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LEADERS: PRIVILEGE, SACRIFICE, OPPORTUNITY AND PERSONNEL ECONOMICS IN THE AMERICAN CIVIL WAR

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Leaders: Privilege, Sacrifice, Opportunity and Personnel Economics in the American Civil War

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ABSTRACT

The US Civil War provides researchers a unique opportunity to identify wartime leaders and thus to test theories of leadership. By observing both leaders and followers during the war and forty years after it, I establish that the most able became wartime leaders, that leading by example from the front was an effective strategy in reducing desertion rates, and that leaders later migrated to the larger cities because this is where their superior skills would have had the highest pay-offs. I find that US cities were magnets for the most able and provided training opportunities for both leaders and followers: men might start in a low social status occupation in a city but then move to a higher status occupation.

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They were the leaders of men, these great ones ...

Carlyle (1840: 3)

A favorite quotation of the many web sites devoted to leadership is, "Real leaders are ordinary men with extraodinary determination."[1] Prior generations celebrated both the superior cognitive and non-cognitive skills of leaders. Carlyle (1840: 3) wrote of "Great Men." Galton (1869: 141), in discussing military leaders, wrote of men "excelling in many particulars," including energy, political capacity, charisma, intellect, and will. A heirarchical organization such as the military or a firm should assign the "real leaders" to the highest ranking positions so that their reach is stretched over a larger reach of the organization's activities (Rosen 1992). But, as Galton (1869: 143) recognized, the incentives may not always be there. In times of peace or during short wars, political patronage may determine military positions. A firm with monopoly power may dissipate its rents on poor managers. The difficulty facing researchers on leadership is that it is hard to identify the real leaders – non-cognitive skills are hard to measure and an observed leader may not necessarily have achieved his position through superior skills.

This paper uses data on Union Army soldiers to test theories of leadership. It examines the characteristics of men who were promoted to leadership positions and looks at what made leaders effective. It examines whether, after the war, leaders are found in the larger cities where their superior decision making skills would have had the highest pay-off. I can thus establish that in the American past cities were magnets for the skilled as they are today (Gould 2007). Because the US Civil War was a prolonged war with civilians (largely self-taught) filling the ranks of commissioned and non-commissioned officers, it provides a unique opportunity to identify the real leaders. Because all records are in the public domain (unlike WWII records) and because I follow men for 40 years, I can determine whether wartime leaders became civilian leaders and where they move after the war.

[1]The original source is unknown.

A vast literature examines the traits of who becomes a leader, describes leadership styles, analyzes what makes leaders effective, and models the matching of leaders and organizations. Traits that distinguish leaders from others include physical energy, intelligence (including social intelligence) greater than that of the average follower, motivation, self-confidence, and flexibility (House and Aditya 1997). Although an emphasis on personality characteristics suggests that leadership is innate, if leaders are judges, experts, and co-ordinators (Hermalin 2007) or simply people who make right decisions more often (Lazear 2010), leadership can be learned.

Game theoretic models of leader effectiveness have emphasized that one way to elicit effort from followers is to lead by example (Hermalin 2007). The density and range of Civil War fireams made exposure suicidal and the leadership skills of great generals evolved with the technology, no longer centering on leading charges or needless exposure to the line of fire (Keegan 1987: 164-234). Nonetheless, Civil War scholars have emphasized the importance of both non-commissioned and commissioned officers such as colonels or captains motivating troops by showing courage under flying bullets (McPherson 2007: 145-54 ; Linderman 1987: 44-45). Scholars have pointed out that US officers' not sharing the danger in WWII became a cause for resentment (Linderman 1999: 197) and may have reduced the US Army's tactical proficiency relative to the Wehrmacht (Muth 2011).

Models of sorting explain the observed characteristics of leaders and their organizations. In Lucas's (1978) model, the largest firms have the best managers because as capital increases wages rise relative to marginal managerial returns thus inducing marginal managers to become employees. Rosen (1982) showed that the more talented will sort to top positions in larger firms where their greater talent filters through the entire firm through the recursive chain of command. Lazear (2010) emphasizes not firm size but that the better leaders will sort to the highest variance industries because this is where decision making has the highest payoff. After the US Civil War, decision making should have had the highest payoff in the larger cities which offered greater diversity in

manufacturing industries (the dominant economic activity) and higher wages (Kim 2006).

1 Officers in the Civil War

Regiments, the basic unit of the Civil War Armies, were formed locally. The volunteer infantry regiments consisted of ten companies, each containing roughly 100 men, commanded by a captain and two lieutenants. Each company had four sergeants, one of whom served as company first sergeant, a sergeant major, a quartermaster sergeant, a commisary sergeant, four corporals, a hospital steward, two musicians, and one wagoneer. The commissioned officers were often volunteer officers drawn from state militias, men of political significance, or other prominent men in the community. Sometimes the enlisted men elected their own officers. Generally, state governors appointed the state governor and the commissioned officers selected the non-commissioned officers. After the first major battles, state governors began to commission officers from the ranks of noncommissioned officers who had proved themselves in the field and in battle (Fisher, Jr. 1994: 109). Among Ohio companies, the major predictors of promotion to non-commissioned officer were a non-farm and non-laborer occupation and literacy (Lee 1999).

