ONLINE APPENDICES I-III FOR "DOMESTIC INSTITUTIONS AND WARTIME CASUALTIES"

APPENDIX I: ADDITIONAL VARIABLE INFORMATION

1. Description of the strategy and terrain variables: This variable is drawn from Stam and Bennett and Stam.[1] The variables are updated through 2001.

The *Strategy* variable can take on 5 possible values based on combinations of 3 possible strategies: maneuver strategies, attrition strategies, and punishment strategies:

5. OMDA/DPOA: offensive maneuver, defensive attrition
4. OPDA/DMOA: offensive punishment, defensive attrition
3. OADA/DAOA: offensive attrition, defensive attrition;
2. OADM/DAOP: offensive attrition, defensive maneuver
1. OADP/DAOM: offensive attrition, defensive punishment

Based on the New York Times Atlas, the *Terrain* variable codes the topography in the dominant location in which a war is fought. The variable can vary between a 1.2, which signifies open, rolling terrain, and a .3, which signifies completely impassable terrain.

Bennett, D. Scott, and Allan C. Stam. 1996. The Duration of Interstate Wars, 1816-1985. *American Political Science Review* 90 (2):239-257.

[1] (Bennett and Stam 1996; Stam 1996)

Stam, Allan C. 1996. *Win, lose, or draw : domestic politics and the crucible of war*. Ann Arbor: University of Michigan Press.

APPENDIX II: ADDITIONAL RESULTS AND THE SUPERIORITY OF VOLUNTEER ARMIES

Eight states fall into the category of volunteer autocratic initiators – Bulgaria in 1912, Saudi Arabia in 1973, Somalia in 1977, Uganda in 1978, and Oman, Qatar, Saudi Arabia, and United Arab Emirates in 1991. The latter four states are all joining initiators in the 1991 Gulf War that did not substantially participate in the military action. Saudi Arabia in 1973 was similarly a joiner in the Yom Kippur War. While the other volunteer initiators, Bulgaria, Somalia, and Uganda, had more robust involvement in their respective wars, the states in the volunteer autocratic initiator category are all minor powers and their wars are not remarkable from a military perspective.

Volunteer autocratic targets also suffer relatively few casualties, as shown in Figure 2, but the historical experiences of volunteer autocratic targets, as with volunteer autocratic initiators, cautions against reading too much into the results. Four states fall clearly into the category of Volunteer Autocratic Targets in the paper above – Two Sicilies in 1849, Hungary in 1919, Jordan in 1973, and Ethiopia in 1977. All four wars involve minor powers and two involve very unstable national states – Hungary had just been formed following World War I while Ethiopia was in the midst of a civil conflict following the downfall of Haile Selassie when Somalia invaded. The figure below shows the complete marginal effects for casualties as regime type, initiation, and military labor policy changes.

Additionally, in contrast to Choi and James' arguments, our results show that there are several reasons to think that volunteer militaries should suffer fewer casualties

than conscript armies.[2] First, volunteer armies are comprised of those that choose to serve. This means they are more likely to be highly motivated, raising overall morale in the military and making them more capable war fighters (Asch and Warner 1999, B5). Indeed, the focus on individual rights in modern societies, described by Choi and James as a reason people do not want to sacrifice themselves for their country, is precisely why all volunteer forces boast higher morale and retention rates. In a speech delivered on September 16, 2003, Deputy Secretary of Defense Paul Wolfowitz argued that the U.S. volunteer military reflects the free society that produces it, enhancing its capabilities (Wolfowitz, 2003). The effect may be compounded in democracies.

Second, through establishing relatively higher recruiting standards, volunteer armies can screen out less qualified soldiers, producing a more competent fighting force able to handle the higher-complexity tactics and weapons of modern militaries.[3] This is not meant to suggest that there are not social selection issues in the volunteer military in the United States. However, in the US case, after early failures, compensation structures in the post-draft period were set up to attract those with higher education levels to join the military, especially in the officer corps. While the volunteer system does not necessarily lead to those with the highest levels of education enlisting, that was a problem during the conscript era in the United States as well. The overrepresentation of those with lower socio-economic status and education in the armed forces cited by Choi and James was commonplace in the American military during World War II, Korea, and Vietnam as well

[2] Note that while we disagree with Vasquez about the relative impact of conscription versus volunteer armies on casualties, he agrees that the available literature predicts greater capabilities on the part of volunteer armies, largely due to training and professionalization (Vasquez 2005).

