Military CEOs

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Abstract

We analyze the effect of military service of CEOs on a host of managerial decisions, corporate policies and outcomes. Exploiting exogenous variation in the propensity to serve in the military that is driven by year of birth, we show that service in the military leads to lower corporate investment in both capital and R&D. Our evidence also suggests that CEOs who serve in the military are less likely to be involved in corporate fraudulent activity and perform better during industry downturns. Taken together, our results show that service in the military has a causal effect on managerial decisions and firm outcomes. Given the steady decline in CEOs with military background since the 1980s, firms with a demand for these particular skills may face a real challenge in obtaining optimal managerial talent.

"I don't know what I'd be doing (without the military), but I wouldn't be here. A day doesn't go by that I don't use the leadership lessons I learned in the Navy. It was absolutely vital."

Anthony F. Early, Jr., CEO DTE Energy

1. Introduction

CEOs with military backgrounds have been disappearing from Corporate America. The supply of executives who served in the military and, in particular, those with combat experience has been diminishing in the last two decades as World War II and Korea veterans began to retire. While 59% of the CEOs of large publicly-held corporations in 1980 had served in the military, only 8% of these firms are now run by CEOs with military background. Instead, most current chief executives have been trained through business degrees and executive education.[1] Does military background matter for corporate decisions and performance?

Service in the military may matter for CEO performance for several reasons. First, militaries have organized and sequential training programs combining both educational and on-the-job experience that are designed to build and develop leadership and command skills. Thus, individuals may acquire hands-on leadership through serving in the military that it is difficult to teach otherwise, being better in taking decisions under pressure or in a crisis situation. Furthermore, many of the CEOs who served in the military were in fact officers and as such they were trained to hold high levels of responsibility and authority even at low levels of commands. Finally, military service is

[1] The fraction of CEOs with a business degree has increased sharply over this period. In fact, only 15.8% of the CEOs in 1980 had an MBA degree. This ratio was a much higher 39.1% by 2006.

based on duty, dedication and even self-sacrifice, as such the military may provide a value system that can encourage the CEO to make ethical decisions, be more dedicated and loyal to the companies they run, even if the actions are difficult and unpopular.[2]

On the other hand, the military is often perceived as an institution where members mostly follow orders and, even among those individuals in charge of giving orders, may not encourage the development of interpersonal skills that are essential in the business world. In this paper we analyze empirically the effect of military service on managerial decisions and corporate outcomes.

Our paper is related to a growing literature in corporate finance that has emphasized the importance of the person in charge of an organization for firm's decisions and performance (Graham and Narasimhan 2004, Malmendier and Tate 2005, Perez-Gonzalez 2006, Bennedsen, Nielsen, Perez-Gonzalez and Wolfenson 2007, Schoar 2007, Kaplan, Klebanov and Sorensen 2008, Bennedsen, Perez-Gonzalez and Wolfenson 2008, Malmendier, Tate and Yan 2010). Likewise, Bertrand and Schoar (2003) show that top executives have person-specific managerial styles that contribute to the differences in performance, financial and organizational policies across firms. Understanding which experiences and individual traits shape these managerial fixed effects remains an open question. This paper explores the possibility that particular experiences in the life of a CEO help shape the type of manager he will become by focusing on whether chief executives with a military background behave differently than their non-military peers.

We start our analysis by studying the relationship between military experience and a host of corporate decisions and outcomes. We find that firms run by military CEOs

[2] See the Korn-Ferry International (2006) report for a more detailed exposition of these arguments.

invest less and have lower expenditures on research and development. However, we find no effect on financial policies, accounting measures of performance, and valuation.

An important observation is that the managers in our sample spend on average less than four years in the military. Thus, the effects documented in the paper are unlikely to be driven by career officers that are later hired because of their high ranking and connections. In fact, only a handful of the executives for whom we observe the length of their military service stayed in the military for 10 or more years.

While we would like to interpret our finding as evidence for a causal effect of service in the military on executive decisions, our analysis is prone to an omitted variables problem. For example, it is possible that we are capturing unobserved personal characteristics correlated both with service in the military and corporate policies. In order to address this selection effect and to show that military service leaves an imprint in future CEOs, we use an instrumental variable strategy. Our approach exploits the fact that the likelihood of serving in the military is higher for some cohorts due to high demand for manpower during wars. Since managerial styles of individuals born in earlier cohorts may be different from those of younger CEOs (Bertrand and Schoar 2003, Malmendier and Nagel 2007), we also include flexible controls for CEO age in our regressions.

As an alternative strategy, we compare individuals with a high likelihood of being drafted because they turned 18 years of age at the height of World War II and the Korean Wars with those less likely to serve since they became of eligible age immediately after the wars ended. Results from both approaches overall validate our finding of a negative effect of military service on investment and R&D expenditures.

The instrumental variables approach suggests that simply sorting into military service due to unobserved innate characteristics does not drive our findings. However, another concern is that firms experiencing a decline in investment opportunities hire military CEOs for reasons we do not observed which are not captured by the battery of controls we employ in our regressions. We address this concern in several ways. First, we control for industry fixed-effects in all of our specifications and thus our results are unlikely to be driven by specific trends in industries that are also more likely to hire CEOs who served in the military. In fact, we do not observe any pattern in the types of industries that hire CEOs with military background. Moreover, we analyze whether the probability of hiring a military CEO depends on firm outcomes in the years prior to the hiring decision. The probability of hiring a CEO with military experience is in fact lower in those firms that have had lower levels of investment and R&D relative to the industry mean in the years prior to the CEO succession. In summary, military CEOs do not seem to be selected into particular industries or into firms that have already adopted a strategy of reduced investment.

While our results seem consistent with a causal effect of military experience on CEOs' decisions, there are two possible channels through which military experience may affect firm outcomes. First, firms with a need to reduce investment and R&D expenditures may choose to hire a chief executive with military experience for this purpose. Alternatively, military background may not be part of the selection criteria in choosing a CEO. Under this scenario, the imprinting of military service exogenously affects executive decisions and as a consequence is reflected in corporate policies. While we cannot differentiate between these two interpretations, both of these mechanisms are

consistent with a causal effect of military experience on firm outcomes whether by a matching mechanism or through random assignments.

Finally, we flesh out potential mechanisms through which military experience affect CEOs' behavior. Specifically, we consider the effect of military background on CEO performance under pressure. We find that CEOs with military background tend to perform better during periods of industry distress as evident by higher market-to-book ratio. Most interestingly, we also find that military CEOs are significantly less likely to be involved in corporate fraudulent activity compared to CEOs who did not serve in the military. This evidence is consistent with military CEOs being more ethical or more likely to abide rules. Finally, military CEO management style seem to be more resilient to crisis and fraud in ways that do not seem to be provided to the same extent by academic programs in business schools.

The remaining of the paper is organized as follows. Section 2 presents the data and summary statistics. We discuss the correlation between military experience and firm outcomes in Section 3, and address endogeneity and selection concerns in Section 4. Section 5 documents the impact of military CEOs during times of distress and their involvement in fraudulent activities. Finally, we conclude in Section 6.

2. Data and Summary Statistics

To determine whether military experience affects CEO performance, we construct a manager-firm matched panel dataset. We start with the data from the Forbes 800 surveys for 1980 to 1991 and use Execucomp from 1992 to 2006. The Forbes survey identifies the names of the chief executives of the 800 largest US firms. Using Execucomp, we

obtain the names of the executives that have been listed as the CEO in the 1,500 publicly traded US firms included in the dataset in each year.[3]

To obtain information on the personal characteristics as well as the military background of the executives, we use the Biography Resource Center (BRC). The BRC contains the information published in various editions of "Who's Who," such as "Who's Who in Industry and Commerce," as well as more descriptive biographies from Gale databases. Researchers studying managerial characteristics often complement these resources with alternative data sources, as the companies' proxy statements and corporate WebPages. However, these sources often do not list whether the executive had military experience, our main variable of interest. Because "Who's Who" explicitly asks for information on military service, our data is less subject to measurement error by using a more limited set of data sources.[4] For each executive we collect information on the date and place of birth, the educational background, and military service. We restrict our analysis to those CEOs for which we observe their year of birth.

The fraction of CEOs with military experience has steadily declined over the period we study (see Figure 1). As we discuss in more detail below, controlling for birth cohort is central to our analysis, in order not to confound effects that are attributed to both military service and age. We are able to find biographies that report the year of birth

[3] Until 1994, the information in Execucomp is limited mostly to the S&P 500, thus our sample size is significantly smaller in 1992 and 1993. From 1994 to the present, the database expanded to include the S&P 1,500 as well as companies that were once part of the index. For each firm in the database, Execucomp allows identifying at least the five highest-paid executives. We limit the sample to CEOs for comparability with the Forbes data and because the likelihood of finding biographical information for non-CEOs is significantly lower. All our results were robust to also including the CFOs listed in Execucomp for whom we were able to obtain biographies.

[4] A potential concern of using a reduced set of data sources is the differential selection of managers into the sample. It is possible that managers of more successful firms, for example, are more likely to appear in the biographical sources. While it seems unlikely that selection into Who's Who would be differential for CEOs depending on their military background, one could worry that military men are less likely to become CEOs of top firms. In this case, the selection would work against our findings, as we would only obtain biographies for a highly selected group of military CEOs.

for a total of 3,701 CEOs (about 55 percent of the executives we search), and restrict our data to the executives born from 1913 to 1960.[5] The resulting sample contains a total of 3,485 managers, 2,257 firms, and 19,175 manager-year observations.[6] When we exclude financials and insurance companies in our investment regressions, the number of firms is reduced to 1,305. For each firm-year, we obtain accounting data from COMPUSTAT.[7] Thus, we have a panel dataset for each year in which the CEO was in office linking personal characteristics to firm outcomes.

