, 2007). The US Millennium Challenge Corporation and USAID both cite a preference for democratic regimes in their aid giving (MCC and USAID websites, 2009). Based on these observations, I have classified increased freedom and democracy as a donor interest. For the purposes of thesis analysis, I
created a *Democracy* variable, which is based on the Freedom House score (Freedom House website, 2008).

**Donor Interest Variable for Military Ties:** USAID’s Greenbook publishes US military aid to a recipient country in per capita terms (USAID Website, 2009). The US’s military strategic interests are closely aligned with other OECD strategic interests. For this reason, the US military assistance information can be used as a proxy to measure level of strategic cooperation affiliation between the OECD and a recipient in a given year (Zanger, 2000). The variable is recorded as *US Military Aid*.

**Other Donor Interest Variables:** Other studies have used linguistic or colonial ties as another measure of donor interest. Central Asia has never been colonized by OECD powers and there are no shared cultural, linguistic, or ethnic factors with outside donors. For this reason, cultural, linguistic, and other historical variables were not included in the analysis.

Recipient energy resources are one of the factors I concluded is a donor interest with regards to Central Asia. For this reason, I attempted to find data related to petroleum and gas exports. Unfortunately, data largely do not exist for each recipient country for much of the 1990’s. The two principal data sources for energy exports, the UN Commodity Flow database and British Petroleum’s Statistical Review of World Energy, are not complete for this region and do not always agree with each other.
Because this lack of reliable data would skew results if added into the dataset, I omitted a variable for petroleum exports from the models.

*September 11th*: This binary variable marks the post-September 11th world. The period of 1992 to 2000 is coded as 0 while the 2001-2006 period is coded as 1. This variable will serve two purposes. First, I will be able to see if the context of post-September 11th world alone translates to more aid for Central Asia. Second, I use this term as the principal variable to interact against need and interests.

*Control Variables*: As part of the control variables in the model, I used the natural log of the recipient country’s population (Wolf & Spoden, 2000) and a count of the deaths from natural disasters in a given year (CRED, 2009). A time variable year is included to account for the expected increase in aid over time as Central Asia becomes a more strategically important region for the OECD.

*OLS Model of Average Effects*

In order to test the robustness of the September 11th interaction terms from the random effects time series model, I have used an OLS model on the average effects of donor interests and recipient need variables to determine if the effects are similar before and after September 11th (Wolf & Spoden, 2000). The main dataset was split into a 1992-2000 set and 2001-2006 set. The average effect of need and interest are put into the following time series corrected OLS model.

\[
OECD\_Aid_i = \alpha_i + \beta_i need + \gamma_i interests + \delta_i \text{controls} + \varepsilon_i
\]  

(6-7)
Due to the high correlation between some variables in model (5), there were fewer variables in the OLS model (6). For example, the correlation between US military aid was 0.42 with Need and 0.60 with Democracy. However, there were no major changes in the directions of the coefficients and in general the second model supported the findings of the time series model.

Results

The results of the analysis are available in Table 1. There appear to be two effects in bilateral aid. Strategic interests of the donor, in the OECD Exports variable, are significant. Donors do take their economic ties into account when determining aid flows to the region.

However, the Need variable is strongly significant. This appears to reject the hypothesis that bilateral aid to Central Asia is donor interests-based. More importantly, the Need variable is much more significant in a post-September 11th world. This factor has a much larger effect than the strategic interest of the donor. In sum, the results of my analysis reject the hypothesis that aid to Central Asia is strategic interests-based. In the case of Central Asia, bilateral assistance is more needs-based.

Equation (1) determines the effect of the Need variable. The results from equation (1) show that recipient need is a significant determinant for bilateral aid to Central Asia. A 0.10 point increase in Need is significantly associated with a 0.89
percentage point increase in donor aid. Donor interests were also generally significant. 