[3] For evidence of the necessity for high-quality recruits in an era of growing technological complexity, see Binkin (Binkin 1984). Recent evidence shows recruits that score higher on aptitude exams are more likely to become higher quality soldiers (Kavanagh 2005).

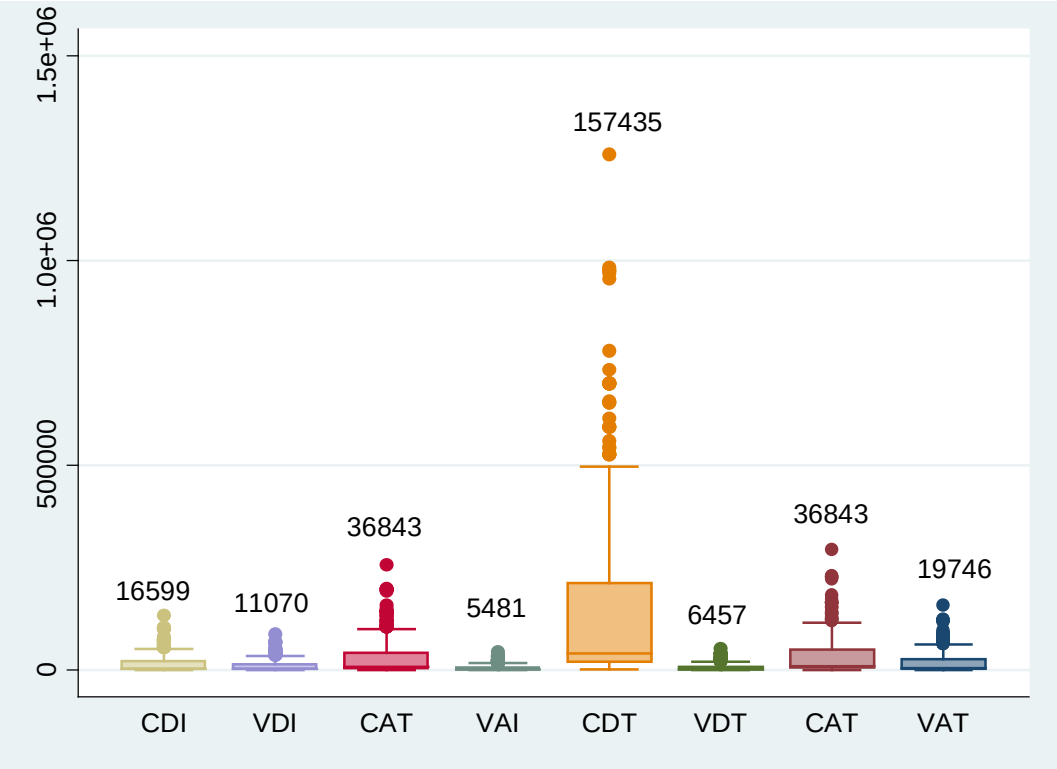
as in the post-draft period. In fact, as measured by the standard military entrance examination, aptitude levels in the American military have increased since the termination of the draft in 1973. Military recruits scoring in categories I-IIIA, those above 50%, on the Armed Forces Qualification Test (AFQT), increased from 37.14% on average from 1960-1973 to 60.1% in 2006.[4] While relatively low levels of the highest education segment of the population enters the military, those that enter are generally better off financially and better educated than much of the population.[5] A 2001 study by the RAND Corporation found that military recruiters were having trouble meeting recruiting targets at points during the 1990s because aptitude standard were so *high* they screened out many potential applicants.[6] This illustrates that the all-volunteer system has not led to a significant decline in the quality of military recruits. There is no reason to suspect other countries are any different.