Similar to previous studies of the role of individual managers on corporate outcomes, we focus on investment and financial policies, as well as firm performance. Panel A of Table 1 presents the summary statistics for the executive's personal characteristics by their military background. Executives from earlier cohorts were more likely to serve in the military, reflecting both the secular decline in enrollment into the military for the general population and especially for highly educated individuals. To compare the educational background of executives, we collected information on the institution they attended, the type of degree obtained, the field of study, and the year of graduation for each educational degree we observe in the biographical sources. We define an executive as having financial education if, for example, the individual obtained an MBA, or had a degree in accounting or economics. We define technical education if the executive's field of study was such as engineering or physics, or if the individual obtained a Bachelor or Masters in Science, for example.[8] Using this broad definition of

[5] For the birth cohorts 1913-1960, we observe at least 30 different executives in each year of birth.
[6] Unfortunately, the matching of Forbes firms to Compustat is not trivial because the firm identifiers are not consistent and because some of the firms in the surveys are not in Compustat. Thus, we lose an additional 462 executives in the matching process.
[7] We further reduce the sample to firms with non-missing information on assets.
[8] Note that this classification of educational background is not unique, in the sense that an executive can have both technical and financial background.

educational background, we find that more than a third of the executives have financial education and almost 50 percent of them have a degree in a technical discipline. Although CEOs with military service are somewhat less likely to have financial education, both types of CEOs are equally likely to have technical education.

We find that military executives are slightly more likely to have attended an Ivy League institution for at least one of their degrees than non-military managers. Moreover, all executives are very highly educated, although CEOs without military experience appear to have studied a year longer than executives with military background. However, it is important to note that our data on the completed years of education is subject to a fair amount of measurement error, as it is based on the reported year of graduation for different degrees, while we do not observe whether individuals have worked in the years in between pursuing different academic degrees.[9]

Perhaps not surprisingly, we find that military executives were significantly more likely (27 percent versus 13 percent) to be born in southern states. Finally, only a handful of the executives in our sample with military experience had a long-run career in the military. On average, managers spent less than four years in the military. Thus, the effects documented in the paper are unlikely to be driven by professional soldiers that had first an extensive career in the military, only switching to the corporate work later in life. In fact, only 1.5 percent of the executives for which we observe the length of military service stayed in the military for 10 or more years.

The fact that the CEOs in our sample do not have an extensive career in the military is also validated by the ranks held by these individuals in the service. Most of

[9] The years of education for executives with military experience are adjusted by the number of years of military service, when the military service was conducted in between their academic studies.

the military CEOs in our sample for whom we have information on highest rank achieved were officers (see Table 2). However, almost 90% of them were lower ranked officers. Indeed, less than 5% of the executives in the sample have a rank of *Major* or higher.

Comparing the sample means for firms run by military and non-military types, we find some important differences in the characteristics of firms (Panel B of Table 1). Individuals with no military experience tend to work in firms that are larger (measured by total assets), have a higher Tobin's Q (measured as the market to book ratio), and have higher expenditures in Research and Development (relative to lagged assets).[10] Executives with military background run firms that are marginally more profitable (measured by return on assets), have a slightly higher book value of leverage, pay out more dividends (relative to their assets), and do more investments (measured by capital expenditures as a fraction of lagged assets). We find no significant difference in acquisitions (measured by the value of acquisitions as a fraction of lagged assets) done by the executives. Finally, non-military CEOs are more likely to engage in corporate fraud. While the differences that emerge from the univariate analysis are suggestive, they may be driven by other factors that correlate with military background. Therefore, we investigate the effect of military experience on corporate outcomes in a multivariate regression setup.

3. Regression Analysis

3.1 Effects on firm performance, investment policy and financial policy

[10] To correct for the large outliers in Tobin's Q, we follow the procedure of Baker, Stein and Wurgler (2003), and force Q to take a value between 0 and 10.

As a first cut of the data we begin our analysis by running panel OLS regressions in which the dependent variable is either an endogenous corporate decision such as investment, R&D expenditure, acquisitions, dividends payout, and leverage, or one of two measures of performance: Tobin's Q and profitability. We estimate the following model:

$$y_{i,t} = \alpha * Military_j + \beta * Characteristics_{j,t} + \delta * X_{i,t} + \nu_t + \upsilon_{sic} + \varepsilon_{i,t}, \qquad (1)$$

Where $y_{i.t}$ is either a corporate decision or one of our two measures of firm's performance, $X_{i,t}$ is a vector of firm-level controls that includes, depending on the specification, Q, cash-flow, firm size, asset tangibility, profitability and leverage. In some specifications we also control for a vector of executive characteristics $Characteristics_j$ that includes the executive's age, whether he was born in a southern state in the U.S., and characteristics of his educational background. All the regressions include 2-digit SIC industry fixed-effects as well as year fixed-effects to control for differences across industries as well as time trends in the outcome variables.[11] We also cluster the standard errors at the firm level.[12] The objective of our paper is to estimate the regression coefficient α, which measures the effect of military service on corporate decisions and firm performance.[13]

Table 3 displays the results from estimating of regression (1) for each of the dependent variables using different specifications. In the first column we measure the effect of military service on corporate investment. Similar to traditional investment regressions (Fazzari, Hubbard and Petersen (1988), Hoshi, Kashyap and Scharfstein

[11] A potential concern is that 2-digit industry codes may not control well for differential selection of military CEOs into industries. We address this point in our robustness checks in Section 3.2. Our results are also robust to controlling instead for year*industry fixed effects.
[12] Standard errors are marginally smaller if we cluster by executive instead.

(1990), Rauh (2006)), we control for a measure of Tobin's Q and cash flow in addition to size, year and industry fixed-effects. We focus on firms in manufacturing, retail, transportation and communication industries in these regressions (2-digit SIC 20 to 59) and the sample size is 11,526 firm-year observations. In all our specifications, our results are consistent with the vast literature on investment-cash-flow sensitivity: consistent with the Q-theory of investment, we confirm that the coefficient on Q is positive and significant, and consistent with the financial constraints explanation of Fazzari, Hubbard and Petersen (1988), the coefficient on cash flow is positive and significant as well (coefficients not reported in the table for brevity). Our novel result is that service in the military has a negative effect of investment. When we don't control by CEO age and other personal characteristics (Panel A), the coefficient on military service is -0.007 and is significant at the 1 percent level. Thus, military service is associated with a reduction in corporate investment of 8.8 percent relative to the unconditional investment mean.

An important concern is that this correlation may be driven by omitted CEO characteristics. As shown in our summary statistics, military experience was significantly higher in earlier cohorts. Other studies have documented that CEOs' age may be associated with risk-taking behavior and managerial style (Bertrand and Schoar (2003), Schoar (2007)). Thus, Panel B replicates the results in Panel A but adds controls for the age of the CEOs. To separate the effect of military service from a pure age effect, we control for age in a flexible manner using indicator variables for the quintiles of the CEOs' age distribution.[14] Alternatively, the correlation of investment with military experience may be driven by other CEO characteristics if, for example, Southerners or

[14] Because the age distribution of CEOs has been extremely stable over time, we define the quintiles using the age of executives over the entire sample. We omit the indicator variable for the first quintile (less than 51 years of age) in all regressions.

individuals with less financial education are less likely to take on new investments. To match military and non-military CEOs on observables, Panel C also includes controls for being a foreigner, being born in the South, and our three indicators for educational background. While the economic magnitude of service in the military is marginally lower, it is still significant at the five percent level. Our result holds in all these regressions: investment of firms managed by CEOs with military background is lower compared to those managed by managers with no prior exposure to the military.

Similarly, column (2) presents results for regression (1) where the dependent variable is Research and Development expenditure scaled by firm assets as of the beginning of the year. Our sample of the R&D regressions is smaller – 6,761 observations - since fewer firms report R&D expenditures in their 10K filings. Our control variables are identical to those in the investment regressions in all three specifications, and as before we focus on firms in manufacturing, retail and transportation industries. Similar to our investment results, we find that executives with military background are less likely to invest in R&D. Even when controlling for age and other personal characteristics, the military coefficient is -0.009 (t-statistic=-3.10), representing a decline of 20.7 percent relative to the unconditional mean.

We do not find any significant relation between military service and either acquisitions, or our measures of financial policy (leverage and dividend payouts), or profitability (columns (3) to (6) in Table 3).[15] While other studies have documented the importance of either CEO fixed effects (Bertrand and Schoar (2003)), or CEO

[15] We also do not find an effect of military experience on a proxy for cost-cutting policy (the ratio of selling, general and administrative expenses to sales) or on advertising (measured by advertising expenditures relative to assets).

overconfidence (Malmendier and Tate (2005, forthcoming)) for these corporate decisions, it seems unlikely that military background is driving these results.

Finally, we find weak evidence that military CEOs are associated with lower valuation, measured by Tobin's Q. Column (7) of Panel (A) of the table shows the presence of a CEO with military experience is associated with a Tobin's Q that is 3.9 percent lower (coefficient of -0.061 and t-statistic=-2.62) than mean valuation. The estimated coefficient becomes somewhat smaller when we add executive-specific controls, and it is not statistically significant in the reduced sample for which we observe demographic and educational characteristics.[16]

3.2 Robustness checks

The basic OLS results discussed in Section 3.1 suggest that CEOs with military experience have different investment and R&D policy compared to other top executives. We now turn to investigate the robustness of these findings and present the results in Table 4. Panel A of the Table presents evidence for investment while Panel B focuses on Expenditures in R&D. First, we examine whether the effect of military service is influenced by the fact that we include foreign-born CEOs. In fact, only 14.8 percent of the CEOs who are foreigners have military experience relative to 37.1 percent of US-born CEOs. Indeed, column (2) shows that the results are virtually unchanged when we exclude foreigners from the sample.

