The Role of Military Service in Human Capital Formation: Evidence from a Draft Lottery*

Paul Bingley†, Stéphanie Vincent Lyk-Jensen‡, Anders Rosdahl§

February 1, 2019

PRELIMINARY DRAFT. PLEASE DO NOT QUOTE.

Abstract

Military conscription is widespread, with many men around the world performing months of service. While the effects of service on a variety of outcomes have been studied, little is known about what skills are learned during service. We use the Danish draft lottery in combination with skills data from the Program for the International Assessment of Adult Competencies to estimate what is learned from military service. While military service is *associated* with reduced skills, we find a positive *causal* effect on skills measured 10 years after service – problem solving, numeracy and especially literacy – for men forced to serve who otherwise would not have served. The positive service effect on skills is largest for high ability men.

*We thank the Danish Ministry of Defence for providing us with the draft data. All errors, omissions, and interpretations are our own.

†VIVE-The Danish Centre for Social Science Research, Herluf Trolles Gade 11, 1052 Copenhagen, Denmark, pab@vive.dk

‡VIVE, svj@vive.dk

§VIVE, ar@vive.dk

JEL Classification: J24, J38, J45, I2
Keywords: Conscription, military service, skills, draft lottery

I. Introduction

Conscription exists in the majority of the world's countries, most of which are not involved in armed conflict. Military service is often extensive, ranging from a few months to several years, and is unique in that it constitutes the only remaining example in modern societies of forced labor that is legal outside of the criminal justice system. It also takes place during an important phase of young men's lives,[1] when decisions are made about labor market entry and further education. Inequities of conscription have long been debated.[2]

As military service constitutes an interruption in the young male career it may have different consequences on their human capital. Albrecht (1999) pinpoint three reasons that such interruptions matter. First, labor market experience is lost, and wages tend to rise with experience. Second, anticipated interruptions may affect human capital investments and the choice of jobs. Third, time out of the civilian workforce may lead to human capital depreciation. However, while Poutvaara, Wagener et al. (2007) argue that conscription is an inefficient allocation of resources, with forced labor leading to considerable loss of output, a military training can also

[1] Although most countries draft only men, as of 2015 nine countries also drafted women. For an overview of conscription gender, ages, and length of military service worldwide, see The World Factbook 2017. Washington, DC: Central Intelligence Agency, 2016.

[2] See Friedman (1962), Altman and Fechter (1967), Altman and Barro (1971), Hansen and Weisbrod (1967), and Oi (1967) for economic arguments for and against the draft.

teach discipline and social skills (Grönqvist and Lindqvist, 2016), and helps integrate different groups in society. Thus the net effect of military service on human capital is not clearly known.

Many studies have investigated the effect of military service on earnings, as a proxy of human capital accumulation. Recently, Bingley, Lundborg and Lyk-Jensen (Forthcoming) find different earnings effect across the ability distribution and they investigate educational enrollment and attainment, as well as work experience as explanatory mechanisms to these different patterns. However, they do not investigate how military service could affect skills. In this paper, we want to investigate, whether military service build human capital by teaching certain vocational skills (see Hanes, Norlin and Sjöström, 2010). In fact, heterogeneous results for men of different ability groups could reflect the fact that these groups may acquire different skills while serving in the military, or these groups may later choose civilian careers that differ in their use of military-induced skills.

Hisnanick (2003) and Eynde (2016) have both investigated the role of military service on human capital formation. Hisnanick (2003) focuses on the returns from military service as reflected in post-wages for African-American males during the post draft era. Military service not only provides these young men new skills and abilities for civilian careers, but also the opportunity to develop social skills such as self-discipline and to establish social networks. Despite the limitation of

the data, Hisnanick (2003) finds some evidence than veteran get higher incomes, have greater labor force attachment, and higher education compared to non-veteran peers. Eynde (2016) uses data from World War I in colonial Punjab and focuses on the effect of military enrollment on literacy. Literacy is measured from population census, while participation in the military is proxied by war casualties by district of soldiers origin. He finds that higher military recruitment is associated with increased literacy.

Thus empirical evidence on the effects of mandatory peacetime military service remains limited, with even less known about the causal effect of military service on skills. To estimate the effect of peacetime military service on skills, we use data from the Danish draft. Upon turning 18 years, men in Denmark must participate in an "Armed Forces Day" (AFD) military recruitment event during which they undergo a variety of tests. Some men who are assessed fit for military service are randomly assigned to serve. We exploit this random assignment to credibly estimate the causal effect of peacetime military service on skills.[3]

We use a comprehensive administrative dataset of the whole Danish population for our analysis. We observe baseline, before service, measures of abilities at

[3]During the period of potential service we consider (1994-2007), the Danish military was involved in both peace-keeping and peace-enforcing operations in Afghanistan, the Balkans, and Iraq. While conscripts were not required to serve abroad, 4.4% of our sample volunteer to do so. Throughout the paper we refer to this period as "peacetime," to distinguish it from, say, conscription during the Vietnam war era, and to place our study alongside other studies in which conscription does not entail a high probability of military combat.

age 18 from the military conscription board. We also use observational data for Denmark from a large-scale assessment study, the Program for the International Assessment of Adult Competencies (PIAAC). This survey includes an assessment of cognitive skills in three domains: numeracy, literacy, and problem solving in technology-rich environments. We focus on the sample of men born 1975-1995 and merge the measures of abilities to their measured skills. Through the Danish administrative register we can observe a rich set of background variables from the medical birth records and other administrative registers.

Our main contribution is to circumvent difficulties about measurement errors by using plausible values from the PIACC data and exploit a design that can clearly attribute the improvement in skills to the military service. We exploit an attractive feature of the Danish system, whereby the random assignment to serve takes place *after* completion of the enlistment tests. We know Armed Forces Qualification Test (AFQT) scores and height measured during the AFD. This information—together with other pre-assignment characteristics, such as parental schooling and birth weight—provides us a unique opportunity to examine whether the effect of conscription varies across men with different labor market prospects.

