COWARDS AND HEROES: GROUP LOYALTY IN THE AMERICAN CIVIL WAR

by

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Introduction

1. Social capital important for economic growth

  (a) Knack and Keefer (1997), La Porta et al. (1997), Guiso et al. (2000)

2. How is social capital produced?

  (a) demographics

  (b) community characteristics

  (c) Alesina and LaFerrara (2000), Putnam (2000), Glaeser et al. (2000), Luttmer (2001), Costa and Kahn (2001)

3. answer important for organizational design

  (a) how design organization to minimize shirking problems?

    i. individual backgrounds, group-interaction effects, and sorting important (Ichino and Maggi 2000)

  (b) if social capital high then need fewer strong incentives

4. no previous empirical work on correlates cowardice and heroism

5. What we do

    (a) examine "quit rates", shirking, and high effort among Civil War companies

        i. cowards – deserting, arrests, awol

        ii. heroes – promotion from private to officer

    (b) what importance of demographics and of group characteristics?

(c) Advantages

    i. stakes are high, costly for others if you shirk in this organization

    ii. because actions are costly to you, getting good measure of commitment (cf. past literature)

    iii. easier for researcher to measure shirking than in modern firm

    iv. easier for team members to observe shirking in army than in firm

    v. large number of companies (282)

    vi. companies small enough (100 men) so no Tiebout sorting within

    vii. no Tiebout sorting across companies (assigned to it)

    viii. companies built on local basis so have heterogeneity (wouldn't if random assignment)

ix. large number of company characteristics (ethnic, age, income, occupational heterogeneity), of own characteristics, of geographical characteristics

(d) Do not estimate social interactions model

   i. only know leader characteristics if internal promotion

   ii. cannot identify peer effects

Specification

1. competing risk hazard model

   (a) cannot estimate probit because of censoring

   (b) examine days until event (desert,arrested, awol, promoted to officer)

      i. if dead, POW, MIA, discharged, or changed company before desertion treat as censored

      ii. if dead, POW, MIA, discharged, changed company, or deserted before arrest, awol, or promoted to officer treat as censored

   (c) may have company level unobserved heterogeneity

      i. peer effects

      ii. punishments

      iii. commanders

(d) account for company-level heterogeneity by using variance correction models (Lin and Wei 1989; Lee, Wei, Amato 1992; Cai, Wei, and Wilcox 2000)

   i. alternative : shared frailty or random effects duration models – would need to explicitly have random effects follow specific parametric distribution (Heckman and Singer 1986)

   ii. alternative: random effects in discrete-time survival data (Hedecker, Siddiqui, and Hu 2000; Han and Hausman 1990) – need few time periods to implement

   iii. clustering biases results against us

(e) if account for individual heteregeneity (e.g. some individuals will never desert) as well then estimation results remain unchanged

2. 3 basic variable types

   (a) individual variables – year mustered in, occupation, country of birth, age, height, whether volunteer, total personal property wealth in 1860 household, whether illiterate

   (b) company variables – birthplace fragmentation, occupation fragmentation, whether total personal household property Gini coefficient higher than median for all companies, coefficient of variation for age, the fraction who died

   (c) geographic variables – percent in county of enlistment voting for Lincoln, population in city of enlistment

3. hazard, $\lambda(t)$, is

$$\lambda(t) = \exp(x'_I \beta_I + x'_C \beta_C + x'_G \beta_G)\lambda_0(t)$$

where I=individual variables, C=company variables, G=geographic variables, $\lambda_0(t)$ = baseline hazard (exponential)

  (a) exponential distribution - slightly better fit than Weibull

4. report hazard ratios –
   1 unit change in dependent variable gives increase/decrease in odds of event

  (a) e.g. in Table 3 Irish 1.4 times as likely to desert as native-born

Data (http://www.cpe.uchicago.edu)

1. 25,204 men in 282 companies

2. mainly enlisted men

3. sample drawn on company level (companies drawn on local level)

4. observe individuals if move out of company, but don't observe characteristics of company move into

5. merge geographic characteristics to data on basis location of enlistment (generally equivalent to place of residence)