Commissioned and non-commissioned officers performed all five of the leadership activities defined by Hermalin (2007): they served as judges, experts, co-ordinators, symbols, and shapers of preferences. Officers had to judge men for absences without leave, crimes, and desertion; they had to become experts in military tactics (both commissioned and non-commissioned officers would take lessons nightly studying from various training manuals); they had to ensure that their men had adequate supplies, they had to file reports, and in the field they had to maintain unit direction and cadence and see to it that the men fired upon order; the regimental color bearer (a sergeant) was the rallying point for the men in the regiment (and the regimental flag enabled regimental and division officers to see where a regiment was in a battle); and, the colonel was supposed to have

"a personal acquaintance with every officer and man" (Sherman 1891: 385). Officer positions required not just technical skills but also people skills. Samuel Pryce whose longest war service was as the regimental adjunct wrote, "The details made by the sergeant major, the distribution of clothing by the Q-M sergeant, and the dispensation of food by the commissary sergeant were positions requiring the highest skill and tact, to avoid complaints" (Pryce 2008: 32).

Officers could not expect to enforce their will on their men. Men who elected their own officers could just as easily dismiss them. Officers who commanded contempt because of their cowardice or disregard for the welfare of their men resigned their commissions, driven out by their men's ill will. When John Beatty, lieutenant colonel of the Third Ohio, began to court martial men who left camp without leave, he faced "not only the hatred and curses of the soldiers tried and punished but in some instances the ill will of their fathers, who for years were my neighbors and friends." He only aggravated insubordination as men extended their absences, refused to drill, and signed petitions demanding his resignation (Linderman 1987: 41). He later gained the regiment's respect when at Perryville he ordered his men to the ground while he remained standing under "shot, shell, and canister ... thick as hail" (Linderman 1987: 44-45).

Officers were paid more than enlisted men and lived in different quarters in the same camp (Smith 2003). At the start of the war infantry privates and corporals were paid $13 a month, sergeants $17, first sergeants $20, and lieutenants and captains over $100 (Boatner 1991: 624). Privates in an army camp were grouped by company. There were separate rows for the non-comissioned officers, commissioned officers of the companies, and the staff and commander of the regiment, who were located in front of the baggage train. Officers used their own funds to purchase food and ate at separate messes from the men. The latrines for officers were behind the baggage train whereas those for enlisted men were at the opposite end of the camp. Smith (2003) finds disease death rates of 65.4 per 1000 for enlisted men in New York Regiments compared to 23 per thousand for their commissioned officers. Lee (1999) finds that in a sample of Ohio companies

four percent of non-commissioned officers died of disease compared to 9 percent of privates.

2 Economic Framework

The military is an internal labor market with few ports of entry and with promotion largely from within (Rosen 1992). In a strongly heirarchical organization with a chain of command structure, it is efficient to assign the most able individuals to the highest ranking and most influential positions in the organization because their reach is stretched over a larger portion of the organization's activities. Selection of personnel to the highest ranks is thus more important than selection to the lower ranks. Because talent is revealed only slowly and because advancement depends on the number of available positions, the promotion mechanism is an elimination tournament. The reward for any given rank is the weighted sum of rewards attained at all ranks higher than the current rank, with weights depending on the conditional probability of surviving to compete at those higher levels. Because competition is tougher at each step, the earnings structure has to give more than proportionally greater awards to those who achieve higher rank.

Both commissioned and non-commissioned officers should have been more skilled than privates prior to joining the army and the more skilled should achieve higher ranks. Promotion should depend on the demand for officers which will in turn depend on how much action the regiment saw. Both officers and non-commissioned officers should have more privileges than enlisted men. Because these privileges meant different food and separate quarters and because of the strong relationship between sanitation and disease in the nineteenth century, officers should face a lower probability of death from disease. Unless monetary compensation was very high they should also face a lower overall risk of death.

Officers might lead by example to signal to their followers that victory is achievable or that the risk of death is not high. Hermalin (2007) shows that in a game theoretic model in which the

leader's actions reveal the true state of nature to the follower, the harder the leader works the harder the followers work. If the leader's actions do not fully reveal the state and their payoff depends on the efforts of other team members, followers will mimic the leader whereas they would not if they knew the true state (Komai et al. 2007). With perfect mimicry, the battlefield mortality of officers and privates will be similar, though going first will increase mortality. The non-commissioned officers who were regimental flag-bearers should have a higher mortality rate than privates because they were good targets. Officers' battlefield mortality could be lower or higher than that of enlisted men if, on average, men do not follow or officers do not lead by example.

Leading by example can be efficient (see the review by Hermalin 2007). If it is an effective strategy then desertion rates (which averaged ten percent for the Union Army) should be lower for companies where a higher fraction of officers relative to enlisted men were killed controlling for the death rate.

How successfully military training can be transferred to the civilian sector remains an open question. Military training could develop skills such as discipline or leadership. It could also have provided familiarity with logistics. Descriptions of the strengths of Grant's leadership and of the management of the modern firm are similar.[2] Although military service on average has a negative causal effect on earnings (Angrist 1990), Benmelech and Frydman (2009) find that military service has a causal effect on managerial decisions and firm outcomes. Even if military training has no effect on later outcomes, if military leaders are the most able they will become the civilian leaders.

The most able (those who become officers) should sort to where their abilities have the greatest pay-offs. Thus they will be in larger cities, which may have fostered the division of labor, and in higher status occupations after the war. Lee (2006) finds that former non-commissioned and

[2]Grant used the telegraph "to collect intelligence, summon reinforcements, rapidly redispose [their] forces, and co-ordinate the movement of widely separated formations." "He valued objective information highly and collected it from many sources ... Rivers and railroads were the means by which Grant brought his armies to the battlefield, spies, scouts and telegraph the media through which he informed himself of the enemy's own movements" (Keegan 1987:210-221). Grant was not able to transfer his skills to the private sector and was a notoriously bad business man.

commissioned officers were more likely to move upward in status to a white collar occupation by 1880 than privates, but did not look at where men migrated. Moving to a large city may have opened up opportunities even for men who had to start in lower status occupations. If the more able leaders are also generalists (Lazear 2010), then the officers who had different types of duties during the war will be more likely to be in larger cities than those who had only type of duty.