Another possible concern is that the effect of military service could be mostly attributable to those executives that were professional military men. Professional military

[16] The lack of significance in this case is mostly explained by the fact that information on place of birth is disproportionately missing for executives from recent cohorts, who are less likely to have serve in the military and also have higher Tobin's Q on average.

men may be different from other CEOs and it is possible that an omitted factor correlated with professional service is driving our negative effect on investment and R&D. Moreover, professional military men may obtain an executive position at a firm in exchange for military contracts regardless of their managerial talent. We analyze this possibility in two ways. First, column (3) shows that our results are robust to the exclusion of professional military men, defined as those individuals with a military career longer than six years (about six percent of the executives in the sample). In addition, we also look at the effect of time spent in the military service. Quite interestingly, we find that, after controlling for whether the executive served in the military, more years of military experience increase investment, albeit at a slower rate (see column (4)). Thus, our finding for investment is not driven by professional military background.

Because investment policies and firm performance systematically vary by industry, all our results include industry controls. In general, we do so by including indicator variables for 2-digit standard industrial codes. While we believe that this level of industry detail allow us to capture the main component of industry variation, we find that our results are robust to using a 3-digit industry definition (see column (5)).[17] Another concern is that military experience may be confounded with firm-specific characteristics that we are not explicitly taking into account.[18]

[17] These estimates should be interpreted with caution because the number of firms in a given year is very small for several industries when defined at the 3-digit level. The similar results obtained whit 3-digit SIC codes suggest that the military coefficient is not biased when relying on less detailed industry definitions. Thus, in the rest of the paper we use 2-digit SIC codes.

[18] An alternative would be to include instead firm fixed-effects to control for unobservable firm characteristics that are invariant over time. However, the military coefficient would be identified in this case only from the few instances in which firms switch from a military to a non-military CEO, or viceversa (see Appendix Table A1). When we control for firm dummies, the military coefficient is reduced to a third and, at least for R&D expenditures, it is still statistically significant.

Finally, we consider whether executives that served in the military during particular wars drive our effects. In column (6), we replace the military dummy by indicator variables for four different periods of military service: World War II, the Korean Wars, Vietnam, and any other period.[19] Although not all conflict variables are individually statistically significant, the coefficients are relatively similar and we don't usually find statistical differences between pairs of coefficients.[20] Moreover, we find a negative effect on investment for those CEOs that participated in the military in a period that did not see a major war conflict.[21] This finding provides suggestive evidence that our results are not driven by executives that experienced combat.[22]

We also supplement the analysis with additional robustness tests by studying the differential effect of service in the different branches of the military. In Appendix Tables A2 and A3 we decompose the military dummy into military branches dummies (US Army, US Navy, US Air Force and Other branches).[23] Our estimates suggest that the negative relation between military service and investment or R&D is not confined only to

[19] We identify an executive as a veteran of WWII if he served at any point between 1940 and 1945, a veteran of Korea if service occurred between 1950 and 1953, veteran of Vietnam for years between 1964 and 1973. Our dummy for "Veteran, Other" identifies those executives that served in the military during years other than those used for the three conflicts described above.

[20] The one exception is that we cannot reject that the coefficient for Vietnam veterans is different than the effect we find for those executives who were in the military in a period other than the three main military conflicts in our sample period.

[21] It is likely that the effect of military service is different for individuals that saw combat. Unfortunately, we don't have detailed information on the military activities of executives.

[22] Since the estimated effects on Tobin's Q documented in Table 2 are not robust, we do not present a detailed analysis for this outcome. When we do, the estimated coefficients of military service on Tobin's Q are stable across specifications but they are rarely statistically significant when controlling for personal characteristics (see Appendix Table 1). The two main exceptions are negative effects of the Korea Veteran dummy, which is significant at the 10 percent level, and when we use firm fixed effects. We tend to put less weight on the specification with firm indicators because the identification for the military effect is obtained from the few firms that saw switches between military and non-military CEOs.

[23] Other branch includes members of the US Coast Guard, a foreign military branch, and other US military excluding the Army, Navy, and Air Force.

one particular branch (column (2)).[24] Overall, we do not find significant differences in the effects for the Marines, who were probably more likely to have seen combat, or the Reserves, who were probably less likely to have seen combat, relative to other military (columns 3 and 4 in both tables).[25] Finally, we analyze whether our findings are affected by the rank achieved by the person during military service.[26] We find some evidence that military officers – in particular those at the rank of Captain and above – do more R&D than other military CEOs.

4. Selection into the Service or Military Treatment Effect?

Thus far we have found that military experience is correlated with lower investment and lower expenditures in Research and Development. While these results suggest that an experience in the military may shape a CEO's style, these estimates cannot be interpreted in a causal manner. To the extent that individuals endogenously choose to join the armed forces and are also screened by the military, the effect of military experience may be driven by unobserved characteristics of the individual. For example, it is possible that more conservative individuals self-select into the military and are also less likely to invest in new projects or develop new products.

The selection criteria of the armed forces can also introduce an omitted variable bias in our simple OLS estimates. The military screens candidates based on physical and mental fitness. However, their selection criteria changed over our sample period. During

[24] Although only the Army and the Navy variables are statistically significant, we cannot reject that the coefficients are equal for any possible pair of military branch dummy variables.
[25] The one exception is that the reduction in Investment appears to be confined only to military men that were not in the Marine Corps.
[26] As shown in Table 2, we only observe the rank achieved for 45% of the executives with military background. Thus, "Other military" in columns (5) and (6) of Appendix Tables A2 and A3 encompass both non-officers and all other military CEOs for which we do not have rank information.

World War II, deferments were conferred mainly for disability or for employment in war production or agriculture. Since May 1943, induction into the military was based on an individual's score on the Army General Classification Test and, later on, on the Armed Forces Qualifying Test (AFQT). The restrictions on deferment reasons and the testing-based selection criteria suggest that men were positively selected based on ability during this period. The nature of available deferments changed during the Korean wars, since men at risk of induction were allowed to defer service for college study starting in 1951. This "channeling" policy of allowing deferments for educational, occupational and family reasons was continued during the draft for the Vietnam conflict. Thus, the source of selection changed during this period, as academically oriented men pursued higher educational attainment instead of enrolling in the armed forces.[27]

Evidence on selection by education achievement are reflected in Figure 2, which measures the share of veterans by year of birth and education level using data from the micro-sample of the 1980 Decennial Census. College educated men born prior to the mid-1930s were more likely to served than all men in the population, but the proportion of highly educated men serving in the military has been disproportionately lower relative to the population since then. The stringent rules for being drafted during World War II are apparent in the high likelihood of enlisting by those individuals who became top executives. The fraction of veterans among managers declined since the cohorts born in the mid-1920s, and it has remained significantly lower than the fraction of veterans in the overall population since then.

[27] This historical description draws heavily from Bound and Turner (1999), Angrist and Kruger (1994), Angrist (1991), and several publications from the Selective Service.

To be able to attribute our findings to a treatment effect of military experience, we need exogenous variation in the likelihood of serving in the military. Thus, we use an instrumental variables approach to obtain estimates for the effect of military service that are not affected by the omitted variable bias introduced by unobserved quality and other personal traits inherent to the manager.

An extensive literature in labor economics has used a variety of strategies to assess the causal impact of veteran status on a variety of outcomes (Angrist 1990, Angrist and Krueger 1994, Angrist 1998, Bound and Turner 1999, Bedard and Deschêne 2006). Unfortunately, methods that allocate the likelihood of military service in a random fashion, as a draft lottery, are not available for our sample period.[28] Because the likelihood of being drafted was significantly higher for some cohorts than others, our main strategy consists in using cohort dummies as instruments for veteran status.[29]

4.1 Estimates using birth cohort

We exploit variation in the likelihood to be drafted to the military across cohorts as an instrument for the executives' veteran status. However, the credibility of the instrumental variables approach depends on whether the cohort effects are correlated with the residuals of the firm outcomes regressions – that is, whether the instrument satisfies the exclusion

[28] For example, a strategy similar to Angrist (1990), who restricts the analysis of the Vietnam draft to men born from 1950 to 1953, would be difficult to apply to our sample because only two CEOs serve in the military out of the 193 executives born in those years.

[29] That the probability of being drafted is related to year of birth is well known. During World War II, the US first required men born from 1914 to 1919 to contact draft boards and, until 1942, added both individuals that became of draft-eligible age as well as older men. To satisfy the demand for manpower, men in the age groups of 18 to 21 became part of the registrant pool in the later years of the war. The draft-eligibility for the Vietnam War lotteries, for example, was based on age.

restriction. Thus, we consider a variety of different specifications to IV estimates of equation (1) for Investment and R&D, and present the results in Table 6.

Chronological order of birth, especially as military conflicts progressed and manpower dwindled, was an important determinant of the probability of military service. Thus, we start by using year of birth dummies to instrument for military participation. The difference between the OLS and IV estimates in this initial specification can be seen by comparing columns (1) and (2). The IV approach validates the direction of the results obtained in the OLS framework: we obtain a statistically significant effect of military service on each of the variables of interest.