6. penalties for desertion, awol

   (a) fines, loss pay

   (b) imprisonment, imprisonment with hard labor

   (c) more onerous duties in company

   (d) only one man executed for desertion

Results

1. Tabulations

  (a) Differences in shirking by

    i. year of muster, occupation, birth place, household wealth

    ii. birth place fragmentation, occupational fragmentation, Gini coefficient, coefficient of variation for age, fraction in company dying

    iii. county ideology, population in city of enlistment

  (b) Disproportionate promotion rate in Wisconsin and Ohio

2. Desertion best measure shirking

   (a) arrests, promotions depend upon officer decisions

   (b) serious offense

   (c) largest number as outcome – 9% sample deserts

3. Predictors of Desertion

(a) if mustered in first year of war less likely

(b) farmers less likely

(c) Irish, British more likely, Germans less likely

(d) tall less likely

(e) volunteers less likely

(f) wealthy less likely

(g) illiterate more likely

(h) more likely if company diverse in occupation, wealth, age

(i) weak evidence that birth place diversity also increases desertion

(j) more likely if large fraction of company died

(k) less likely if county pro-Lincoln

(l) more likely if from large city

4. Predictors of Arrests

    (a) if mustered in first or last year of war less likely

    (b) if Irish, British more likely

    (c) weak evidence more likely if illiterate

    (d) if company diverse in occupation more likely

    (e) if company diverse in wealth less likely but significant only if control for occupational fragmentation

    (f) if high company death rate less likely

5. Predictors of AWOL

   (a) less likely if volunteer

   (b) more likely if illiterate

   (c) less likely if from pro-Lincoln county

6. Predictors of Promotion

   (a) more likely if mustered in first or last year of war

   (b) more likely if professional/proprietor or artisan relative to farmer or laborer

   (c) more likely if taller

   (d) more likely if birth place diversity, but this is Wisconsin effect

   (e) less likely if occupational or wealth diversity

   (f) more likely if large fraction company died but weak significance

Conclusion

1. social capital matters

   (a) for team production similarity in age most important

   (b) occupational fragmentation important as well for desertion and arrests

2. individual characteristics matter

3. ideology matters

4. have emphasized benefits of Tiebout sorting in team production, but there might also be costs – did individuals gain any benefits from being in the army with a diverse group of people?

Table 1: Variable Means for All Men, for Deserted, for Arrested, for AWOL, and for Promoted to Officer

	All	Deserted	Arrested	AWOL	Promoted
Days from muster until		265.068	503.996	439.324	438.890
Dummy=if mustered in					
1861	0.197	0.193	0.311‡	0.354‡	0.341‡
1862	0.372	0.338‡	0.374	0.361	0.399
1863	0.058	0.132 ‡	0.090 ‡	0.061	0.038 *
1864	0.255	0.231‡	0.191‡	0.190‡	0.086‡
1865	0.117	0.106‡	0.033‡	0.033‡	0.136
Dummy=1 if occupation					
Farmer	0.558	0.375‡	0.431‡	0.552	0.571
Artisan	0.187	0.233‡	0.188	0.180	0.182
Professional/proprietor	0.066	0.076‡	0.073	0.070	0.121‡
Laborer	0.182	0.309‡	0.303‡	0.196	0.098‡
Unknown	0.008	0.006	0.005	0.002*	0.028‡
Dummy=1 if born in					
US	0.800	0.670‡	0.661‡	0.798	0.871
Germany	0.063	0.068	0.064	0.052	0.048
Ireland	0.056	0.125‡	0.148‡	0.072*	0.025‡
Great Britain	0.032	0.063‡	0.063‡	0.031	0.020
Other	0.049	0.074‡	0.064*	0.046	0.035
Age at enlistment	25.787	25.653	25.459	25.586	25.280
Height in inches at enlistment	67.723	67.421‡	67.244‡	67.873	68.669‡
Dummy=1 if volunteer	0.924	0.874‡	0.925	0.920	1.000‡
Log(total household personal property) in 1860	1.836	0.912‡	1.193‡	1.706	2.091*
Dummy=1 if missing property information	0.559	0.750‡	0.722‡	0.561	0.535
Dummy=1 if illiterate	0.017	0.021*	0.019	0.033‡	0.005*
Dummy=1 if missing literacy information	0.446	0.665‡	0.619‡	0.459	0.439
Company-level measures					
Birth place fragmentation	0.550	0.602‡	0.630‡	0.549	0.583‡
Occupational fragmentation	0.528	0.594‡	0.583‡	0.534	0.476‡
Dummy=1 if total household personal Gini above all company median	0.399	0.485‡	0.355*	0.448‡	0.227‡
Dummy=1 if missing Gini	0.207	0.272‡	0.330‡	0.220	0.227
Coefficient of variation for age	0.284	0.286*	0.274‡	0.288‡	0.280†
Fraction in company dying	0.130	0.126‡	0.106‡	0.137†	0.144‡
Percent in county of enlistment voting for					
Lincoln	35.359	33.349‡	30.110‡	29.202‡	34.267
Other candidate	32.868	38.864‡	31.629‡	34.218	30.632*
Unknown	31.773	27.987‡	38.261‡	36.580	35.101
Log(population) city enlistment	8.275	8.795‡	8.468‡	8.299	7.996‡
Number observations	25,204	2176	575	883	396