3 Econometric Framework

I examine whether officers were more able by looking at the predictors of time in months from muster until first promotion to commissioned officer, sergeant, and corporal. That is, I estimate a Weibull hazard model of the form

$$h(t) = h_0(t) \exp(\beta_x(X) \tag{1}$$

where $h_0(t)$ is the baseline hazard and X is a vector of characteristics including height, personal property ownership in 1860, literacy in 1860, marital status in 1860, nativity, occupation at enlistment (professional or proprietor, artisan, laborer, and unknown, with farmer as the omitted category), dummies for enlistment year, age at muster, volunteer status, the logarithm of population in city of enlistment, and whether the regiment was in the past under fire, a measure of promotion possibilities.

I investigate the survivorship privileges of being an officer by running Weibull hazard models of months until death from muster

$$h(t) = h_0(t) \exp(\beta_c(\text{Corporal}) + \beta_s(\text{Sergeant}) + \beta_o(\text{Commissioned Officer}) + \beta_x \text{X}) \tag{2}$$

$$h(t) = h_0(t) \exp(\beta_{so}(\text{Sergeant or Commissioned Officer}) + \beta_x \text{X}) \tag{3}$$

where $h_0(t)$ is the baseline hazard and control variables include height, personal property ownership in 1860, literacy in 1860, marital status in 1860, nativity, occupation at enlistment (professional or proprietor, artisan, laborer, and unknown, with farmer as the omitted category), dummies for enlistment year, age at muster, volunteer status, and the logarithm of population in city of enlistment. Men who desert, become POWs, or are discharged are treated as censored. I examine both time until death from all causes and time until death from disease and wounds. My regressions for wounds also control for whether or not an officer position was a front-line position (e.g. a quarter-master was not).

If the men who become officers are also the healthier men or the men more knowledgeable in disease prevention, I may overestimate the beneficial effect of being an officer on the risk of death from disease. I may understate if these men had fewer immunities because they were from healthier areas. If the men who become officers are the most gung-ho, I will overestimate the negative effects of being an officer on risk of death in battle. I will understate if men who became officers were seeking safety. Unfortunately I cannot statistically correct for endogeneity because predictors of promotion to officer such total casualties also determine death, including death from disease. Birth year dummies (those born later did not serve a full three year term and thus did not have as many chances to become officers) were weak instruments.

I estimate the effectiveness of leading from the front by estimating OLS regressions of the form

$$\begin{aligned} \text{Company Desertion Rate} \quad = \quad & \beta_r\left(\frac{\text{No of officers killed+.01}}{\text{No of men killed +.01}}\right) + \\ & \beta_d(\text{Company Death Rate in Battle}) + \\ & \beta_o(\text{Company Characteristics}) + u \end{aligned} \tag{4}$$

where each observation is a company, the ratio of commissioned officers to enlisted men killed in battle is on the regiment level, and company characteristics include the fraction of the company

who were volunteers, the coefficient of variation of age for the company, company occupational fragmentation, birth place fragmentation, and the mean 1860 percent vote for Lincoln in the county of enlistment.

I examine the effects of having been an officer on city of residence in both 1880 and 1900 by estimating probit equations for each year of the form

$$C = \beta_c(\text{Corporal}) + \beta_s(\text{Sergeant}) + \beta_o\text{Commissioned Officer} + \beta_a\text{X} \quad (5)$$

$$C = \beta_{so}(\text{Sergeant or Commissioned Officer}) + \beta_x\text{X} \quad (6)$$

and ordered probit equations of the form

$$CS = \beta_{so}(\text{Sergeant or Commissioned Officer}) + \beta_x\text{X} \quad (7)$$

where C is equal to one if the veteran lived in a city of at least 25,000 people in 1880 or 1900 and CS is a categorical variable with city size categories of 25,0000 or more, 2500-24,999, and less than 2500 or unincorporated in 1900. X is a vector of socioeconomic and demographic characteristics, including height at enlistment, personal property ownership in 1860, literacy in 1860, marital status in 1860, nativity, occupation at enlistment (professional or proprietor, artisan, laborer, and unknown, with farmer as the omitted category), dummies for enlistment year, age at muster, volunteer status, dummies for population size in city of enlistment, and dummies for 1880 occupation in the 1900 specification. If officers are the most able, whether innately or because of what they have learned on the job, they should move to a larger city.

I similarly measure the effects of having been an officer on later life socioeconomic outcomes by estimating probit equations of the form

$$S = \beta_c(\text{Corporal}) + \beta_s(\text{Sergeant}) + \beta_o\text{Commissioned Officer} + \beta_a\text{X} \quad (8)$$

$$S = \beta_{so}(\text{Sergeant or Commissioned Officer}) + \beta_x \text{X} \quad (9)$$

where S is variously an indicator of whether the veteran was a professional or proprietor circa 1900, a home owner in 1900, and a professional or proprietor in 1880.