However, this approach may not satisfy the exclusion restriction as earlier cohorts may behave differently than executives born in recent decades for factors that we are not explicitly controlling for. For example, Malmendier and Nagel (2007) find that individuals who experienced macro-economic shocks are less likely to take risks and invest less in liquid assets that individuals from birth-cohorts that experienced high stock market returns. Moreover, Schoar (2007) finds that CEOs who start their career during economic downturns have a different career path and more conservative managerial styles. Thus, an alternative strategy is to control for a function of age in both the first and second stage regressions. Controlling for age effects allow us to compare executives within a given age group and, therefore, born during a fairly similar period. Thus, these estimates are not subject to the concern of comparing earlier versus later cohorts.

We start in column (3) by including an indicator variable for whether the executive is younger than 57, the median age in the sample. Because ninety percent of the CEOs have ages between 48 and 64, by adding this control the year of birth effects are

mostly identified within executives born no more than ten years apart. In column (4) we use the same age control but also add the place of birth and educational background of the managers. The results verify our previous findings: all coefficients are negative and, overall, statistically significant. The economic magnitude of the effects is also quite large, representing a 20.3 percent decline in Investment and a 62.2 percent reduction in R&D relative to the respective unconditional means.

Although the age distribution of CEOs is fairly compressed, one could argue that an indicator for median age is a coarse way to control for differences in behavior of executives over time. Thus, column (5) uses instead dummy variables for the 2^{nd} to 5^{th} quintiles of the age distribution for all executive-years in the sample. All the coefficients remain fairly stable although, not surprisingly, the estimates are less efficient. In general, these results validate our findings that CEOs with military experience lower R&D and Investment.

While our findings controlling for a function of age are reassuring, one may still be concerned about the comparability of the cohorts used in our estimation. To refine our identification strategy, we consider local specifications that exploit more precise variation in the likelihood of being drafted in the military. To approximate a regression discontinuity approach, an alternative strategy is to compare individuals who became age-eligible during the peak of a war with those less likely to serve because they turned 18 when demands for manpower had diminished after the end of the war. While this strategy is appealing, its application in practice faces limitations. As shown in Figure 3, the high frequency of military conflicts during the period of interest made most men likely to serve in the armed forces at some point in their lives. For example, a high

fraction of men born in 1930, who turned 18 after the end of World War II, participated in the Korean War. With this caveat in mind, we apply this procedure to World War II and to Korea.[30]

For World War II, we restrict our analysis to executives born from 1920 to 1932.[31] Replicating the OLS estimation for this period provides similar coefficients to those in the entire sample, although the estimate is not significant for R&D (see column (6) of Table 5). As an instrument, we use an indicator variable for men born from 1920 to 1926, as the likelihood of being drafted was much higher for these cohorts than among the individuals born from 1927 to 1932 (see Figure 3). The magnitude of the coefficients remains fairly stable, although the estimate is not statistically significant for Investment (see column (7)).

It is important to note that the Korean War may be a better environment than World War II to apply this localized strategy, as there was no major military conflict until the Vietnam War. In this case, we limit our sample to men born from 1931 to 1942.[32] The effect of military experience on the outcome variables of interest is consistent with the results from our entire sample, although our data is noisier in the reduced sample (column (8) of Table 5). The magnitude of our estimates increases when we instrument military service with an indicator for men born from 1931 to 1936, the cohorts that were more likely to get drafted during the Korean conflict. However, the sign of the

[30] As we discussed before, only two of the executives in our sample born during cohorts drafted through the 1971 to 1975 Vietnam lotteries entered the military. Thus, we restrict the local estimate analysis to World War II and the Korean Wars.

[31] Determining an appropriate comparison group for the high-draft cohort of 1920-1926 is not obvious. We choose to include cohorts up to 1932 to have a similar number of observations for the treatment and control groups.

[32] As for World War II, there is discretion in how to define comparison group for the high-draft cohort of 1931-1940 is not obvious. We include cohorts up to 1942 to have a similar number of years and observations for the treatment and control groups. Our results are not very sensitive to changing the period of analysis.

coefficients still indicates a negative effect of military experience, and our estimate for R&D is statistically significant at the one-percent level (see column (9)). In sum, the results from most of our specifications seem consistent with a treatment effect of military experience that leads to lower Investment and less expenditure in Research and Development.

4.2 Interpretation of the results

The instrumental variables approach allows us to rule out the possibility that the effect of military service is due to intrinsic characteristics of the individual that are associated both with selection into military service and the corporate policies we study. However, our results cannot yet be interpreted as identifying a treatment effect of military experience on CEOs' decisions. In particular, there are three possible channels through which military experience may translate into the effects we documented. First, it is possible that firms that desire to reduce investment and R&D expenditures hire a chief executive with military experience for this purpose. Alternatively, military background may not be a criterion on which CEOs are being selected, but the imprinting that this experience left in individuals translates into different firm outcomes once military men become CEOs. While we cannot differentiate between these two interpretations, both of these mechanisms are consistent with a causal effect of military experience on firm outcomes.

However, it is important to consider that we could still find a positive association of military experience and firm outcomes not due to a treatment effect of military service if firms that are already experiencing a decline in investment or R&D expenditures happen to disproportionately hire military CEOs for reasons we do not explicitly control

for in our regressions. To analyze this possibility, we start by considering whether there is differential selection into different industries by military type. Because our regressions always control for industry fixed effects, our findings are unlikely to be driven by this type of selection. However, some industries have a higher concentration of military CEOs than others (see Table 6). Thus, we evaluate this point further by comparing the distribution of military and non-military CEOs across 2-digit SIC codes. To avoid noisy estimates, we restrict our analysis to the 26 industries excluding financials and insurance in which we observe at least 20 executives over the entire sample period. Figure 4 presents a kernel density plot of the industry composition of executives by military type. As the figure indicates, overall the differences between the distribution functions do not appear to be too striking. Indeed, when we perform a Kolmogorov-Smirnov test for equality of the distributions, we cannot reject that the distributions are equal (corrected p-value = 0.271). Thus, our results do not appear to be driven by selection into particular industries.

To address the selection into particular firms due to omitted factors more directly, we study whether the probability of hiring a military CEO depends on firm outcomes in the years prior to the hiring decision. More specifically, we consider a linear probability model of the determinants of hiring CEOs with military experience. For this analysis, we limit the sample to the first year each CEO with available biographical information is in office (one observation per firm-CEO pair). We model the hiring probability as a function of our standard controls as well as the trend in each of the outcome variables of interest in the years prior to hiring a new CEO. Specifically, we separately evaluate

whether deviations in investment and R&D from the asset-weighted industry mean help predict the hiring of a military CEO.[33]

We find that firms with a *higher* investment ratio than their industry in the year prior to the chief executive replacement are more likely to hire a CEO with military expertise, although the coefficient is not statistically significant (column (1) of Table 7). Because investment may be lumpy, we perform a similar analysis by comparing the average firm investment ratio in the three years and the five years prior to the CEO transition to the industry mean over the same period. In both cases the coefficients are negative but not statistically significant (columns (2) and (3)). A similar analysis reveals that firms with higher R&D relative to other corporations in the same industry are more likely to hire a military CEO, and the estimates are even significant for the three- and five-year trends (columns (4) to (6)). Moreover, military men are not more or less likely to be hired by firms that have lower market valuations than their industry peers (columns (7) to (9)). In sum, the document effect of military experience does not appear to be driven by military men becoming the CEOs of firms that experience a steady decline in investment and R&D.[34] Thus, the relationship between military CEOs and lower investments seems to be causal.

5. Assessing potential mechanisms

Our findings suggest that military experience affects CEOs future performance. We now turn to analyze specific attributes of CEOs with military background and potential

[33] While we present results using a four-digit industry classification, results are similar for the two- and three-digit SIC codes.

[34] On the contrary, our findings suggest that military CEOs are often hired after periods of overinvestment on Research and Development, consistent with the idea that firms may optimally select CEOs based on their military experience to lower investments.

mechanisms that may affect their performance. It is often suggested that military men may perform better since they can cope better in difficult situations, or because they have a better sense of ethics and commitment (Griesedieck and Wardell 2006).

To assess whether military service allows CEOs to better handle crises, we consider differential effects on the valuation of firms during periods of industry distress by CEO type. As shown in Table 3, there is a weak negative relationship between service in the armed forces and a firm's Tobin's Q. Table 8 presents a similar analysis in which we now interact the military dummy with an indicator variable for whether the industry experiences economic distress during the year. We identify an industry (measured either at the 3- or at the 4-digit SIC) as being in distress if the asset-weighted profitability relative to assets in a given year is below the 25th percentile of the same measure in the entire Compustat sample for the period 1975 to 2006. Interestingly, these results are unlikely to be driven by firms switching the type of their CEOs during periods of industry distress, as the likelihood of replacing a non-military CEO with an executive with military experience is similar in good and bad times. Indeed, only 7.7 of all executive transitions for which we have complete biographies are cases in which firms in industries experiencing distress replace a non-military CEO for an executive with military background (see Appendix Table A1). However, a similar type of transition accounts for a higher 9.3 percent of all CEO replacements over the entire sample.

Reassuringly, our measure of economic distress is associated in a lower firm valuation. Although Tobin's Q is on average lower for military men, CEOs with military experience perform somewhat better that their non-military peers during distress times (column (1) of Table 8). Indeed, the coefficient on the interaction term is positive and

larger in magnitude that the level effect of military experience. This result is robust to including the CEO's personal characteristics in the regression (column (2)), and the magnitude of the interaction effect becomes somewhat larger when use 4-digit SIC to calculate industry distress (columns (3) and (4)).[35]

One potential explanation for our findings is that military men may learn how to make decisions in extreme conditions during combat. Although we are not able to observe whether the executives with military experience actively participated in combat, we use the members of the Marine Corps as a proxy. However, we find no evidence that marines perform any differently from other military men either in normal times or during periods of industry distress (column (5)). Interestingly, and perhaps confirming a unique military leadership effect, we also find that firms led by executives with an MBA degree have no differential valuations in good or bad times (column (6)).