Third, lower turnover ratios in volunteer armies allow for the advanced military training necessary for adopting high-skill tactics associated with reduced casualties on the battlefield. Higher turnover ratios increase unit instability by causing a constant stream in and out of conscripts. In 1983, at the end of the tumultuous first decade of the All Volunteer Force in the United States, overall service personnel turnover rates had already declined from 20% to 17%.[7] Turnover ratios are much higher in modern conscript militaries (admittedly this was not always true during historical periods where absolute

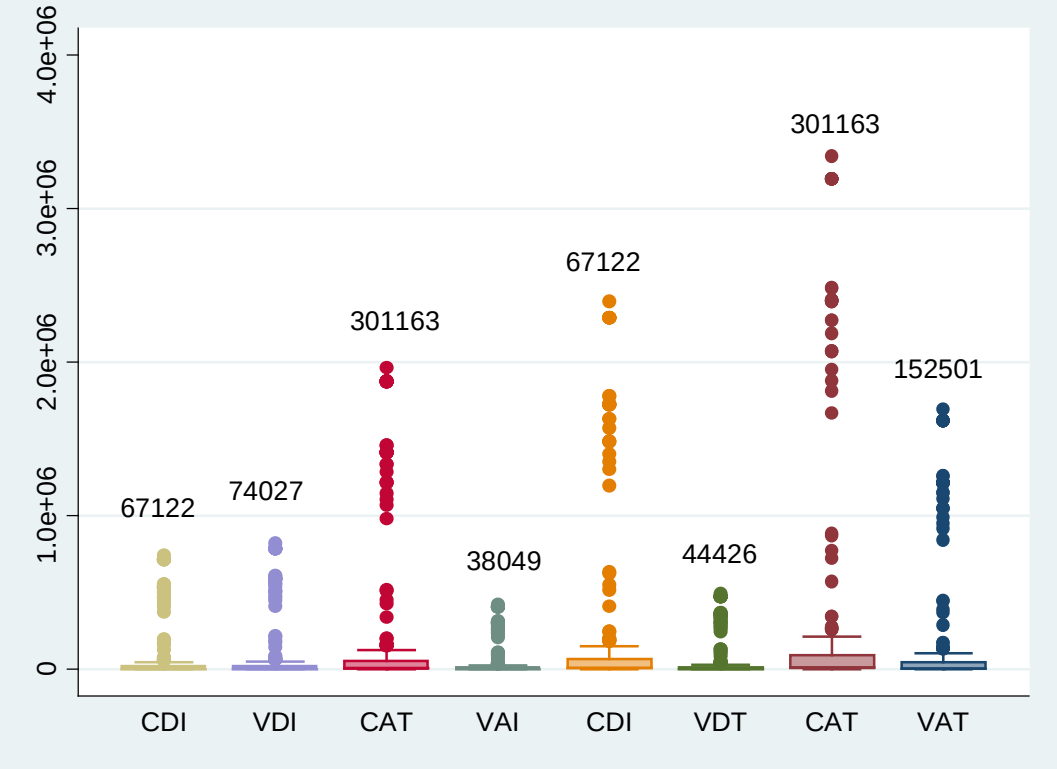
[4] (Binkin 1984, 8; Office of the Undersecretary of Defense 2006, D9)
[5] (Halfbinger and Holmes 2003; Holmes 2003)
[6] (Orvis and Asch 2001, 42). In fact, through recruitment bonuses and other recruitment strategies, the military increased accession from college graduates after the down period in the late 1990s (Asch, Du, and Schonlau 2004). It is also true that the technical skill requirements for excelling in military service are increasing as the complexity of military technology increases. However, existing evidence does not indicate problems within the military in attracting/training personnel to operate the equipment.
[7] (Binkin 1984, 15)

rulers could conscript people for life -- but this does not reflect modern reality for almost all conscript armies), which do not encourage people to stay in the military as a career.