I examine the simultaneous choice of city size and occupation by estimating multinomial logit models for both 1880 and 1900 in which my categories are 1) in a city of 2,500 or more and a professional or proprietor; 2) in a city of 2,500 and not a professional or proprietor; 3) not in a city of 2,500 and a professional or proprietor; and, 4) not in city of 2,500 or more and not a professional or proprietor. That is, I estimate

$$\Pr(\text{Category i}) = \beta_{so}(\text{Sergeant or Commissioned Officer}) + \beta_x \text{X} \quad (10)$$

where X is in an indicator of a vector of pre-enlistment and enlistment demographic and socioeconomic characteristics.

4 Data

My sample is based on the army records of roughly 35,000 white men in 303 volunteer infantry Union Army regiment.[3] These records provide basic socioeconomic and demographic information at enlistment and record muster-in and muster-out information, promotions and demotions, furloughs, AWOLs, desertions, captures, wounds, illnesses, and death. Information on the 1860 population of incorporated place of enlistment was added. Military records were collected for all enlisted men within one of the randomly chosen companies. The commissioned officers in the sample are therefore predominately those who rose from the ranks. I added information whether the regiment was under fire in a specific month from the regimental histories collected as part of

[3]The data were collected as part of the NIA funded project, *Early Indicators of Later Work Levels, Disease and Death* (P01AG10120), Robert Fogel, PI. The data are available at http://www.cpe.uchicago.edu.

this project.

After the military records were entered into the database, pension records, including detailed physical examinations, were collected. The pension records provide information on occupation, names of family members, and death. The information in the pension records and in the army records is then used to link recruits to the 1850, 1860, 1900, and 1910 censuses. Linkage to the 1860 census indicates that the sample is representative not just of the Union Army but also of the northern population of military age in terms of literacy and wealth. I will use information from the 1860 census on personal property ownership, literacy, and marital status and from the 1900 census on place of residence and occupation. I used the published tables from the 1900 census to obtain information on population of the incorporated place. I also use the linkage to the 1880 census done by Costa and Kahn (2007). This linkage only uses information in the military service records.[4] I added population on city of residence from the published tables of the 1880 census.

I restrict my analyses to men with complete wartime information on desertion, death, and discharge, leaving me with 34,941 men. When examining the effects of rank on mortality I restrict the sample to the 27,545 men with complete date information on all rank changes and who were not commissioned officers when they joined the company. When I examine men in 1880 and 1900, I am using 5,464 and 10,756 observations, respectively.[5]

My analysis of the effectiveness of leading from the front uses the 300 companies for whom I have information on the regimental battlefield mortality rate of officers and enlistment men from Dyer's *A Compendium of the War of the Rebellion*. I calculated company desertion rates, the fraction of the company dead from wounds, the fraction of the company dead of disease, the fraction of the company who were volunteers, the coefficient of variation of age for the company, company occupational fragmentation, company birth place fragmentation, and the mean 1860 percent vote

[4]For a discussion of linkage rates see Costa and Kahn (2007).

[5]More men are linked to the 1900 census than to the 1880 census because using the pension information leads to a better match.

for Lincoln in the county of enlistment using individual level data on the 34,941 men.

Table 1 shows variable means for all 34,941 men (or those linked to the censuses) by highest rank achieved. The literate, the native-born, professionals or proprietors and artisans, volunteers, and those who volunteered earlier are more likely to become officers. Those who became commissioned officers are less likely to have died during the war but this may simply be because only those who survived longer were at risk of being commissioned. After the war, officers were more likely to be professional or proprietors and were living in larger cities.

5 Results

5.1 Creating Leaders

Table 2 shows that the more able were more likely to become officers, i.e. men who were more literate and men who were either professionals or proprietors or artisans. The tall were more likely to become officers, as were the native-born. Size of city of enlistment did not matter. Volunteer status predicted becoming a corporal but was not a statistically significant predictor of being promoted to either sergeant or officer. Controlling for year of enlistment and other characteristics of men at enlistment, having the regiment be under fire in the past was a statistically significant predictor of promotion. Being under fire in the past month predicted promotion to sergeant and corporal and being under fire two months ago predicted promotion to commissioned officer, probably because of the time it took to obtain a commission.

Promotion to commissioned officer sharply lowered the odds of death relative to a private from both disease and wounds (see Table 3). Promotion to corporal or sergeant lowered the odds of death relative to a private from disease but raised the odds of death from wounds. Overall risk of death relative to a private was lower. The estimated duration dependence parameter for the weibull, p, was 0.924 ($\hat{\sigma}^2$=.018) for death from disease and 1.191 ($\hat{\sigma}^2$=0.045) for death in battle, implying

that men's risk of death from disease fell with their time in the army (perhaps as they developed immunities) but that their risk of death from wounds rose.

For comparison, the final column of Table 3 gives results for all causes of death for a sample of roughly 6,000 colored troops. These were led by white commissioned officers and by black corporals and sergeants. Because 90 percent of black wartime deaths were from disease, overall mortality is effectively disease mortality. The higher the rank the lower the relative risk of death.