To explore the possibility that the military may confer its men a stricter moral code, we analyze the correlation between military experience and alleged corporate fraud. Our sample of corporate frauds comes from Dyck, Morse and Zingales (2010) and consists of U.S. firms against whom a securities class action lawsuit had been filed under the provisions of the Federal 1933.1934 Exchange Acts for the period 1994-2004. Dyck, Morse and Zingales (2010) conduct thorough investigation ending up with a sample of 216 alleged fraud cases. We merge these fraud cases to our data (for a total of 132 fraud cases) and estimate linear probability models of the likelihood of corporate fraud.[36]

[35] As expected, the magnitude of the interaction term between military CEOs and industry distress becomes smaller when we define distress as having profitability below the median profitability for the industry over the entire sample period. In this case, the type of CEO has no differential effect on Tobin's Q during periods of industry distress. Thus, it is important to point out that our results are sensitive to the definition of industry distress used.

[36] We use a linear probability model since we have both year and industry fixed-effects in the regressions in order to avoid the incidental parameters problem. Nevertheless, our results remain unchanged when we use

Interestingly, military CEOs are less likely to be involved in corporate fraud. The coefficient on *Military* is significant at the 1 percent level in columns (1) through (5). The economic magnitude of the coefficient in column 1 implies a reduction of 62.5% in the likelihood of at least one year of fraud compared to the unconditional mean. Our results hold whether we define the fraud indicator as being equal to one for only the year in which the fraud began (columns (1)-(3)) or when the fraud dummy equals one for all the years of the fraud case (columns (4)-(6)). All the regressions in table 9 also control for firm size, year fixed-effects. CEO's age-quintiles, a dummy for CEOs that were born in a southern state, a dummy for foreign-born CEOs, CEO educational background and industry fixed-effects.

When we run a horse race between the effect of MBA education and military experience on fraud (column (2)), the coefficient on *Military* is unchanged, while the MBA indicator is not statistically different from zero. We also investigate the interaction between fraud, military experience and industry distress. We estimate the likelihood of corporate fraud conditional on military experience, industry distress and the interaction between military experience and industry distress. Intuitively, the likelihood of fraud is positively correlated with distress at the industry level. However, the likelihood of corporate fraud in times of distress is lower when a military CEO runs the firm (columns (3) and (6)). Finally, we find weak evidence that CEOs with MBA education are also less likely to engage in fraudulent activity during times of distress. The lower incidence of fraud is consistent with military CEOs being more ethical or more likely to abide rules.

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probit regressions. For example, the marginal effect (evaluated at the mean) of the military dummy for the first year of detected fraud is -0.0052 (z=-2.62) while the impact on all years of fraud is -0.0076 (z=-2.32).

Taken together, our results suggest that military experience may provide of leadership or ability to make decisions in stressful situations, since corporations led by chief executives who served in the military have higher valuations during periods of industry distress. Furthermore, the likelihood of corporate fraud is lower when a military CEO runs the firm. Moreover, military CEO management style seem to be more resilient to crisis and fraud in ways that do not seem to be provided to the same extent by academic programs in business schools.

6. Conclusion

Our analysis shows that service in the military affects executive decisions and corporate policies and outcomes. More precisely, we find that CEOs who serve in the military tend to have lower investments, their firms are less likely to be involved in fraud, and seem to perform better in times of industry distress. We contribute to the literature on CEO characteristics by focusing on a variable that is less subject to the usual concerns of endogeneity and omitted variables. In this manner, we show that an experience that occurs earlier in life, and for only a few years, may have long-lasting effects on the type of manager that an individual becomes.

More importantly, our findings are particularly significant in light of the steady decline of CEOs with military backgrounds that Corporate America is witnessing in the past 25 years. The reduction in the supply of executives have conservative investment policies, are less prone to fraud and, plausibly, better equipped to navigate through times of crisis may be detrimental for firms if these skills cannot be easily provided to individuals through alternative sources, as MBA programs. To the extent that growth of

firms through excessive investment or corporate fraud can be inefficient, our results provide suggestive evidence that the shift away from military service to business and executive education can pose an important challenge to corporations.

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Table 1: Summary Statistics, by Firm-Year

	Non-military CEOs			Military CEOs			Difference in Means
	Mean	Std. Dev.	# firm-year obs.	Mean	Std. Dev.	# firm-year obs.	T-test
Panel A: Personal Characteristics							
Year of Birth	1939.54	9.36	13539	1930.77	7.88	5636	61.84
Finance Ed.	0.375	0.484	12884	0.314	0.464	5447	7.78
Technical Ed.	0.477	0.5	12884	0.483	0.5	5447	-0.67
Ivy League School	0.284	0.451	12892	0.33	0.47	5447	-6.28
Years of Education	18.859	3.45	11486	17.841	3.316	5210	17.9
Foreign	0.085	0.28	10391	0.03	0.172	5140	12.97
South	0.214	0.41	9493	0.276	0.447	4984	-8.39
Length of Service				3.83	1.85	5079	
Panel B: Firm Characteristics							
Firm Size	8.048	1.652	12645	8.078	1.479	4736	-1.08
Return to Assets	0.135	0.099	12452	0.127	0.095	4632	4.67
Tobin's Q	1.61	0.801	12611	1.364	0.585	4726	19.29
Investment	0.079	0.067	8518	0.083	0.054	3085	-3.17
Acquisitions	0.034	0.123	7847	0.031	0.096	2707	1.43
R&D	0.048	0.071	5139	0.033	0.04	1637	8.23
Book Leverage	0.254	0.189	10367	0.276	0.17	3362	-5.92
Dividend Payouts	0.016	0.026	12577	0.021	0.055	4708	-6.64
Fraud (First year)	0.010	0.098	5405	0.001	0.029	1218	3.12
Fraud (All years)	0.022	0.148	5405	0.005	0.700	1218	4.02

Table 2: Military Background of CEOs with Military Experience

	Percentage	Number of Executives
Military Branch		
US Army	42.98	392
US Navy	38.71	353
US Air Force	14.80	135
US Coast Guard	1.21	11
Foreign Military Service	1.75	16
Other Military Service	0.55	5
# executives with observed branch		912
Marines	6.03	55
Reserves	20.5	187
Military Ranks		
Officer	91.71	376
Low level officer	89.27	366
Lieutenant	65.37	268
Captain	20.49	84
Major and above	4.63	19
# executives with observed rank		410

Note: Sample based on 918 CEOs with Military Experience. Officer identifies individuals reporting a rank of lieutenant, captain, colonel, major, or other non-identified officers. Low level officer takes a value of one for non-colonel lieutenants, captains, and majors. Major and above identifies individuals with a rank of lieutenant-colonel, colonel, major, or major general.

Table 3: Effect of Military on Firm Decisions and Performance, OLS Results

	Investment	R&D	Acquisitions	Book Leverage	Dividend Payouts	ROA	Tobin's Q
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: No age controls							
Military	-0.007	-0.011	-0.001	-0.004	0.003	-0.0001	-0.061
	(0.002)**	(0.003)**	(0.003)	(0.007)	(0.001)+	(0.003)	(0.023)**
Obs.	11562	6761	10515	10587	13509	17084	17337
R-squared	0.33	0.4	0.03	0.28	0.14	0.27	0.28
Panel B: Age controls							
Military	-0.006	-0.009	0.002	0.0001	0.002	-0.002	-0.049
	(0.002)*	(0.003)**	(0.003)	(0.007)	(0.001)	(0.003)	(0.024)*
Obs.	11562	6761	10515	10587	13509	17084	17337
R-squared	0.33	0.41	0.04	0.28	0.14	0.27	0.28
Panel C: Age controls and CEO personal characteristics							
Military	-0.006	-0.009	0.002	-0.002	0.002	-0.002	-0.038
	(0.002)*	(0.003)**	(0.003)	(0.008)	(0.001)	(0.003)	(0.027)
Obs.	8928	5181	8023	8159	10286	13238	13431
R-squared	0.35	0.44	0.04	0.3	0.14	0.31	0.3

Note: Military is an indicator variable for whether the CEO of the firm in the given year has any military experience. All regressions include controls for firm size (measured by log of total assets), year fixed effects, and 2-digit SIC dummies. Columns (1) to (3) also include Tobin's Q and Cash Flows. Column (4) includes controls for Tobin's Q and ROA. Column (5) controls for Tobin's Q, ROA, and book leverage. Regressions (1) to (3) are restricted to manufacturing and retail industries (SIC codes between 20 and 59). Panel B includes dummy variables for the age quintiles for the entire age distribution in the sample (omitted category is the first quintile). Panel C also includes a dummy variable for whether the executive is foreign and whether he was born in a southern state, and three indicators for educational background (attended Ivy League school, technical education, and financial education). Robust standard errors in parentheses are clustered by firm. + indicates significance at 10%; * significant at 5%; ** significant at 1%