*OECD Exports* to Central Asia is very significant. An increase in exports is associated with an increase in donor aid by a roughly 2 to 1 ratio. *Democracy* was also significant in this equation’s determinant variables. Interestingly, despite the increase in military cooperation beginning in 2001, neither *US Military Aid* nor *September 11th* were statistically significant in this iteration.

In sum, in model (1), both *need* and *interests* are significant. This does not strongly support my hypothesis. In model (2), I interacted *OECD Exports* with *September 11th*. Given that this is a strategic interest variable for the donor, I expected that after 2001, the donors’ interests would be more strongly reflected in the bilateral aid. In fact, the interaction term *OECD Exports * *September 11th* was not significant. The strengths and significance of the other variables essentially do not differ between (1) and (2). The criteria for connecting trade to aid did not appear to change after 2001. In fact, in models (1) – (5), the magnitude of exports’ effect on bilateral aid is essentially stable. Figure 6 for *OECD Exports* conditional on *September 11th* shows the positive effect of this variable on aid flows. It would appear that aid is given to Central Asian countries that have higher exports from OECD donor countries, but that this basic calculation did not change across the span of the time period.

Equation (3) looks at how civil liberties and political rights changed for donors following 2001. To measure this, I added an interaction term of *Democracy* *
September 11th to the original equation (1). The addition of this term actually reduced the significance of Democracy though both terms are weakly jointly significant. It would appear that the donor desire to assist democratic regimes was not a driving factor in aid allocation decisions after 2001. In the other models, Democracy was weakly significant or not significant. Figure 5 plots an upward trend for Democracy as conditional to September 11th. While positive, the effect is very slight. In spite of the donor rhetoric, aid flows to Central Asia are apparently not shaped with regard to the quality of the recipient’s democracy. Need is still significant in model (3) and the fact that this donor interest does not appear to be important also indicates that bilateral aid in this case is needs-based.

The other donor interest variable tested was US Military Aid. This variable was not significant in any equation. Interacting the term with September 11th did not show any level of individual or joint significance for the model. Researchers have drawn a connection between a recipient country’s willingness to host a base, and a donor’s willingness to “pay” with aid (Jones Luong & Weinthal, 2002). However, high levels of military assistance and cooperation are not tied to the bilateral aid flows for Central Asia. The fact that bases were installed in the recipient countries, a war was fought out of these same countries, and yet aid is not influenced at all strongly indicates that the hypothesis that aid is donor interests-based is not accurate in the case of Central Asia.
Given the importance of understanding recipient need in the aid flow dynamics and the specific test of the hypothesis in the case of September 11th, equation (4) is a critical part of the analysis. Equation (4) introduces a single interaction term for Need and September 11th to equation (1).

The results strongly indicate that I should reject the donor interests-based aid hypothesis. Need as a single variable slightly weakens in magnitude, but the impact of September 11th is tremendous. First, the variable for September 11th itself accounts for an increase of 16 percentage points in donor aid. After 2001, aid is much larger for the Central Asian region. This is remarkable, but the more impressive factor is the effect that September 11th has jointly with Need. A 0.10 point increase in Need by itself would be correlated to nearly a 0.7 percentage point rise in aid. The interaction of Need and September 11th yields an increase in aid that is more than three times this size.

To better show this effect, figure 4 plots the steep and positive trend in aid from Need conditional on September 11th. Even within the bounds of a single standard deviation, the strong upward trend is visible. This picture vividly shows the degree to which bilateral aid to Central Asia is needs-based. Based on model (4), donors after 2001 are not only not giving more aid based on their own self-interests, but they appear to be favoring recipient need even more than before. Based on this model, aid is indeed needs-based.
The final version of this model includes all interaction terms that are individually and jointly significant. The results continue to show that aid to Central Asia is needs-based. The only indicator that donor interest plays into the aid decisions is the level of exports from OECD countries. This is important, but the magnitude of the effect does not change before and after 2001. It seems that there is some level of economic interest that donors take into account at a lower level, but that it is not playing a central role. More interestingly, Democracy, which had been significant in previous models, weakens considerably. US Military Aid continues to not be significant. Of the three proxies for donor interests, only one manages to remain relevant in the aid determination process.