5.2 Leader Effectiveness

Although on average commissioned officers did not imperil themselves in battle, when they did, it was an effective strategy in creating a cohesive fighting unit. At the regiment level, the mean ratio of officers to enlisted men killed was 0.169 with a standard deviation of 0.333. Company desertion rates, which averaged 11 percent, were lower for companies in which the regimental battlefield mortality of commissioned officers relative to enlisted men was higher (see Table 4), controlling for the fraction of men in the company dying of wounds and of disease. The results persist when I control for proxies for commitment to the cause such as the strength of the vote for Lincoln in the county of enlistment or volunteer status and for proxies for cohesiveness such as the coefficient of variation of age, occupational fragmentation, and birth place fragmentation (see the last two columns).[6] A standard deviation increase in the mean ratio of officers to enlisted men killed would have lowered desertion rates by 0.014. In contrast, desertion rates would have fallen by 0.008 with a standard deviation increase in the fraction of the company who were volunteers, by 0.012 with a standard deviation decrease in birthplace fragmentation, by 0.033 with a standard deviation increase in the percent of the county voting for Lincoln, and by 0.044 with a standard deviation decrease in occupational fragmentation. I find no evidence of non-linearities in the effect of the ratio of officers to enlisted men killed on desertion rates (results not shown). The ratio of deaths

[6]See Costa and Kahn (2003) for the effects of company characteristics on desertion rates and details on how the fragmentation indices were calculated.

from disease of officers relative to enlisted men had no effect on desertion rates (see the second column of Table 4), either because sick men could not desert or because the connection between officers' better food and quarters and their lower risk of death from disease was not well known.

5.3 Are Leaders in Larger Cities?

In 1880 former sergeants and commissioned officers were more likely to be in cities of 25,000 or more relative to privates (see Table 5), controlling for characteristics at enlistment, including enlistment occupation and size of city of enlistment. A former sergeant was 1.7 times as likely as a former private to be in a city of 25,000 or more while a former commissioned officer was 2.8 times as likely. When I look at the combined category of former sergeant or commissioned officer, these men were twice as likely to be in a city of 25,000 or more. When I control for occupation in 1880, these men were still 1.9 times as likely to be in a city of 25,000 or more.

Former sergeants and commissioned officers were not just more likely than former privates to be in large cities, they were also more likely to be in intermediate size cities. They were twice as likely as former privates to be in cities of 25,000 or more and 1.2 to 1.7 times as likely to be in cities of 2,500 to 24,999 (see Table 5).

Former sergeants and commissioned officers were more likely to have moved across counties between 1860 and 1880 (results not shown). The fraction of county movers was 0.59 and being a former sergeant raised the probability of a move relative to a private by 0.055 ($\hat{\sigma}^2$=0.031). Being a former commissioned officer raised the probability of a move by 0.102 ($\hat{\sigma}^2$= 0.052). Conditional on being a county mover, there was not a statistically significant relationship between distance moved and wartime rank and the sign of the coefficient on former commissioned officer implies that former officers were less likely to move long distances. Former sergeants were statistically significantly more likely to have moved across states but not former commissioned officers. The results are consistent with a move to large cities rather than with a westward migration.

Examining size of city of residence and wartime rank in 1900 yields similar but slightly attenuated results (see Table 6), controlling for enlistment characteristics and 1880 occupation. Corporals, sergeants, and commissioned officers were more likely to be in a city of 25,000 or more relative to privates, with stronger effects for commissioned officers. For the combined category of former sergeant or commissioned officer, these men were 1.3 times as likely to be in city of 25,000 or more relative to privates. They were 1.2 times as likely to be in a city of 2,500 to 24,999.

Former sergeants and commissioned officers were more likely to be professionals or proprietors in 1880 and 1900 and former corporals were also more likely to be professionals or proprietors circa 1900 (see Table 7). Men in the combined category of former sergeant or commissioned officer were 1.7 to 1.8 times as likely to be professionals or proprietors relative to privates.

In both 1880 and 1900 having been a sergeant or commissioned officer raised a veteran's probability of 1) living in a city of 2,500 or more and being a professional or proprietor; 2) living in city of 2,500 or more and not being a professional or proprietor; and, 3) not living in city of 2,500 or more and being a professional or proprietor (see Table 8). Relative to the mean probability of living in a city of 2,500 or more and being a professional or proprietor, having been a former sergeant or commissioned officer roughly doubled the joint probability of living in a city of 2,500 or more and being a professional or proprietor.

Cities may have provided training opportunities for the able. (Because of sorting on ability, a random veteran would not necessarily benefit from being in a city.) Veterans who were in a city of 2,500 or more in 1880 and were not professionals or proprietors in 1880 were more likely to be professionals and proprietors in 1900 (see Table 9).

The movement of officers to large cities did not lead former privates and corporals to follow them (results not shown). The 298 former sergeants or commissioned officers in cities or boroughs in 1900 were more likely to be in city of 25,000 or more if there was a fellow officers in that same city (the derivative of the probit coefficient was 0.366 with a standard error of 0.091), but

the number of former privates or corporals did not predict former sergeants and officers being in a large city. In contrast, the 1661 former privates or corporals in cities in 1900 were more likely to be in city of 25,000+ if there was an enlisted man in that city (the derivate on the probit coefficient was 0.327 with a standard error of 0.039) but not if there was a former sergeant or officer in that city.

5.4 Leaders as Generalists

There is suggestive evidence sergeants and officers with more than strict military tasks while in the army were more likely to be in a city of 25,000 or more in 1880 (results not shown), consistent with Lazear's (2010) theory of leaders as generalists. I classified different tasks as being a quartermaster, being on recruiting duty, being a clerk, being a nurse, etc. if veteran was ever in a front-line position. I do not consider being on guard duty a different type of task nor do I consider a promotion to be a different type of task. Relative to privates sergeants with only one type of task had only a 0.014 ($\hat{\sigma}^2$=0.012) greater probability of being in a large city, but those with more than one task had a 0.079 ($\hat{\sigma}^2$=0.034) greater probability. Commissioned officers with only one type of task had a 0.056 ($\hat{\sigma}^2$=0.037) greater probability of being in a large city compared to one of 0.156 ($\hat{\sigma}^2$=0.077) for officers with more than one type of task. However, having more than one type of task may proxy not for being a generalist but having for the chance to acquire skills that were more transferable to the private sector (Lee 2006). When I classified the combined category of sergeants or commissioned officers as having one, two, and three or more tasks, I found suggestive but not statistically significant evidence of decreasing returns.

