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Military Career Outcome and Lifespan of 6 Classes of Annapolis and West Point graduates: causation and selection effects.

Extended Abstract Prepared for Presentation at IUSSP 2013

Background

Among military officers, as in many comparable civilian settings, a higher final rank usually is associated with a higher life expectancy (Silva et al. 2007, Edwards, 2008). This can be causation: material and immaterial benefits of a higher rank in active service and thereafter may cause life to last longer. Alternatively, there may be selection: those with a robust health may have a greater chance to make it to the top ranks. We investigate the graduates of 1949, 1950, 1951 of the US Naval Academy (n=2206) and of the US Military Academy (n=1719), with app. 42%, 49%, 49% equally distributed survivors to this date. Furthermore, we focus on subjects with at least 20 years of active military service, when men could retire with benefits. Death before the according age in most cases would be due to violence or accident.

We do knowe branch of service, final rank and attendance years for College NCS / CGS College (intermediate level service preparing for senior level) and War College (senior level service preparing for top level) - indicating speed of career; dates of birth, retirement and death.

Men come from a population in which variation in several major intervening variables is kept at a minimum. (1) Virtually all men in these cohorts came from a stable middle class background with a European ancestry, grew up in peacetime, and apparently experienced no extreme hardship in childhood. (2) All men were highly screened for physical and mental fitness, and intelligence before admission to USNA and USMA. (3) All men remained healthy and fit at least until their late 40s; otherwise they would not have stayed on active duty. (4) Men's weight would have conformed with the *United States Army Maximum Allowable Weight (MAW) Table*, with MAWs corresponding to a BMI of 29.9 for the shortest and 27.9 for the tallest men. (5) in the microcosm of military compounds, rank differences have no impact on nutrition, sanitation, or exercise facilities, with free and excellent health care, and regular mandatory check-ups for all. (6) Income inequality is moderate. The basic monthly salary of an admiral / four-star general at present is about twice the salary for a lieutenant commander / major, the lowest final rank observed among those with 20+ years of service in the sample, and in any case, well above the poverty line.

Methods:

Semi- and full-parametric frailty models become popular to account for unobserved heterogeneity. The influence of unobserved covariates in a proportional hazard model can be treated by a positive latent random variable, the frailty Z. The frailty concept implies a mixture of individuals in population varying in their susceptibility to common risks (Vaupel, 1979). In homogenous population the frailty variance is small the value for the frailty converges to 1. But when increases the frailty variable Z becomes more relevant for affecting the individual hazard intensively by unobserved heterogeneity. The frailty concept requires for the parametric paradigm, the specification of one parametric distribution.

The most popular parametric specification for the frailty variance follows the gamma distribution.

This is one of the most flexible statistical distributions and can be used as an approximation for any other parametric version. There are no biological or empirical arguments justifying the use of the gamma distribution, it is simply computational or mathematical convenience that determines the preferences of any parametric version for the frailty (Yashin et al. 2001, Wienke, 2011).

Follow the Perks Model (Butt und Habermann, 2004, Vaupel et al. 2009) we use a parametric frailty model, with Gompertz-specification for the baseline and Gamma for the frailty

$$\lambda(t) = \alpha + \frac{ae^{bt}}{1 + \frac{\sigma^2 z\alpha}{b}(e^{bt} - 1)}$$

with $\lambda_0(t) = ae^{bt}$ and $\Lambda_0(t) = \frac{a}{b}(e^{bt} - 1)$

Results

Beyond the expected positive association between final rank and life span / survival we find the mortality differential by rank to reach a maximum around age 75 but then to decrease. This pattern supports the selection hypothesis. Modelling unobserved heterogeneity suggests that the levelling off of differential mortality rates at higher ages is caused by the differential loss rate of subjects by final rank from the sample with advancing age. The trajectories leading to different final ranks, and indirectly also to different lifespan seem to drift apart already in early careers. This fits in with the deliberate sorting of candidates for leadership positions starting in hierarchies like the military already around age 30.

Discussion

These results possibly may not be applicable to large cohorts segmented by schooling and broad job categories – like the civil service levels investigated, for example, in the Whitehall cohort studies, when subjects were categorized as administrators / professionals and executives, doctors and lawyers / clerical / others = messengers, doorkeepers, etc (Marmot, Rose, Shipley, Hamilton 1978) – or perhaps just in comparing administrators vs. professionals and executives. These results, however, may be generalized, wherever people with identical educational and professional life trajectories until young adulthood continue to compete against each other for career and financial success for their whole active life. Differential mortality and resulting life span differentials may reflect differential competitiveness resources rather than material and immaterial benefits of the professional success.

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