In model (5), the post-September 11th world, holding other factors constant, is associated with 21 percentage points more donor aid for Central Asia than before. Donors are giving more because of the changed geopolitical circumstances. In this new environment donors are paying attention to the recipient need. In a post-September 11th world a Central Asian country will see roughly three times the amount of need-based aid than it would have prior to 2001. There do not appear to be any cold, realpolitik calculations on aid allocations in the new era. Rather, donors appear to be even more cognizant of poverty and human development in Central Asia by the end of 2006 than in 1992. These results, in rejecting my hypothesis that aid to Central Asia is also donor strategic interests-based, actually shows that aid to the region is needs-based.
OLS Equation Results

To test the robustness of these findings, two OLS equations were used to compare the average effects of Need and Interests before and after 2001. Of the donor interest variables examined, US military assistance per capita was not included. High levels of correlation prevented the inclusion of this variable, but given that US Military Aid was not significant in equations (1) – (5), this should not affect the OLS results. The second model also supports the finding that bilateral aid is needs-based.

In both the 1992-2000 period and the post-September 11th period of 2001-2006, the percentage increase in OECD exports is roughly proportional to the increase in donor aid. This supports the previous models’ findings that while there is some calculation of trade relationships in allocating funds to a recipient country, it did not greatly change following September 11th.

Democracy is significant in the pre-2001 dataset with a 1 point increase in a recipient country’s score is associated with a 1.3 percentage point increase in aid. This significance, however, disappears in the post-September 11th dataset. Western donors reacted to the new strategic situation by increasing their aid for development, not by pushing their own agenda. The reduced significance of Democracy and the unchanged impact of OECD Exports do not support the hypothesis that bilateral aid in the Central Asian context is donor interest driven.
In the pre-2001 OLS model (6), *Need* is not significant. The fact that aid began to flow only after a couple years into the independence of these new states might be contributing to the lack of significance of this variable. It is the post-September 11\(^{th}\) equation (7) where *Need* is dramatically and strongly significant. For context, Tajikistan, one of the poorest countries in Central Asia would be expected to receive 15 percentage points more of donor assistance than Kazakhstan, a richer, oil-exporting country.

It would appear that instead of making calculated geopolitical decisions and pushing their own interests as my hypothesis posits, donors were much more responsive to recipients’ needs. Models (6) and (7) both reject the hypothesis that aid to Central Asia is donor interests-based.

**Section 4: Conclusion**

The theories on determinants of bilateral aid find that donor interest supersedes the level of a recipient country’s need. My hypothesis was that the same findings from other regions in the world would also be seen in the Central Asian context. The fact that this did not occur raises important questions about the theoretical underpinnings of bilateral aid.

The time period of the analysis begins in 1992 and lasts through 2006. In this fifteen year interval, the region of Central Asia became important strategically both due to its energy supplies and to the establishment of Western military bases in 2001.
If the region had simply been ignored and aid agencies were able to allocate funds with little political input, the results should have shown a diminishing level of the importance of need over time.

Most importantly, prevailing theories would suggest that the sudden change in the region’s geopolitical importance after September 11th should show a similar spike in the significance of donor interest variables from 2001. However, instead of exhibiting any different determining characteristics, aid flows continue largely as they did prior to September 11th.

Analysis of this situation should focus on how the political conditions surrounding Central Asia might affect aid levels. It is possible that policy-makers consider the region to be at least within some zone of Russian interest, if not within a defined sphere of influence. While not officially acknowledged, the relative remoteness of Central Asia to the West and its de facto assignment to Russia would not indicate any potential for political and diplomatic “investment” by the West with official assistance. In this context, the general lack of importance and attention of policy-makers in the West might allow aid agencies to make their allocation decisions free from undue political influence. This finding should encourage further research into Central Asian politics and its role in the world community.