The symbols ∗, †, and ‡ indicate that the mean is significantly different from the mean for those not in the category. Arrests and AWOLs are those preceding desertion only. The logarithm of personal property wealth is set equal to zero for those for whom this information is missing. The standard deviations of log(total household personal property), birth place fragmentation, occupational fragmentation, the coefficient of variation for age, and log(population) are 2.787, 0.215, 0.182, 0.034, and 1.483, respectively.

Table 2: Percent Serving by State and Percent Deserted, Arrested, AWOL, Promoted to Officer, and Died in War by State

	% Serving	% Deserted	% Arrested	% AWOL	% Promoted	% Died
Connecticut	2.06	4.79	1.97	4.09	0	2.40
Maine	1.67	1.29	2.35	0.87	0.38	2.35
Massachusetts	2.11	1.68	1.88	1.65	0.94	2.63
New Hampshire	2.30	4.25	2.35	4.09	1.69	3.91
Vermont	1.22	0.00	0.00	0.00	0.00	0.53
Delaware	1.73	2.57	1.50	0.79	0.19	1.12
New Jersey	3.46	9.86	6.19	1.10	1.13	2.04
New York	11.49	11.92	19.61	17.4	8.08	12.53
Pennsylvania	8.34	5.45	5.44	4.02	4.32	6.68
Illinois	11.78	7.52	5.25	12.28	7.89	12.11
Indiana	5.21	4.64	3.00	4.96	9.02	5.79
Michigan	5.48	5.38	3.85	3.31	4.32	6.60
Ohio	17.16	13.56	10.41	17.4	15.60	16.19
Wisconsin	5.50	1.91	2.81	1.81	12.59	4.05
Iowa	5.34	1.6	4.13	4.09	15.79	8.47
Kansas	1.01	0.51	1.31	0.47	2.82	0.25
Minnesota	1.15	0.39	0.75	0.31	2.26	0.34
Missouri	3.59	3.54	3.00	3.54	7.89	5.09
Kentucky	3.55	7.95	5.25	10.16	1.50	4.22
Maryland	1.54	4.60	2.91	3.78	0.38	1.17
Washington, DC	0.46	0.74	1.78	1.26	0.00	0.03
West Virginia	1.32	0.39	0.94	1.57	0.19	0.64
New Mexico	0.35	1.01	1.88	0.00	0.00	0.03
California	2.15	4.48	11.44	1.02	3.01	0.81

25,204 observations. Arrests and AWOLs are those preceding desertion only.