6 Conclusion

The Civil War provides researchers a unique opportunity to identify wartime leaders. By observing both leaders and followers during the war and forty years after it, I established that the most able became wartime leaders, that leading by example from the front was an effective strategy in reducing desertion rates, and that leaders later migrated to the larger cities because this is where their superior skills would have had the highest pay-offs. My findings support theories of leadership based on personnel economics such as those of Lazear (2010).

My findings also have implications for the growth of US cities. The literature on internal migration has emphasized the westward movement, but at the same time that the population was moving westward the share of the urban population (those living in a city of at least 2500) rose from 20 to 40 percent between 1860 and 1900. Cities were magnets for the most able (the leaders). They also provided training opportunities for both leaders and followers: men might start in a low social status occupation in a city but then move to a higher status occupation.

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Table 1: Characteristics of Men by Highest Rank Achieved

	Private or Support	Corporal	Sergeant	Commissioned Officer
Dummy=1 if has personal property in 1860	0.699	0.698	0.676	0.700
Dummy=1 if married in 1860	0.331	0.297	0.314	0.399
Dummy=1 if illiterate	0.045	0.016	0.010	0.012
Dummy=1 if Native-born	0.733	0.796	0.800	0.846
Irish	0.092	0.066	0.077	0.041
German	0.079	0.058	0.049	0.054
British	0.039	0.041	0.038	0.032
Other	0.058	0.039	0.036	0.027
Age at muster	25.784	25.164	25.837	26.459
Height in inches	67.435	68.075	68.456	68.554
Population in 1860 in enlistment place	64,404.030	53,318.420	76,581.600	64,852.090
Dummy=1 if farmer	0.516	0.520	0.428	0.350
Professional or proprietor	0.189	0.226	0.275	0.257
Artisan	0.064	0.085	0.122	0.247
Laborer	0.226	0.161	0.164	0.103
Unknown	0.006	0.008	0.011	0.043
Dummy=1 if mustered in 1861	0.189	0.270	0.324	0.350
1862	0.324	0.426	0.420	0.466
1863	0.073	0.049	0.048	0.043
1864	0.280	0.174	0.145	0.095
1865	0.134	0.080	0.063	0.046
Dummy=1 if volunteer	0.894	0.962	0.976	0.985
Dummy=1 if died in the war	0.140	0.129	0.120	0.056
Population in 1880 city of residence	20,229.520	20,738.400	37,602.180	51,787.690
Population in 1900 city of residence	96,883.030	94,386.460	166,247.600	176,386.800
Dummy=1 if farmer in 1880	0.432	0.434	0.381	0.220
Professional or proprietor	0.123	0.117	0.208	0.336
Artisan	0.180	0.220	0.206	0.253
Laborer	0.237	0.197	0.182	0.154
Dummy=1 if farmer c. 1900	0.740	0.681	0.592	0.469
Professional or proprietor	0.261	0.281	0.359	0.566
Artisan	0.417	0.398	0.447	0.389
Laborer	0.514	0.369	0.357	0.235
Dummy=1 if home owner in 1900	0.601	0.667	0.607	0.636
Obs	28,255	3,138	2,573	975

Table 2: Odds Ratio of Probability of Promotion

	Time (in Months) Until Commissioned Officer	Sergeant	Corporal
Regimental casualties current month	1.002	1.001	0.998
	(0.008)	(0.004)	(0.005)
Regimental casualties one month ago	1.005	1.014‡	1.014‡
	(0.006)	(0.003)	(0.003)
Regimental casualties two months ago	1.012‡	0.0984*	0.988
	(0.003)	(0.008)	(0.009)
Regimental casualties three months ago	0.989		
	(0.014)		
Age at muster	1.029†	0.992	0.985*
	(0.012)	(0.008)	(0.008)
Height in inches	1.124‡	1.153‡	1.066‡
	(0.035)	(0.027)	(0.024)
Dummy=1 if has personal property in 1860	1.169	0.876	0.751*
	(0.356)	(0.155)	(0.115)
Dummy=1 if illiterate	0.000‡	0.318*	0.474
	(0.000)	(0.208)	(0.224)
Dummy=1 if Native-born	1.806*	1.098	1.357*
	(0.585)	(0.192)	(0.224)
Dummy=1 if volunteer	1.253	1.188	2.268*
	(0.684)	(0.631)	(1.117)
Logarithm(Population in City of Enlistment)	0.944	0.948	0.981
	(0.060)	(0.040)	(0.038)
Dummy=1 if at enlistment farmer			
Professional or proprietor	8.671‡	4.951‡	1.123
	(2.164)	(0.945)	(0.265)
Artisan	2.344‡	2.512‡	1.774‡
	(0.571)	(0.415)	(0.240)
Laborer	0.845	1.725‡	1.240
	(0.317)	(0.332)	(0.204)
Number of men	27,545	26,879	25,837
Number of promotions	122	295	446

The sample is restricted to men with complete information on all rank changes and dates of rank changes. Standard errors are in parentheses and are clustered at the company level. The symbols *, †, and ‡ indicate significance at the 10, 5, and 1 percent level, respectively. Additional control variables include enlistment year dummies, a dummy for volunteer status, a dummy for unknown occupation, and a dummy indicating linkage to the 1860 census. See Equation 1 in the text.