It is also possible that the long history of bilateral aid allocations obscures recent trends. Calls for aid effectiveness, accountability, and attention to humanitarian
need might be influencing patterns of donation. If this is the case, long historical patterns may obscure the newer determinants of bilateral aid.

At a minimum, the exception of Central Asia’s experience with bilateral aid calls for more scholarly attention. If Central Asia is unique in its bilateral aid relationships, further analysis will help build a more nuanced understanding of how bilateral aid packages are formulated and delivered.
References


Jones Luong, Pauline; Weinthal, Erika. (2002). New Friends, New Fears in Central Asia. *Foreign Affairs.* 81:2, 61-70


OECD. (2009). International Development Statistics website is a portal to order the 2009 OECD DAC aid data CD-ROM. http://www.oecd.org/document/1/0,3343,en_2649_34447_1895553_1_1_1_1,00.html


Figures and Results Tables

Figure 1: Central Asia’s Aggregate OECD Bilateral Aid and Central Asia’s Relative Share of Global OECD Bilateral Aid
Figure 2: OECD Aid to Central Asia and OECD Aid to Afghanistan/Iraq as a Percentage of Total OECD Global Aid
Figure 3: Central Asia’s Relative Share of Total OECD Global Aid (Including Afghanistan and Iraq) and Central Asia’s Relative Share of Total OECD Global Aid (Not Including Afghanistan and Iraq)
Figure 4: Conditional Effect of September 11th on Need (2006)
Figure 5: Conditional Effect of September 11th on Freedom (2006)
Figure 6: Conditional Effect of September 11th on OECD Exports (2006:US)

-1 Standard Deviation

Conditional effect of Sep 11 on OECD Exports

+1 Standard Deviation

Australia: Uzbekistan

US: Kazakhstan
Table 1
Equations (1)-(5) Random Effects Time Series

Dependent Variable: Logged OECD DAC bilateral aid flows to Central Asia from 1992-2006

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>OECD Exports(^1)</td>
<td>0.458***</td>
<td>0.445***</td>
<td>0.457***</td>
<td>0.481***</td>
<td>0.449***</td>
</tr>
<tr>
<td></td>
<td>(0.090)</td>
<td>(0.097)</td>
<td>(0.090)</td>
<td>(0.094)</td>
<td>(0.098)</td>
</tr>
<tr>
<td>Freedom(^2)</td>
<td>0.465*</td>
<td>0.462*</td>
<td>0.634</td>
<td>0.430*</td>
<td>0.298</td>
</tr>
<tr>
<td></td>
<td>(0.261)</td>
<td>(0.260)</td>
<td>(0.544)</td>
<td>(0.255)</td>
<td>(0.281)</td>
</tr>
<tr>
<td>Need(^3)</td>
<td>8.927**</td>
<td>9.178**</td>
<td>8.603**</td>
<td>6.874*</td>
<td>6.866*</td>
</tr>
<tr>
<td></td>
<td>(3.905)</td>
<td>(4.008)</td>
<td>(3.893)</td>
<td>(3.842)</td>
<td>(3.912)</td>
</tr>
<tr>
<td>OECD Exports(^1) * September 11(^{th})</td>
<td>0.069</td>
<td>0.174</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.194)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freedom(^2) * September 11(^{th})</td>
<td></td>
<td>0.634</td>
<td>0.559</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.544)</td>
<td>(0.227)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Need(^3) * September 11(^{th})</td>
<td></td>
<td></td>
<td>23.859**</td>
<td>27.664**</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(10.566)</td>
<td>(13.321)</td>
<td></td>
</tr>
<tr>
<td>September 11(^{th})</td>
<td>-0.271</td>
<td>-0.802</td>
<td>3.601</td>
<td>16.593**</td>
<td>21.348**</td>
</tr>
<tr>
<td></td>
<td>(0.796)</td>
<td>(1.587)</td>
<td>(3.493)</td>
<td>(7.508)</td>
<td>(10.295)</td>
</tr>
<tr>
<td>US Military Aid Per Capita</td>
<td>0.685</td>
<td>0.696</td>
<td>0.645</td>
<td>0.777</td>
<td>0.782</td>
</tr>
<tr>
<td></td>
<td>(0.541)</td>
<td>(0.549)</td>
<td>(0.537)</td>
<td>(0.501)</td>
<td>(0.515)</td>
</tr>
<tr>
<td>Population(^4)</td>
<td>0.206</td>
<td>0.187</td>
<td>0.220</td>
<td>0.240</td>
<td>0.211</td>
</tr>
<tr>
<td></td>
<td>(0.283)</td>
<td>(0.282)</td>
<td>(0.292)</td>
<td>(0.291)</td>
<td>(0.299)</td>
</tr>
<tr>
<td>Deaths from Natural Disasters</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.001)</td>
</tr>
<tr>
<td>Year</td>
<td>0.380***</td>
<td>0.379***</td>
<td>0.370***</td>
<td>0.393***</td>
<td>0.382***</td>
</tr>
<tr>
<td></td>
<td>(0.112)</td>
<td>(0.112)</td>
<td>(0.112)</td>
<td>(0.109)</td>
<td>(0.112)</td>
</tr>
<tr>
<td>Constant</td>
<td>-751.204***</td>
<td>-748.520***</td>
<td>-731.544***</td>
<td>-778.054***</td>
<td>-758.789***</td>
</tr>
<tr>
<td></td>
<td>(224.022)</td>
<td>(225.711)</td>
<td>(224.893)</td>
<td>(218.729)</td>
<td>(223.762)</td>
</tr>
</tbody>
</table>