Table 3: Desertion Competing Risk Hazard Model

	Hazard Ratio	Std Err	Hazard Ratio	Std Err	Hazard Ratio	Std Err	Hazard Ratio	Std Err
Dummy=1 if mustered in								
1861								
1862	1.459‡	0.093	1.349*	0.207	1.459‡	0.220	1.467‡	0.224
1863	3.266‡	0.265	3.038‡	0.646	3.266‡	0.676	3.258‡	0.706
1864	2.472‡	0.179	2.350‡	0.352	2.472‡	0.362	2.484‡	0.381
1865	4.488‡	0.415	3.830‡	0.717	4.488‡	0.845	4.473‡	0.856
Dummy=1 if occupation								
Farmer								
Artisan	1.370‡	0.085	1.418‡	0.112	1.370‡	0.107	1.377‡	0.108
Professional/proprietor	1.279‡	0.115	1.310‡	0.136	1.279	0.131	1.285†	0.132
Laborer	1.425‡	0.086	1.532‡	0.149	1.425‡	0.120	1.433‡	0.120
Unknown	1.105	0.310	1.101	0.340	1.105	0.343	1.127	0.351
Dummy=1 if born in								
US								
Germany	0.797†	0.074	0.741†	0.100	0.797*	0.109	0.804	0.108
Ireland	1.402‡	0.101	1.407‡	0.120	1.402‡	0.122	1.414‡	0.126
Great Britain	1.500‡	0.141	1.465‡	0.186	1.500‡	0.202	1.496‡	0.202
Other	1.160*	0.101	1.151	0.152	1.160	0.150	1.159	0.149
Age at enlistment	0.993†	0.003	0.995	0.004	0.993	0.004	0.993*	0.004
Height in inches at enlistment	1.015†	0.008	1.012	0.009	1.015*	0.009	1.014*	0.009
Dummy=1 if volunteer	0.746‡	0.055	0.739*	0.119	0.746*	0.118	0.741*	0.119
Log(total household personal property), 1860	0.958‡	0.015	0.965†	0.017	0.958‡	0.017	0.947‡	0.017
Dummy=1 if missing property information	1.067	0.110	1.114	0.123	1.067‡	0.117	1.015	0.112
Dummy=1 if illiterate	1.816‡	0.282	1.959‡	0.299	1.816‡	0.274	1.829‡	0.283
Dummy=1 if missing literacy information	1.785‡	0.144	1.767‡	0.156	1.785‡	0.159	1.791‡	0.160
Company-level measures								
Birth place fragmentation	1.352‡	0.190	1.503	0.404	1.352	0.381	1.321	0.367
Occupational fragmentation	2.371‡	0.429	2.579†	1.111	2.371	0.988	2.711†	1.640
Dummy=1 if total household personal Gini								
if above all company median	1.353‡	0.080	1.530‡	0.225	1.353†	0.197		
Dummy=1 if missing Gini	1.262‡	0.086	1.387*	0.239	1.262	0.194		
Coefficient of variation for age	68.394†	51.966	14.986	26.103	68.394†	125.768	72.486†	136.613
Fraction in company dying	6.204‡	2.147	4.190*	3.667	6.204†	4.835	6.143†	4.697
Percent in county of enlistment voting for								
Lincoln	0.992‡	0.002	0.986	0.003	0.992‡	0.003	0.991‡	0.003
Other candidate								
Unknown	0.995‡	0.001	0.993	0.001	0.995‡	0.002	0.994‡	0.002
Log(population) city enlistment	1.057‡	0.016	1.053	0.035	1.057*	0.032	1.059*	0.033
Region Fixed Effects	Y		N		Y		Y	
Clustered on Company	N		Y		Y		Y	
$\chi^2(33), \chi^2(28), \chi^2(33), \chi^2(31)$ for								
Log likelihood ratio	1803.74		568.71		660.82		636.17	

Days until desertion are measured from first mustering in. The symbols ∗,†, and ‡ indicate that the coefficient is significantly different from 1 at the 10, 5, and 1 percent level, respectively. The log-likelihood ratio test is for equality of all coefficients to 1. Men who died, became POWs, were discharged, were missing in action, or changed companies before first desertion are treated as censored. Region fixed effects are for Middle Atlantic, East North Central, West North Central, Border, and West (New England is the omitted category).