Table 3: Odds Ratio of Probability of Wartime Death by Rank Relative to Private

	White Troops			USCT
	Overall	Disease	Battle	Overall
1. Hazard Model				
Corporal	0.888‡	0.727‡	1.216†	0.697‡
	(0.061)	(0.066)	(0.122)	(0.093)
Sergeant	0.824‡	0.535‡	1.347‡	0.320‡
	(0.070)	(0.071)	(0.149)	(0.064)
Commissioned Officer	0.181‡	0.079‡	0.351‡	0.188‡
	(0.057)	(0.057)	(0.132)	(0.051)
2. Hazard Model				
Sergeant or Commissioned Officer	0.688‡	0.446‡	1.101	
	(0.057)	(0.057)	(0.120)	

The sample is restricted to men with complete information on all rank changes and dates of rank changes. Standard errors are in parentheses and are clustered at the company level. The symbols *, †, and ‡ indicate significance at the 10, 5, and 1 percent level, respectively. The specification is Equations 2 and 3 in the text. Control variables include height, personal property ownership in 1860, literacy in 1860, marital status in 1860, nativity, occupation at enlistment, enlistment year dummies, age at muster, volunteer status, and the logarithm of population in city of enlistment.

Table 4: Effect of Leading from the Front on Company Desertion Rates

	Mean	Dependent Variable: Company Desertion Rate			
$\frac{\text{No of officers killed+.01}}{\text{No of men killed +.01}}$ in regiment	0.169	-0.044†		-0.032*	-0.042†
	(0.332)	(0.020)		(0.019)	(0.019)
Fraction company dying of wounds	0.046	0.287*	0.394†	0.139	0.132
	(0.041)	(0.161)	(0.155)	(0.150)	(0.144)
Fraction company dying of disease	0.091	-0.256‡	-0.204†	0.026	0.008
	(0.008)	(0.096)	(0.095)	(0.096)	(0.094)
Fraction company volunteers	0.918			-0.066*	-0.046
	(0.173)			(0.034)	(0.033)
Company coefficient of variation of age	3.583			-0.016	-0.024†
	(0.453)			(0.012)	(0.012)
Company occupational fragmentation	0.541			0.230‡	0.244‡
	(0.184)			(0.034)	(0.033)
Company birth place fragmentation	0.632			0.067‡	0.053†
	(0.228)			(0.025)	(0.024)
$\frac{\text{No of officers died disease +.01}}{\text{No of men died disease +.01}}$ in regiment	0.017		0.051		
	(0.059)		(0.106)		
1860 vote (%) for Lincoln in enlistment county	48.444				-0.002‡
	(16.341)				(0.000)
Constant		0.129‡	0.111‡	0.061	0.169‡
		(0.014)	(0.012)	(0.062)	(0.063)
Observations		300	300	300	291
R-squared		0.044	0.030	0.231	0.304

Each observation is a company. See Equation 4 in the text. Standard errors are in parentheses and are clustered at the company level. The symbols *, †, and ‡ indicate significance at the 10, 5, and 1 percent level, respectively.

Table 5: Wartime Rank (Relative to Private) and Size of City of Residence in 1880

	Probit		Ordered Probit		
			Odds Ratios		
	City of 25,000+		City Population		
	$\frac{\partial P}{\partial X}$	Odds Ratio	25000+	2500-24999	Difference
1. Probit					
Corporal	0.002	1.046			
	(0.009)	(0.245)			
Sergeant	0.023‡	1.663‡			
	(0.010)	(0.312)			
Commissioned Officer	0.063‡	2.824‡			
	(0.024)	(0.747)			
2. Probit					
Sergeant or Commissioned Officer	0.032‡	1.952‡			
	(0.009)	(0.303)			
With Occupation Category Controls					
Sergeant or Commissioned Officer	0.019‡	1.911‡			
	(0.006)	(0.360)			
3. Ordered Probit					
Sergeant or Commissioned Officer			2.093‡	1.682‡	0.410‡
			(0.292)	(0.173)	(0.127)
With Occupation Category Controls					
Sergeant or Commissioned Officer			2.127‡	1.216‡	0.910‡
			(0.355)	(0.411)	(0.332)

The sample consists of the 5,464 men linked to the 1880 census. See Equations 5, 6, and 7 in the text. Standard errors are in parentheses and are clustered at the company level. The symbols *, †, and ‡ indicate significance at the 10, 5, and 1 percent level, respectively. The specifications control for height at enlistment, dummies for personal property ownership, literacy, and marital status in 1860, nativity dummies (Britain, Ireland, Germany, other foreign, with US as the omitted category), occupation at enlistment dummies (professional or proprietor, artisan, laborer, and unknown, with farmer as the omitted category), enlistment year dummies, age at muster, a dummy for volunteer status, a dummy for population size in city of enlistment, and a dummy indicating linkage to the 1860 census.