| Obs. N                  | 1650         | 1650         | 1650         | 1650         | 1650         |
| R^2                     | 0.0728       | 0.0737       | 0.0739       | 0.0767       | 0.0805       |

Standard error in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

1: Logged values
2: Based on modified Freedom House Score where 7 is most free and 1 is least free
3: Based on modified HDI Score where 0.0 is the best social development score, 1.0 is the worst social development score
Table 2
OLS Regressions for split time periods
Dependent Variable: Logged OECD DAC bilateral aid flows to Central Asia

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>OECD Exports¹</td>
<td>1.025***</td>
<td>1.348***</td>
</tr>
<tr>
<td></td>
<td>(0.105)</td>
<td>(0.184)</td>
</tr>
<tr>
<td>Freedom²</td>
<td>1.281***</td>
<td>15.194</td>
</tr>
<tr>
<td></td>
<td>(0.361)</td>
<td>(12.128)</td>
</tr>
<tr>
<td>Need³</td>
<td>22.450</td>
<td>143.482**</td>
</tr>
<tr>
<td></td>
<td>(16.123)</td>
<td>(72.825)</td>
</tr>
<tr>
<td>Population¹</td>
<td>0.017</td>
<td>-4.724</td>
</tr>
<tr>
<td></td>
<td>(0.488)</td>
<td>(4.075)</td>
</tr>
<tr>
<td>Deaths from Natural Disasters</td>
<td>0.009</td>
<td>-1.510</td>
</tr>
<tr>
<td></td>
<td>(0.007)</td>
<td>(1.357)</td>
</tr>
<tr>
<td>Constant</td>
<td>20.928</td>
<td>279.370</td>
</tr>
<tr>
<td></td>
<td>(13.910)</td>
<td>(199.823)</td>
</tr>
<tr>
<td>Obs. N</td>
<td>110</td>
<td>110</td>
</tr>
<tr>
<td>R²</td>
<td>0.4476</td>
<td>0.3982</td>
</tr>
</tbody>
</table>

Standard error in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

1: Logged values
2: Based on modified Freedom House Score where 7 is most free and 1 is least free
2: Based on modified HDI Score where 0.0 is the best social development score, 1.0 is the worst social development score
### Table 3
Descriptive Statistics