Table 4: Arrest Competing Risk Hazard Model

	Hazard Ratio	Std Err	Hazard Ratio	Std Err	Hazard Ratio	Std Err
Dummy=1 if mustered in						
1861						
1862	$1.377^{\ddagger}$	0.147	1.204	0.235	$1.377^{\dagger}$	0.215
1863	$1.482^{\dagger}$	0.247	1.350	0.302	$1.482^{\dagger}$	0.280
1864	$1.511^{\ddagger}$	0.201	1.394	0.292	$1.511^{\dagger}$	0.260
1865	0.724	0.193	0.514	0.169	0.724	0.234
Dummy=1 if occupation						
Farmer						
Artisan	0.960	0.116	1.012	0.147	0.960	0.118
Professional/proprietor	1.199	0.197	1.263	0.235	1.199	0.205
Laborer	1.058	0.119	1.294^{*}	0.200	1.058	0.140
Unknown	0.763	0.445	0.741	0.445	0.763	0.459
Dummy=1 if born in						
US						
Germany	0.863	0.157	0.761	0.145	0.863	0.159
Ireland	$2.174^{\ddagger}$	0.276	$2.158^{\ddagger}$	0.316	$2.174^{\ddagger}$	0.277
Great Britain	$1.616^{\ddagger}$	0.293	$1.524^{\dagger}$	0.273	$1.616^{\ddagger}$	0.282
Other	1.208	0.205	1.190	0.194	1.208	0.176
Age at enlistment	$0.988^{\dagger}$	0.006	0.994	0.007	0.988^{*}	0.007
Height in inches at enlistment	0.985	0.011	0.981	0.012	0.985	0.014
Dummy=1 if volunteer	0.802	0.142	0.844	0.181	0.802	0.165
Log(total household personal property) in 1860	1.019	0.029	1.026	0.034	1.019	0.033
Dummy=1 if missing property information	$1.467^{\dagger}$	0.284	1.506^{*}	0.360	1.467^{*}	0.342
Dummy=1 if illiterate	1.454	0.459	1.544^{*}	0.401	1.454	0.399
Dummy=1 if missing literacy information	1.228	0.179	1.251	0.195	1.228	0.187
Company-level measures						
Birth place fragmentation	1.104	0.288	$2.287^{\dagger}$	0.874	1.104	0.408
Occupational fragmentation	$2.519^{\ddagger}$	0.857	2.684^{*}	1.573	2.519^{*}	1.177
Dummy=1 if total household personal Gini						
if above all company median	$0.732^{\ddagger}$	0.082	0.886	0.160	0.732^{*}	0.122
Dummy=1 if missing gini	0.905	0.111	1.113	0.226	0.905	0.170
Coefficient of variation for age	1.347	1.881	$0.011^{\dagger}$	0.024	1.347	3.771
Fraction in company dying	$0.071^{\ddagger}$	0.049	$0.019^{\ddagger}$	0.022	$0.071^{\ddagger}$	0.073
Percent in county of enlistment voting for						
Lincoln	0.997	0.003	0.994	0.004	0.997	0.004
Other candidate						
Unknown	1.000	0.002	0.998	0.002	1.000	0.002
Log(population) city enlistment	1.005	0.031	0.985	0.049	1.005	0.041
Region Fixed Effects	Y		N		Y	
Clustered on Company	N		Y		Y	
$\chi^2(33), \chi^2(28), \chi^2(33)$ for						
Log likelihood ratio	460.60		219.73		377.75	

Days until arrest are measured from first mustering in. The symbols $*$, $\dagger$, and $\ddagger$ indicate that the coefficient is significantly different from 1 at the 10, 5, and 1 percent level, respectively. The log-likelihood ratio test is for equality of all coefficients to 1. Men who died, became POWs, were discharged, were missing in action, changed companies, or deserted before first arrest are treated as censored. Region fixed effects are for Middle Atlantic, East North Central, West North Central, Border, and West (New England is the omitted category).