Table 4: Robustness Checks

	Base Specification	Excluding Foreigners	Excluding Professional Military	Length of Service	3-digit SIC	War Effects
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Investment						
Military	-0.006	-0.006	-0.006	-0.015	-0.005	
	(0.002)*	(0.003)*	(0.003)*	(0.005)**	(0.002)*	
Length of service				0.003		
				(0.001)*		
Length of service, squared				-0.00017		
				(0.00006)**		
Veteran WWII						-0.011
						(0.004)**
Veteran Korea						-0.004
						(0.004)
Veteran Vietnam						-0.004
						(0.004)
Veteran, Other						-0.007
						(0.003)*
Observations	8928	8270	8524	8673	8928	8673
Panel B: Expenditures in R&D						
Military	-0.009	-0.010	-0.011	-0.032	-0.006	
	(0.003)**	(0.003)**	(0.003)**	(0.008)**	(0.003)*	
Length of service				0.007		
				(0.002)**		
Length of service, squared				-0.0002		
				(0.0001)*		
Veteran WWII						-0.012
						(0.003)**
Veteran Korea						-0.014
						(0.004)**
Veteran Vietnam						-0.004
						(0.005)
Veteran, Other						-0.018
						(0.006)**
Observations	5181	4729	4951	5033	5181	5033

Note: Base specification replicates the estimate from Panel C of Table 3. Military is an indicator variable for whether the CEO of the firm in the given year has any military experience. Length of service is the number of years the executive spent in the military. Professional military men are defined as those spending more than 6 years in the military service. An executive is considered a veteran of WWII if he started the military service from 1940 to 1946, veteran of the Korean War if military service began from 1950 to 1953, and a veteran of Vietnam if service was started from 1964 to 1973. Individuals starting military service in any other year are classified as "Veteran, other." All regressions include controls for firm size (measured by log of total assets), cash flows, Tobin's Q, year fixed effects, dummy variables for the age quintiles for the entire age distribution in the sample, a dummy variable for whether the executive was born in a southern state, and three indicators for educational background (attended Ivy League school, technical education, and financial education). All columns except for (2) include an indicator for whether the executive is foreign born. Columns (1) to (4) and (6) also include industry fixed effects at the 2-digit SIC. Instead, column (5) controls for 3-digit SIC dummies. Regressions are limited to manufacturing and retail industries (SICs from 20 to 59). Robust standard errors in parentheses are clustered by firm. + indicates significance at 10%; * significant at 5%; ** significant at 1%

Table 5: Effect of Military Experience on R&D and Investment; Instrumental Variables Approach

	All sample					1920-1932 cohorts		1931-1942 cohorts	
	OLS	IV	IV	IV	IV	OLS	IV	OLS	IV
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A: R&D									
Military	-0.011	-0.036	-0.023	-0.028	-0.02	-0.006	0.009	-0.012	-0.044
	(0.003)**	(0.010)**	(0.010)*	(0.012)*	(0.012)	(0.004)	(0.013)	(0.004)**	(0.015)**
# Obs.	6761	6761	6761	5181	5181	1747	1747	2887	2887
R-Squared	0.4	0.38	0.4	0.42	0.43	0.53	0.5	0.41	0.36
Panel B: Investment									
Military	-0.007	-0.018	-0.009	-0.016	-0.009	-0.011	-0.006	-0.004	-0.013
	(0.002)**	(0.007)*	(0.009)	(0.009)+	(0.011)	(0.004)**	(0.017)	(0.003)	(0.012)
# Obs.	11562	11562	11562	8928	8928	2902	2902	5129	5129
R-Squared	0.33	0.32	0.33	0.34	0.34	0.32	0.32	0.34	0.33
Age Control	No	No	Median	Median	Quintiles	No	No	No	No
Personal Characteristics	No	No	No	Yes	Yes	No	No	No	No
Ind. FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Instrument		Year of birth	Year of birth	Year of birth	Year of birth		YOB 1920-1926		YOB 1931-1936

Note: Military is an indicator variable for whether the CEO of the firm in the given year has any military experience. All regressions include controls for firm size (measured by total assets), year fixed effects, 2-digit SIC dummies, Tobin's Q and Cash Flows and are restricted to manufacturing and retail industries (SIC codes between 20 and 59). Median age is an indicator for whether the age of the executive is above the median age in the entire sample. Age quintiles are defined over the entire age distribution in the sample (omitted category is the first quintile). Personal characteristics comprise of a dummy variable for whether the executive is foreign and whether he was born in a southern state, and three indicators for educational background (attended Ivy League school, technical education, and financial education). Robust standard errors in parentheses are clustered by firm. + indicates significance at 10%; * significant at 5%; ** significant at 1%

Table 6: Industry Rankings by Concentration of Military CEOs

Rank	Industry Code	Industry Description	Fraction military CEOs	Total number of executives
Panel A: Highest fraction of military CEOs				
1	34	Fabricated Metal Products	52.00	50
2	49	Electric, Gas and Sanitary Services	40.00	265
3	32	Stone, Clay, Glass, and Concrete Products	40.00	25
4	29	Petroleum Refining and Related Products	38.18	55
5	40	Railroad Transportation	34.78	23
6	22	Textile Mill Products	34.62	26
7	45	Transportation by Air	34.15	41
8	26	Paper and Allied Products	33.33	69
9	30	Rubber and Miscellaneous Plastics Products	33.33	27
10	20	Food and Kindred Products	32.14	112
Panel B: Lowest fraction of military CEOs				
26	56	Apparel and Accessory Stores	12.50	32
25	50	Wholesale Trade-durable Goods	15.22	46
24	48	Communications	20.22	89
23	28	Chemicals and Allied Products	21.83	229
22	36	Electronic and Other Electrical Equipment and Components	22.76	145
21	53	General Merchandise Stores	22.81	57
20	59	Miscellaneous Retail	22.92	48
19	51	Wholesale Trade-non-durable Goods	23.40	47
18	58	Eating and Drinking Places	25.00	44
17	35	Industrial and Commercial Machinery and Computer Equipment	25.29	174

Note: Sample based on the 26 2-digit industry classifications with more than 19 executives in each industry among manufacturing, retail and transportation industries (standard industrial codes 20 to 59).

Table 7: Linear Probability Model of Hiring a Military CEO

Dependent Variable: Military CEO

	Investment			R&D			Tobin's Q		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Difference to industry mean, year prior	0.127			0.351			0.002		
	(0.260)			(0.348)			(0.016)		
Difference to industry mean, 3 years prior		-0.068			0.687			-0.01	
		(0.294)			(0.343)*			(0.018)	
Difference to industry mean, 5 years prior			-0.258			0.717			-0.014
			(0.447)			(0.428)+			(0.020)
Ind. FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	504	485	468	317	296	283	692	681	648
R-squared	0.24	0.25	0.26	0.29	0.35	0.35	0.25	0.26	0.25

Note: Military is an indicator variable for whether the CEO of the firm has any military experience. Regressions are limited to the year in which a new CEO was hired. For each independent variable of interest (Investment, R&D Expenditures, and Tobin's Q), we separately include in each row the difference between the firm's outcome to the asset-weighted industry mean (using a 4-digit classification of industry) in the year prior to hiring the CEO, the difference between the firm's mean outcome over the 3 years prior to hiring the CEO to the asset-weighted industry mean (using a 4-digit classification of industry) in those same years, and the difference between the firm's mean outcome over the 5 years prior to hiring the CEO to the asset-weighted industry mean (using a 4-digit classification of industry) in those same years All regressions include controls for firm size (measured by total assets), age quintiles, year fixed effects, and 2-digit SIC dummies. Age quintiles are defined over the entire age distribution in the sample (omitted category is the first quintile). + indicates significance at 10%; * significant at 5%; ** significant at 1%

Table 8: Firm Performance During Periods of Industry Distress

	Tobin's Q					
	(1)	(2)	(3)	(4)	(5)	(6)
Military	-0.069	-0.055	-0.077	-0.065	-0.069	-0.066
	(0.026)**	(0.029)+	(0.026)**	(0.030)*	(0.030)*	(0.030)*
Ind. distress	-0.113	-0.094	-0.151	-0.139	-0.139	-0.128
	(0.017)**	(0.020)**	(0.017)**	(0.020)**	(0.020)**	(0.022)**
Military*distress	0.081	0.067	0.11	0.108	0.112	0.106
	(0.026)**	(0.030)*	(0.027)**	(0.030)**	(0.031)**	(0.030)**
Marines					0.056	
					(0.069)	
Marines*distress					-0.054	
					(0.087)	
MBA						0.009
						(0.038)
MBA*distress						-0.039
						(0.034)
Distress defined using:	SIC3	SIC3	SIC4	SIC4	SIC4	SIC4
Individual Characteristics	No	Yes	No	Yes	Yes	Yes
Ind. FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	17337	13431	17337	13431	13431	13431
R-squared	0.28	0.3	0.29	0.3	0.3	0.3

Note: Industry distress is an indicator for years in which the profitability of the industry (defined by the asset-weighted return on assets at the 3 or 4-digit SIC) is below the 25th percentile of asset-weighted industry profitability from 1975 to 2006. All regressions include controls for firm size, age quintiles, 2-digit SIC dummies, and year fixed effects. Age quintiles are defined over the entire age distribution in the sample (omitted category is the first quintile). Personal characteristics comprise of a dummy variable for whether the executive is foreign and whether he was born in a southern state, and three indicators for educational background (attended Ivy League school, technical education, and financial education). Financial education is excluded in regression (6), which includes an indicator variable for whether the executive has an MBA degree. Marines is an indicator variable for whether the executive was a member of the U.S. Marines Corps. Robust standard errors in parentheses are clustered by firm. + indicates significance at 10%; * significant at 5%; ** significant at 1%