Box Plot Without Outliers (Extension of Table 4)



Box Plot With Full Dataset (Extension of Table 4)



Asch, Beth J., Can Du, and Matthias Schonlau. 2004. *Policy options for military recruiting in the college market : results from a national survey*. Santa Monica, Calif.: Rand.

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Holmes, Steven A. 2003. The Nation: For Job and Country; Is This Really An All Volunteer Army. *New York Times*, April 6, 2003, D1.

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APPENDIX III: CONTROLLING FOR OTHER ECONOMIC AND TECHNOLOGICAL FACTORS

Impact of GDP, Technology, and Time on Casualties[8]

	Model 1	Model 2 (Model 4 in Table 3 in paper)	Model 3	Model 4	Model 5 (Model 5 in Table 3 in paper)
	B/SE	*B/SE*	*B/SE*	*B/SE*	*B/SE*
Conscription	0.955**	1.778***	0.883*	1.095~	1.113*
	-0.433	-0.449	-0.519	-0.674	-0.673
Regime Type	0.00182	0.0437	-0.00688	-0.0176	-0.0228
	-0.0409	-0.0357	-0.045	-0.0473	-0.0485
World Wars	2.181***		1.862***	2.007***	2.021***
	-0.588		-0.605	-0.629	-0.679
Initiation		0.359	-0.135	-1.554	-1.628
		-0.568	-0.606	-1.171	-1.192
Existential		1.472***	0.964*	0.895	1.004*
		-0.502	-0.58	-0.585	-0.597
Regime Type * Initiation				0.125*	0.136*
				-0.0678	-0.0719
Conscription * Regime Type				0.00753	0.0106
				-0.061	-0.0628
Conscription * Initiation				1.887*	1.905*
				-1.015	-1.023
Conscription * Regime Type * Initiation				-0.201***	-0.205***
				-0.0746	-0.0754
Constant	3.355***	2.219***	3.267***	3.132***	3.099***
	-0.642	-0.707	-0.825	-0.86	-0.826
lnalpha					
Terrain	-0.989**	-1.198*	-1.081**	-1.107**	-1.021**

[8] These results are consistent whether or not we log the GDP variables and other appropriate variables.

	-0.498	-0.677	-0.512	-0.513	-0.46
Strategy	0.0749	-0.015	0.114	0.133	0.159
	-0.0996	-0.093	-0.105	-0.102	-0.11
Pre-War Army Size	-2.55E-05	-9.97E-05	3.78E-05	-5.80E-06	3.43E-05
	-0.000117	-0.000123	-0.000126	-0.000105	-0.000111
Military Spending	-7.14e-09***	-6.70e-09***	-9.88e-09**	-6.69e-09***	-9.59e-09**
	-2.47E-09	-2.47E-09	-4.46E-09	-2.54E-09	-4.40E-09
Pre-War Army Size * Military Spending	-1.12E-07	1.33E-07	1.42E-08	8.35E-08	8.73E-08
	-2.06E-07	-2.01E-07	-2.72E-07	-2.39E-07	-2.69E-07
Year	0.0119**	0.00877	-0.322	0.0118**	-0.24
	-0.00551	-0.0057	-0.578	-0.00595	-0.581
GDP Per Capita	0.000119***	0.000119***	5.50E-05	0.000110***	5.32E-05
	-3.77E-05	-3.71E-05	-7.28E-05	-3.93E-05	-8.29E-05
Year Squared			8.61E-05		6.47E-05
			-0.000149		-0.00015
GDP Per Capita Squared			2.68E-09		2.96E-09
			-4.08E-09		-4.25E-09
Constant	-21.97**	-15.27	301.9	-21.88*	223.2
	-10.57	-10.93	561.1	-11.5	564
Observations	152	151	151	151	151
Degrees of Freedom	3	4	5	9	9
Wald Chi2	26.2	24.05	26.97	72.51	64.24
log pseudolikelihood	-1324	-1318	-1311	-1309	-1308
Robust standard errors in parentheses					
***** p<0.01, ** p<0.05, * p<0.1 ~p=0.104**					