Table 5: AWOL Competing Risk Hazard Model

	Hazard Ratio	Std Err	Hazard Ratio	Std Err	Hazard Ratio	Std Err
Dummy=1 if mustered in						
1861						
1862	0.720‡	0.059	0.703‡	0.096	0.720†	0.101
1863	0.823	0.123	0.820	0.168	0.823	0.170
1864	1.043	0.108	0.991	0.177	1.043	0.181
1865	0.592‡	0.118	0.556*	0.178	0.592	0.193
Dummy=1 if occupation						
Farmer						
Artisan	0.918	0.089	0.937	0.098	0.918	0.096
Professional/proprietor	1.124	0.153	1.134	0.159	1.124	0.159
Laborer	1.036	0.101	1.017	0.127	1.036	0.128
Unknown	0.493	0.286	0.491	0.486	0.493	0.488
Dummy if born in						
US						
Germany	0.744*	0.118	0.700	0.144	0.744	0.156
Ireland	1.124	0.152	1.134	0.172	1.124	0.174
Great Britain	1.095	0.200	1.078	0.210	1.095	0.218
Other	1.003	0.160	0.967	0.193	1.003	0.195
Age at enlistment	1.007	0.005	1.006	0.005	1.007	0.005
Height in inches at enlistment	1.014	0.012	1.013	0.010	1.014	0.011
Dummy=1 if volunteer	0.627‡	0.085	0.563‡	0.123	0.627†	0.130
Log(total household personal property) in 1860	0.974	0.018	0.983	0.019	0.974*	0.019
Dummy=1 if missing property information	0.787*	0.107	0.826	0.117	0.787	0.110
Dummy=1 if illiterate	1.648‡	0.315	1.825†	0.569	1.648	0.509
Dummy=1 if missing literacy information	1.304†	0.153	1.272†	0.159	1.304†	0.166
Company-level measures						
Birth place fragmentation	1.160	0.227	0.850	0.225	1.160	0.378
Occupational fragmentation	0.863	0.214	1.197	0.551	0.863	0.443
Dummy=1 if total household personal Gini						
if above all company median	1.098	0.092	1.190	0.193	1.098	0.169
Dummy=1 if missing gini	1.138	0.114	1.092	0.199	1.138	0.206
Coefficient of variation for age	12.042†	12.772	180.887‡	335.483	12.042	24.611
Fraction in company dying	0.982	0.496	1.090	0.986	0.982	0.907
Percent in county of enlistment voting for						
Lincoln	0.992‡	0.002	0.986‡	0.004	0.992‡	0.003
Other candidate						
Unknown	0.996‡	0.001	0.994‡	0.002	0.996†	0.002
Log(population) city enlistment	1.016	0.026	1.036	0.037	1.016	0.038
Region Fixed Effects	Y		N		Y	
Clustered on Company	N		Y		Y	
$\chi^2(33), \chi^2(28), \chi^2(33)$ for						
Log likelihood ratio	267.15		124.83		195.71	

Days until awol are measured from first mustering in. The symbols $*$, $\dagger$, and $\ddagger$ indicate that the coefficient is significantly different from 1 at the 10, 5, and 1 percent level, respectively. The log-likelihood ratio test is for equality of all coefficients to 1. Men who died, became POWs, were discharged, were missing in action, changed companies, or deserted before first awol are treated as censored. Region fixed effects are for Middle Atlantic, East North Central, West North Central, Border, and West (New England is the omitted category).