<table>
<thead>
<tr>
<th></th>
<th>Obs. N</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log of Donor Aid</td>
<td>1650</td>
<td>6.313</td>
<td>6.876</td>
<td>0.000</td>
<td>19.448</td>
</tr>
<tr>
<td>Log of OECD Exports to Central Asia</td>
<td>1650</td>
<td>7.087</td>
<td>3.610</td>
<td>0.000</td>
<td>14.263</td>
</tr>
<tr>
<td>Freedom House Score</td>
<td>1650</td>
<td>5.860</td>
<td>1.025</td>
<td>3.000</td>
<td>7.000</td>
</tr>
<tr>
<td>Human Development Index</td>
<td>1650</td>
<td>0.713</td>
<td>0.062</td>
<td>0.575</td>
<td>0.873</td>
</tr>
<tr>
<td>US Military Aid Per Capita</td>
<td>1650</td>
<td>0.231</td>
<td>0.392</td>
<td>0.000</td>
<td>2.560</td>
</tr>
<tr>
<td>Log of Population</td>
<td>1650</td>
<td>15.972</td>
<td>0.680</td>
<td>15.172</td>
<td>17.092</td>
</tr>
<tr>
<td>Deaths from Natural Disasters</td>
<td>1650</td>
<td>34.853</td>
<td>185.316</td>
<td>0.000</td>
<td>1601.000</td>
</tr>
</tbody>
</table>

1: 1 is most free and 7 is least free
2: 1.0 is the best social development score, 0.0 is the worst social development score

### Table 4
Correlations Between Variables for Equations (1) – (5)

<table>
<thead>
<tr>
<th></th>
<th>Log of Donor Aid</th>
<th>OECD Exports</th>
<th>Freedom</th>
<th>September 11th</th>
<th>US Military Aid</th>
<th>Population</th>
<th>Natural Disasters</th>
</tr>
</thead>
<tbody>
<tr>
<td>OECD Exports</td>
<td>0.455</td>
<td>-0.150</td>
<td>-0.125</td>
<td>0.251</td>
<td>-0.125</td>
<td>0.340</td>
<td>-0.088</td>
</tr>
<tr>
<td>Freedom</td>
<td>0.024</td>
<td>0.030</td>
<td>-0.271</td>
<td>0.174</td>
<td>-0.219</td>
<td>0.278</td>
<td>0.077</td>
</tr>
<tr>
<td>Need</td>
<td>0.179</td>
<td>0.099</td>
<td>0.064</td>
<td>0.179</td>
<td>0.455</td>
<td>0.051</td>
<td>-0.096</td>
</tr>
<tr>
<td>September 11th</td>
<td>0.251</td>
<td>0.229</td>
<td>-0.125</td>
<td>0.251</td>
<td>0.229</td>
<td>0.051</td>
<td>-0.118</td>
</tr>
<tr>
<td>US Military</td>
<td>0.174</td>
<td>0.099</td>
<td>0.064</td>
<td>0.174</td>
<td>0.455</td>
<td>0.051</td>
<td>-0.096</td>
</tr>
<tr>
<td>Population</td>
<td>0.077</td>
<td>0.278</td>
<td>-0.139</td>
<td>0.077</td>
<td>0.455</td>
<td>0.051</td>
<td>-0.096</td>
</tr>
<tr>
<td>Natural Disasters</td>
<td>-0.088</td>
<td>-0.160</td>
<td>0.340</td>
<td>-0.088</td>
<td>-0.118</td>
<td>-0.079</td>
<td>-0.095</td>
</tr>
<tr>
<td>Year</td>
<td>0.332</td>
<td>0.323</td>
<td>-0.206</td>
<td>0.850</td>
<td>0.415</td>
<td>0.060</td>
<td>-0.207</td>
</tr>
</tbody>
</table>
Map of Central Asia

Commonwealth of Independent States - Central Asian States