Table 9: Alleged Corporate Fraud and Military Experience

Dependent variable:	Indicator for first year of fraud			Indicator for all fraud years		
	(1)	(2)	(3)	(4)	(5)	(6)
Military	-0.006	-0.006	-0.004	-0.013	-0.013	-0.006
	(0.002)**	(0.002)**	(0.002)+	(0.006)*	(0.006)*	(0.006)
MBA		-0.002	0.001		-0.007	-0.003
		(0.005)	(0.006)		(0.013)	(0.012)
Industry distress			0.01			0.025
			(0.005)*			(0.009)**
Military * industry distress			-0.009			-0.033
			(0.004)*			(0.008)**
MBA * industry distress			-0.011			-0.018
			(0.006)+			(0.011)
Constant	-0.038	-0.037	-0.039	-0.086	-0.085	-0.089
	(0.007)**	(0.007)**	(0.007)**	(0.018)**	(0.018)**	(0.018)**
Individual Characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Ind. FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6930	6930	6930	6930	6930	6930
R-squared	0.02	0.02	0.02	0.06	0.06	0.07

Note: Fraud data from Dyck, Morse and Zingales (2010). Regressions restricted to period from 1994 to 2004 due to availability of fraud data. Dependent variable in regressions (1) to (3) is an indicator for the first year in which the company was identified as committing fraud, and in columns (4) to (6) is an indicator for all years in which the firm was identified as committing fraud. All regressions include controls for firm size (measured by log of total assets), year fixed effects, dummy variables for the age quintiles for the entire age distribution in the sample (omitted category is the first quintile), a dummy variable for whether the executive was born in a southern state, a dummy for whether the executive is foreign born, three indicators for educational background (attended Ivy League school, technical education, and financial education), and industry fixed effects at the 2-digit SIC. Industry distress is an indicator for years in which the profitability of the industry (defined by the asset-weighted return on assets at the 4-digit SIC) is below the 25th percentile of asset-weighted industry profitability from 1975 to 2006. MBA is an indicator variable for whether the executive has an MBA degree. Robust standard errors in parentheses are clustered by firm. + indicates significance at 10%; * significant at 5%; ** significant at 1%.

Appendix Table A1: Executive Transition Probabilities, by Military Experience and Industry Distress

	Entire Sample		Periods of Industry Distress	
	Number	Percentage	Number	Percentage
Military to Non-Military	377	23.49	109	23.29
Non-Military to Non-Military	950	59.19	290	61.97
Non-Military to Military	149	9.28	36	7.69
Military to Military	129	8.04	33	7.05
Total	1,605		468	

Note: A CEO transition is identified when we observe a CEO replacement in two consecutive years in a firm and we have biographical information for both chief executives. Note: Industry distress is an indicator for years in which the profitability of the industry (defined by aggregate return on assets at the 4-digit SIC) is below 25th percentile of asset-weighted average industry profitability over the entire sample period.

Appendix Table A2: Effect of Type of Military Background on Investment

	Base Specification	Type of Branch	Marines	Reserves	Officers	Rank
	(1)	(2)	(3)	(4)	(5)	(6)
Military	-0.006					
	(0.002)*					
US Army		-0.009				
		(0.003)**				
US Navy		-0.004				
		(0.003)				
US Air Force		-0.001				
		(0.005)				
Other branch		-0.011				
		(0.008)				
Marines			0.005			
			(0.007)			
Reserves				-0.004		
				(0.004)		
Officers					-0.005	
					(0.003)	
Lieutenant						-0.005
						(0.004)
Captain						-0.006
						(0.005)
Major and above						-0.008
						(0.010)
Other military			-.007	-0.006	-0.006	-0.006
			(.002)**	(0.002)*	(0.003)*	(0.003)*
Constant	0.133	0.133	0.133	0.133	0.132	0.132
	(0.026)**	(0.026)**	(0.026)**	(0.026)**	(0.025)**	(0.025)**
Observations	8908	8908	8908	8908	8928	8928
R-squared	0.34	0.34	0.34	0.34	0.35	0.35

Note: Base specification replicates the estimate from Panel C of Table 3. Military is an indicator variable for whether the CEO of the firm in the given year has any military experience. Other branch includes members of the US Coast Guard, a foreign military branch, and other US military excluding the Army, Navy, and Air Force. Officer identifies individuals reporting a rank of lieutenant, captain, colonel, major, or other non-identified officers. Major and above identifies individuals with a rank of lieutenant-colonel, colonel, major, or major general. In columns (4) to (6), Other military is a dummy variable for all military CEOs other than those belonging to the branch or rank directly controlled for in the specific regression. All regressions include controls for firm size (measured by log of total assets), cash flows, Tobin's Q, year fixed effects, dummy variables for the age quintiles for the entire age distribution in the sample (omitted category is the first quintile), a dummy variable for whether the executive was born in a southern state, a dummy for whether the executive is foreign born, three indicators for educational background (attended Ivy League school, technical education, and financial education), and industry fixed effects at the 2-digit SIC. Military CEOs are included in columns (1) to (4) if their branch was reported in the biographical information. Regressions are limited to manufacturing and retail industries (SICs from 20 to 59). Robust standard errors in parentheses are clustered by firm. + indicates significance at 10%; * significant at 5%; ** significant at 1%

Appendix Table A3: Effect of Type of Military Background on Expenditures in Research and Development

	Base Specification	Type of Branch	Marines	Reserves	Officers	Rank
	(1)	(2)	(3)	(4)	(5)	(6)
Military	-0.009					
	(0.003)**					
US Army		-0.012				
		(0.004)**				
US Navy		-0.008				
		(0.004)*				
US Air Force		-0.002				
		(0.007)				
Other branch		-0.005				
		(0.011)				
Marines			-0.018			
			(0.007)**			
Reserves				-0.008		
				(0.005)+		
Officers					-0.006	
					(0.003)+	
Lieutenant						-0.009
						(0.004)*
Captain						0.0001
						(0.005)
Major and above						0.005
						(0.008)
Other military			-0.009	-0.01	-0.011	-0.011
			(0.003)**	(0.003)**	(0.004)**	(0.004)**
Constant	0.019	0.02	0.018	0.019	0.017	0.017
	(0.013)	(0.013)	(0.013)	(0.013)	(0.018)	(0.018)
Observations	5170	5170	5170	5170	5181	5181
R-squared	0.44	0.44	0.44	0.44	0.44	0.44

Note: Base specification replicates the estimate from Panel C of Table 3. Military is an indicator variable for whether the CEO of the firm in the given year has any military experience. Other branch includes members of the US Coast Guard, a foreign military branch, and other US military excluding the Army, Navy, and Air Force. Officer identifies individuals reporting a rank of lieutenant, captain, colonel, major, or other non-identified officers. Major and above identifies individuals with a rank of lieutenant-colonel, colonel, major, or major general. In columns (4) to (6), Other military is a dummy variable for all military CEOs other than those belonging to the branch or rank directly controlled for in the specific regression. All regressions include controls for firm size (measured by log of total assets), cash flows, Tobin's Q, year fixed effects, dummy variables for the age quintiles for the entire age distribution in the sample (omitted category is the first quintile), a dummy variable for whether the executive was born in a southern state, a dummy for whether the executive is foreign born, three indicators for educational background (attended Ivy League school, technical education, and financial education), and industry fixed effects at the 2-digit SIC. Military CEOs are included in columns (1) to (4) if their branch was reported in the biographical information. Regressions are limited to manufacturing and retail industries (SICs from 20 to 59). Robust standard errors in parentheses are clustered by firm. + indicates significance at 10%; * significant at 5%; ** significant at 1%