Table 6: Promotion to Officer Competing Risk Hazard Model

	Hazard Ratio	Std Err	Hazard Ratio	Std Err	Hazard Ratio	Std Err	Hazard Ratio	Std Err
Dummy=1 if mustered in								
1861								
1862	0.629‡	0.081	0.643†	0.139	0.629†	0.119	0.595‡	0.118
1863	0.629*	0.175	0.685	0.295	0.629	0.245	0.610	0.230
1864	0.545‡	0.111	0.596	0.236	0.545	0.215	0.490*	0.182
1865	3.018‡	0.560	3.458‡	1.277	3.018‡	1.016	2.322‡	0.713
Dummy=1 if occupation								
Farmer								
Artisan	1.454‡	0.207	1.429†	0.218	1.454‡	0.213	1.450‡	0.212
Professional/proprietor	2.670‡	0.443	2.698‡	0.520	2.670‡	0.508	2.580‡	0.488
Laborer	0.936	0.180	0.830	0.170	0.936	0.185	0.937	0.181
Unknown	3.814‡	1.313	3.951‡	1.582	3.814‡	1.511	3.586‡	1.342
Dummy=1 if born in								
US								
Germany	0.723	0.179	0.816	0.203	0.723	0.181	0.544†	0.141
Ireland	0.533*	0.176	0.522	0.225	0.533	0.238	0.508	0.227
Great Britain	0.607	0.220	0.636	0.211	0.607	0.202	0.538	0.181
Other	0.643	0.185	0.676	0.213	0.643	0.196	0.590†	0.182
Age at enlistment	0.997	0.007	0.997	0.008	0.997	0.008	0.998	0.008
Height in inches at enlistment	1.105‡	0.022	1.110‡	0.020	1.105‡	0.021	1.105‡	0.021
Log(total household personal property) in 1860	1.010	0.029	1.011	0.039	1.010	0.039	1.010	0.039
Dummy=1 if missing property information	0.842	0.187	0.830	0.213	0.842	0.213	0.879	0.221
Dummy=1 if illiterate	0.439	0.313	0.374	0.275	0.439	0.322	0.462	0.340
Dummy=1 if missing literacy information	1.201	0.220	1.257	0.258	1.201	0.247	1.164	0.235
Company-level measures								
Birth place fragmentation	2.369‡	0.742	3.658‡	1.896	2.369	1.287	0.828	0.395
Occupational fragmentation	0.925	0.373	0.245†	0.169	0.925	0.623	0.921	0.652
Dummy=1 if total household personal Gini								
if above all company median	0.711†	0.102	0.524†	0.156	0.711	0.203	0.696	0.180
Dummy=1 if missing gini	1.036	0.157	0.878	0.223	1.036	0.271	1.260	0.340
Coefficient of variation for age	0.408	0.601	0.135	0.413	0.408	1.208	0.253	0.743
Fraction in company dying	3.404*	2.312	6.536*	7.398	3.404	3.345	3.215	3.195
Percent in county of enlistment voting for								
Lincoln	1.000	0.000	1.000	0.000	1.000	0.000	1.000	0.000
Other candidate								
Unknown	1.058	0.269	1.122	0.412	1.058	0.387	0.800	0.272
Log(population) city enlistment	1.012	0.046	0.970	0.075	1.012	0.075	1.046	0.073
Region Fixed Effects	Y		N		Y		Y	
Wisconsin, Iowa Dummies	N		N		N		Y	
Clustered on Company	N		Y		Y		Y	
$\chi^2(32),\chi^2(27),\chi^2(32),\chi^2(34)$ for								
Log likelihood ratio	348.24		257.72		288.80		279.27	

Days until promotion are measured from first mustering in. The symbols $*$, †, and ‡ indicate that the coefficient is significantly different from 1 at the 10, 5, and 1 percent level, respectively. The log-likelihood ratio test is for equality of all coefficients to 1. Men who died, became POWs, were discharged, were missing in action, changed companies, or deserted before first promotion to officer are treated as censored. Region fixed effects are for Middle Atlantic, East North Central, West North Central, Border, and West (New England is the omitted category).

Table 7: Predicted Probabilities of Desertion, Arrest, AWOL, and Promotion to Officer By Company Characteristics

	Desertion	Arrest	AWOL	Promotion
Using true variable values	0.078	0.023	0.035	0.015
If birthplace fragmentation=0	0.066	0.022	0.033	0.017
If occupational fragmentation=0	0.049	0.014	0.038	0.016
If Gini is below company average	0.065	0.027	0.033	0.016
If coeficient of variation for age=0	0.024	0.022	0.017	0.021
If all of above	0.011	0.014	0.016	0.026

Desertion, AWOL, and arrest probabilities are predicted from the third specifications in Tables 3, 4, and 5, respectively. Promotion to officer is predicted from the fourth specification in Table 6.