Table 6: Wartime Rank (Relative to Private) and Size of City of Residence in 1900

	Probit		Ordered Probit		
			Odds Ratios		
	City of 25,000+		City Population		
	$\frac{\partial P}{\partial X}$	Odds Ratio	25000+	2500-24999	Difference
1. Probit					
Corporal	0.024†	1.227†			
	(0.011)	(0.107)			
Sergeant	0.025†	1.236†			
	(0.012)	(0.115)			
Commissioned Officer	0.054‡	1.508†			
	(0.024)	(0.232)			
2. Probit					
Sergeant or Commissioned Officer	0.031‡	1.286‡			
	(0.011)	0.106)			
3. Ordered Probit					
Sergeant or Commissioned Officer			1.335‡	1.162†	0.174‡
			(0.090)	(0.044)	(0.050)

The sample consists of the 10,756 men linked to the 1900 census. See Equations 5, 6, and 7 in the text. Standard errors are in parentheses and are clustered at the company level. The symbols *, †, and ‡ indicate significance at the 10, 5, and 1 percent level, respectively. The specifications control for height at enlistment, dummies for personal property ownership, literacy, and marital status in 1860, nativity dummies (Britain, Ireland, Germany, other foreign, with US as the omitted category), occupation at enlistment dummies (professional or proprietor, artisan, laborer, and unknown, with farmer as the omitted category), enlistment year dummies, age at muster, a dummy for volunteer status, a dummy for population size in city of enlistment, 1880 occupation dummies (professional or proprietor, artisan, and laborer, with farmer as the omitted category), and dummies indicating linkage to the 1860 and 1880 censuses.

Table 7: Wartime Rank (Relative to Private) and Socioeconomic Status in 1900 and 1880

	Occupation c. 1900 is Professional or Proprietor		Owner in 1900		Professional or Proprietor in 1880	
	$\frac{\partial P}{\partial X}$	Odds Ratio	$\frac{\partial P}{\partial X}$	Odds Ratio	$\frac{\partial P}{\partial X}$	Odds Ratio
1. Probit						
Corporal	0.027‡	1.207†	0.053‡	1.090‡	-0.010	0.914
	(0.011)	(0.086)	(0.009)	(0.027)	(0.013)	(0.104)
Sergeant	0.069‡	1.542‡	0.009	1.016	0.061‡	1.530‡
	(0.013)	(0.114)	(0.015)	(0.026)	(0.016)	(0.154)
Commissioned Officer	0.169‡	2.343‡	0.075‡	1.128‡	0.117‡	2.005‡
	(0.029)	(0.267)	(0.025)	(0.044)	(0.034)	(0.318)
2. Probit						
Sergeant or Commissioned Officer	0.088‡	1.692‡	0.017	1.028	0.084‡	1.750‡
	(0.012)	(0.111)	(0.014)	(0.023)	(0.015)	(0.159)

The samples consist of the 5,464 men linked to the 1880 census and the 10,756 men linked to the 1900 census. See Equations 8 and 9 in the text. Standard errors are in parentheses and are clustered at the company level. The symbols *, †, and ‡ indicate significance at the 10, 5, and 1 percent level, respectively. The specifications control for height at enlistment, dummies for personal property ownership, literacy, and marital status in 1860, nativity dummies (Britain, Ireland, Germany, other foreign, with US as the omitted category), occupation at enlistment dummies (professional or proprietor, artisan, laborer, and unknown, with farmer as the omitted category), enlistment year dummies, age at muster, a dummy for volunteer status, a dummy for population size in city of enlistment, and a dummy indicating linkage to the 1860 census. The 1900 specifications control for 1880 occupation dummies (professional or proprietor, artisan, and laborer, with farmer as the omitted category) and a dummy indicating linkage to the 1880 census.

Table 8: Former Sergeant or Commissioned Officer (Relative to Former Private or Corporal) and City Size and Occupation Choice in 1880 and 1900

	1900		1880	
	Mean P	$\frac{\partial P}{\partial X}$	Mean P	$\frac{\partial P}{\partial X}$
City of 2,500+ and professional/proprietor	0.029	0.024‡	0.081	0.043‡
		(0.006)		(0.007)
City of 2,500 and not professional/proprietor	0.071	0.032‡	0.193	0.021*
		(0.009)		(0.012)
City of less than 2,500 and professional/proprietor	0.111	0.047‡	0.082	0.033‡
City of less than 2,500 and not professional/proprietor	0.789	-0.103‡	0.645	-0.097‡
		(0.014)		(0.014)

The samples consist of the 5,464 men linked to the 1880 census and the 10,756 men linked to the 1900 census. See Equation 10 in the text. Standard errors are in parentheses and are clustered at the company level. The symbols *, †, and ‡ indicate significance at the 10, 5, and 1 percent level, respectively. The specifications control for height at enlistment, dummies for personal property ownership, literacy, and marital status in 1860, nativity dummies (Britain, Ireland, Germany, other foreign, with US as the omitted category), occupation at enlistment dummies (professional or proprietor, artisan, laborer, and unknown, with farmer as the omitted category), enlistment year dummies, age at muster, a dummy for volunteer status, a dummy for population size in city of enlistment, and a dummy indicating linkage to the 1860 census.

Table 9: City Size and Occupation Choice in 1880 and Occupational Status in 1900

Dependent Variable: Professional or Proprietor in 1900	Private or Corporal $\frac{\partial P}{\partial X}$	Sergeant or Commissioned Officer $\frac{\partial P}{\partial X}$
City of 2,500+ and professional/proprietor in 1880	$0.397^{\ddagger}$	$0.440^{\ddagger}$
	(0.062)	(0.094)
City of 2,500+ and not professional/proprietor in 1880	0.051^{*}	0.127^{*}
	(0.030)	(0.076)
Not city of 2,500+ and professional/proprietor in 1880	$0.385^{\ddagger}$	$0.468^{\ddagger}$
	(0.030)	(0.056)
Mean P	0.148	0.297
Observations	2,932	501
Pseudo R^2	0.119	0.127

The sample consists of all 3,433 men linked across the 1880 and 1900 censuses. Standard errors are in parentheses and are clustered at the company level. The symbols *, †, and ‡ indicate significance at the 10, 5, and 1 percent level, respectively. All specifications control for age at enlistment.