Figure 1: Share of Male CEOs with Military Experience, 1980-2006

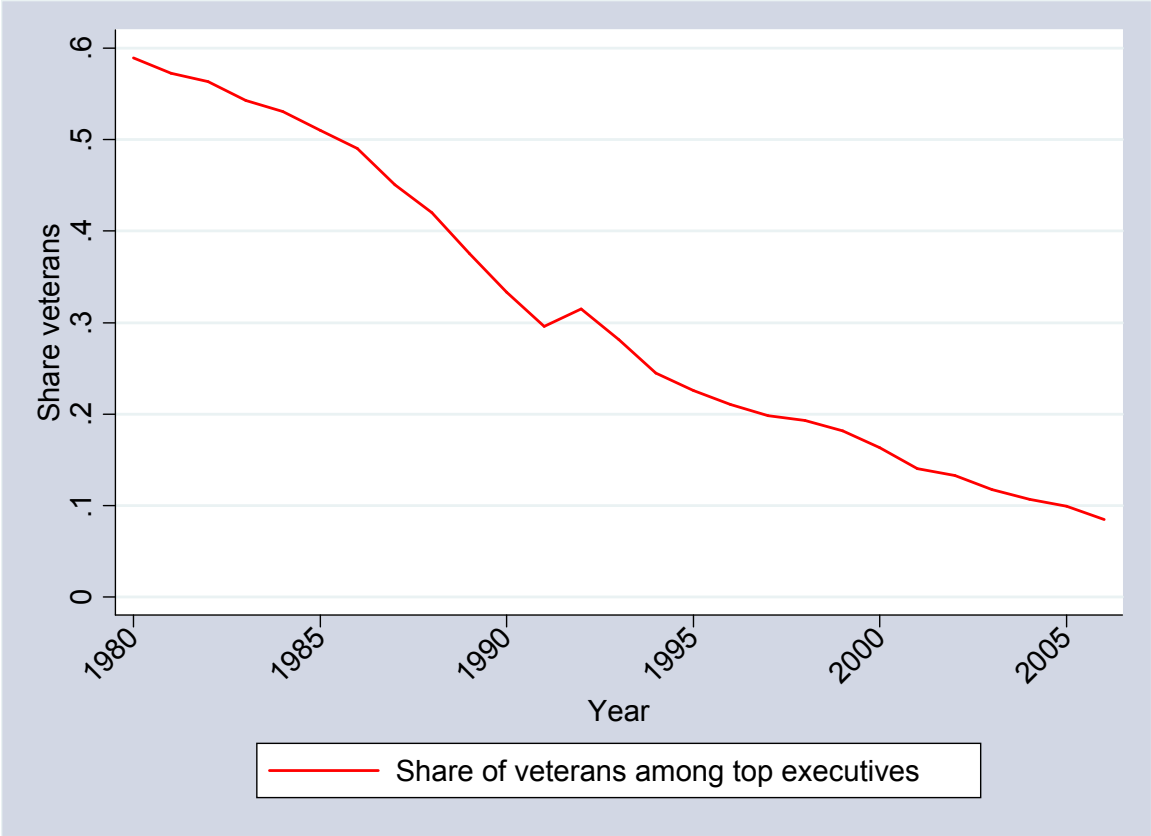
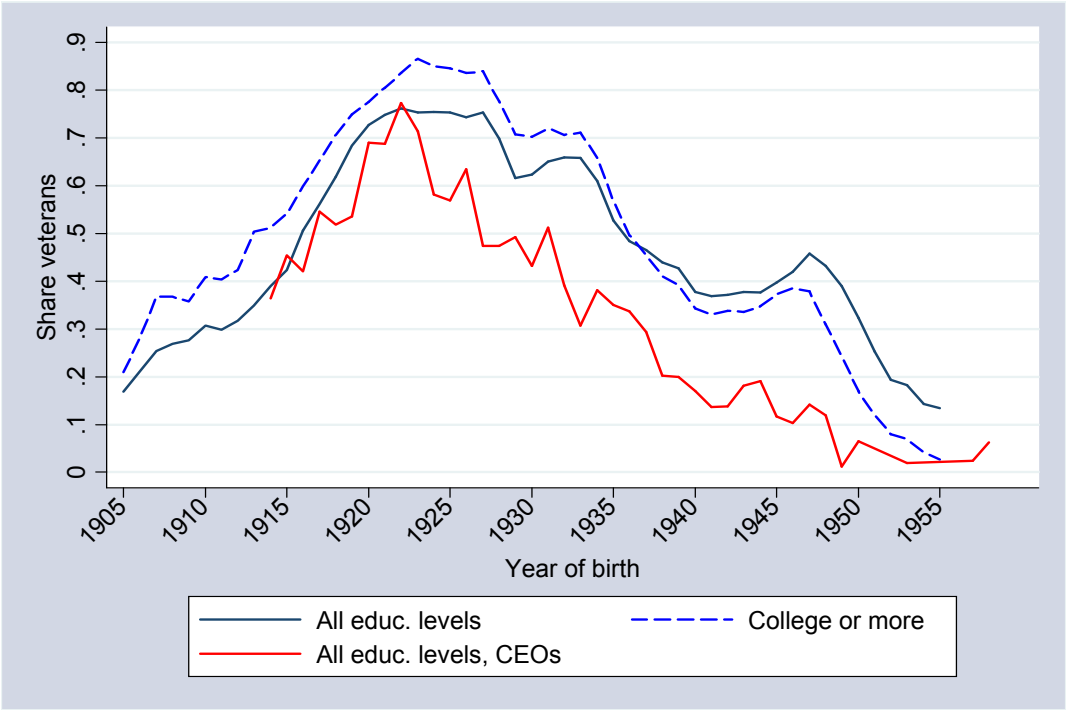
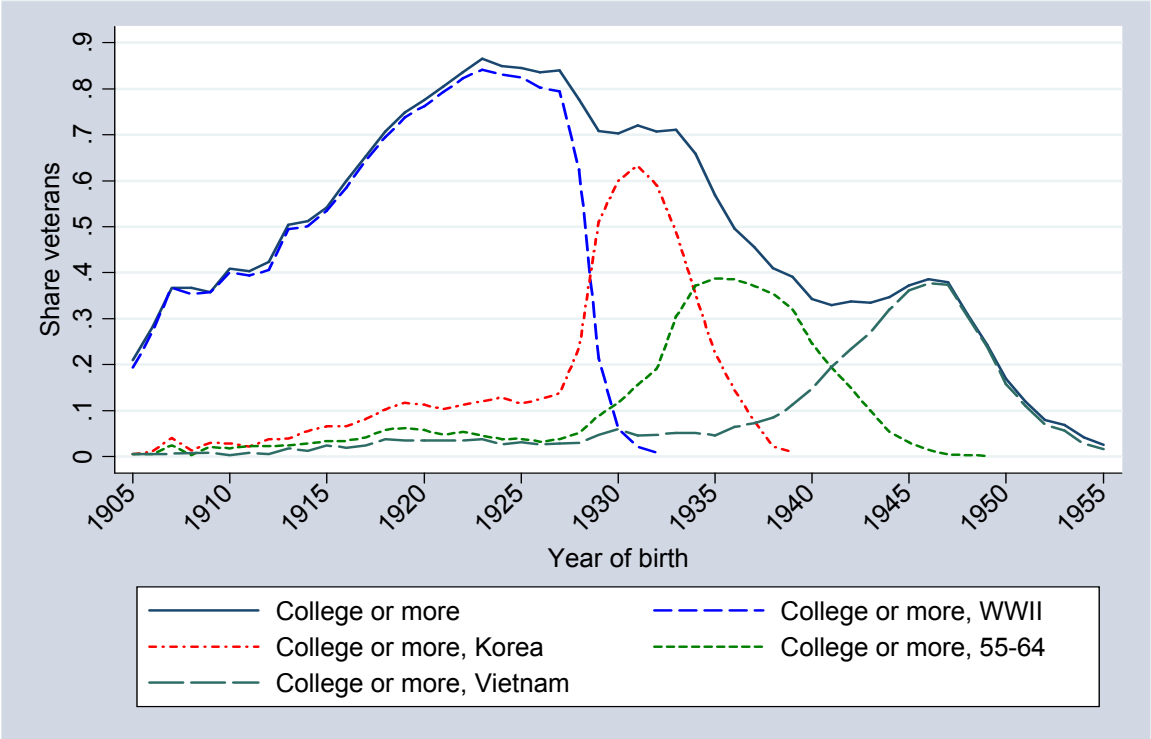


Figure 2: Share of Veterans in the Population and Among Top Executives by Birth Cohort



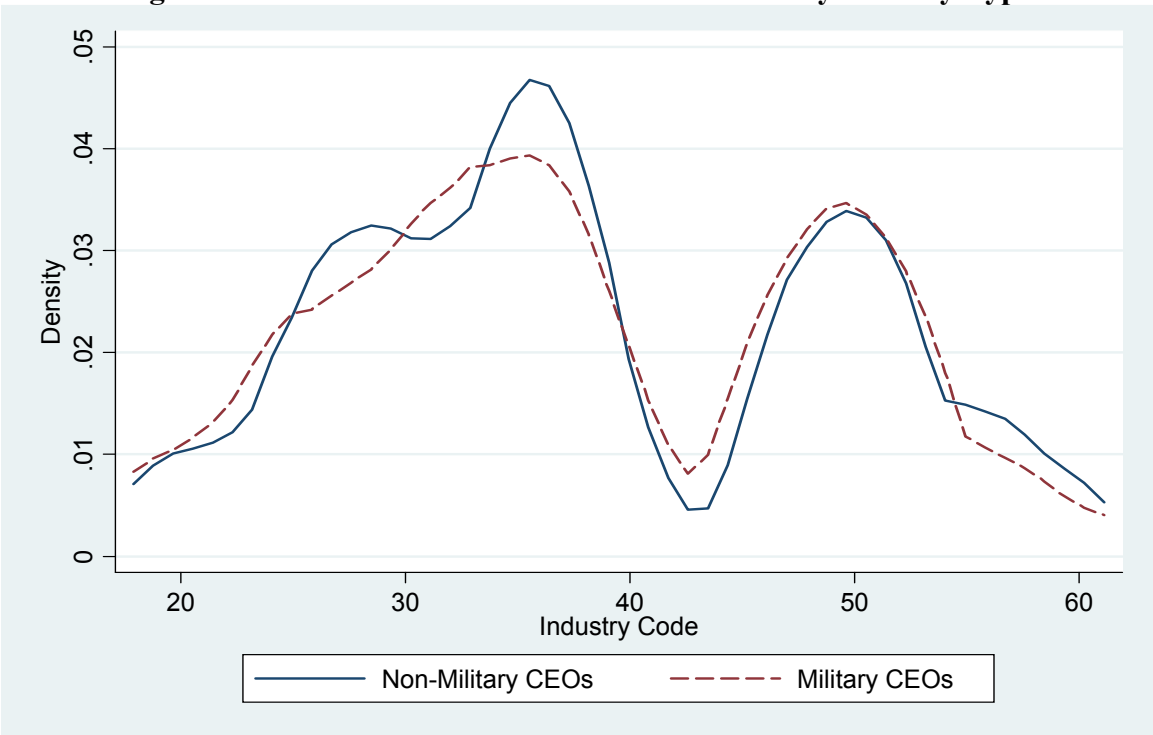
Data from the 1% sample of the 1980 Decennial Census. Based on all men of birth cohorts 1905 to 1955.

Figure 3: Share of College-Educated Veterans, Total and by Military Conflict



Data from the 1% sample of the 1980 Decennial Census. Based on all men with college education of birth cohorts 1905 to 1955.

Figure 4: Distribution Function across Industries by Military Type



Note: Kernel density based on the 26 2-digit industry classifications with more than 19 executives in each industry among manufacturing, retail and transportation industries (standard industrial codes 20 to 59).