Our preliminary results show that peacetime military service has a *positive mean impact* on skills: Men who serve because they are drafted but who otherwise would not have volunteered improve skills. Allowing the service effect to vary

across the AFQT score distribution, we find that men with baseline ability above the median improve skills the most because of military service.

Our findings have three important implications. First, the average costs of mandatory service, in terms of delayed human capital accumulation and reduced earnings, is hiding some positive effects on skills. Second, the skill formation of the draft is unequally distributed, with men with high ability men benefiting the most through higher skills. Third, our findings have some policy measures implications showing that 4-8 months intensive training around age 20 improves skills as measured around 10 years later.

The paper proceeds as follows. Section 2 briefly explains the organization of military conscription in Denmark and the details of the draft lottery. Section 3 describes the data we use, and Section 4 presents our empirical approach. Section 5 presents our results, and Section 6 concludes.

II. Military Conscription in Denmark

On their 18th birthday all men[4] receive a letter requiring their attendance at an AFD on a specific date three to nine months later.[5] About 200 AFDs take place over the year. At each of the six regional military recruitment centers, 40-50 men

[4]Since 2004 women have been invited to participate in the AFD but not in the lottery. We only include men in our analysis, as no mandatory draft exists for women, and few women volunteered to serve during our sample period. We only refer to men in this paper.

[5]AFDs take place in birth-order sequence within recruitment districts.

are assessed during five-six hours. Men found to be fit for service are randomly assigned to military service through a lottery held at the end of the AFD.

A. Conscription Procedure

Figure 1 illustrates the conscription procedure. Before participating in the AFD, all prospective draftees submit a health questionnaire to be used as background information for the fitness assessment. Based on responses to this questionnaire and supporting documentation, about 10% of a cohort is declared unfit for military service and therefore ineligible for the draft and not required to attend an AFD. Reasons for ineligibility are serious somatic or psychiatric disorders, which need to be certified by a consultant physician at a regional public hospital (Hageman, Pinborg and Andersen, 2008).

[Figure 1 about here]

On the AFD, prospective draftees undergo a medical examination and a psychological evaluation, and complete an AFQT. These test results and the health assessment form the basis for further selection. For low AFQT scores (10%), high body mass index (10%), low body mass index (5%), or certain medical conditions (the top three, at 2%, being ADHD, musculoskeletal disorders, and asthma), 27% of a cohort or 30% of men attending the AFD are declared ineligible. Thus 70% of those participating at an AFD (63% of each cohort) are declared fit for military

service and assigned a future date at which they *may* be required to serve (service begins every six months). This date allows for completion of education before service if a deferment is requested, up to age 25.[6] Finally, all fit-for-service men must draw a lottery number from a drum.

B. Lottery draws and service probability

Regardless of the lottery outcome, at the AFD any man declared fit for service can volunteer and will serve from his preassigned service date. Each February and August, the Ministry of Defense announces a lottery number threshold below which men assessed fit for service during the previous half year are assigned to serve. Importantly, as thresholds are set for each half year AFD, rather than potential service dates, deferment has no effect on the probability of being drafted.[7] The threshold depends on the needs of the military and the number of volunteers, and is subject to the distribution of potential service dates. We refer to men drawing a lottery number below the threshold as "drafted" regardless of whether or not they served, or whether or not they volunteered.

[Figure 2 about here]

Lottery numbers are generated by a third party (TDC A/S) and range from 1-

[6] In exceptional circumstances can service start be delayed until age 31. See Article 25 (paragraph 2) Law of Military Service.

[7] In contrast to some other countries, educational deferment cannot be considered draft avoidance behavior in Denmark. In our sample, 99.6% had completed their military service before turning 25.

36,000. Both lottery thresholds for recent years and that the threshold is volatile are known to these men.[8] The relationship between service probability and proximity to the lottery threshold is presented in Figure 2. Those below the threshold are drafted and are much more likely to serve than those above the threshold. Service probability increases somewhat approaching the threshold from above or below. Although threshold proximity appears to encourage volunteering, because the threshold is announced only after volunteering is complete, this pattern is likely due to a desire to reduce future uncertainty for men who have drawn a low number.[9]

C. Compliance with the draft

Of a full male cohort, 37% are unfit for service, 36% are judged fit for service but do not serve and 27% serve in the military. Twenty eight percent of a cohort are drafted: 20% who actually serve and 8% who do not (3% are conscientious objectors,[10] 4% later have poor health, 0.5% have a criminal record,[11] and 0.5%

[8]The mean lottery number threshold during our enlistment period is 16,730, but it ranges from 3,000 for those with service dates in the second half of year 2000 to 36,000 for the first half of year 2003. Correlation in the threshold from one enlistment period to the next is -0.39.

[9]In specification checks we show that our results are robust to inclusion of lottery numbers as instruments and robust to the exclusion of men close to the lottery threshold. As lottery thresholds are assigned biannually according to AFD date, men who are fit-for-service cannot manipulate their draft probability. Nevertheless, Figure 2 clearly shows that service probability increases close to the threshold. Excluding lots near to the threshold produces estimates similar to the sample as a whole, suggesting that volunteering close to the draft threshold is not driving our findings.

[10]Conscientious objectors are assigned to work for their local municipality in care facilities for children or the elderly, hospitals, libraries, etc. This civil service is of a similar 8-month duration, and the rate of pay is the same as for military service.

[11]For practical purposes, criminal background checks are not run before the AFD.

are either fined or imprisoned under the draft law).[12] We observe 7% of a cohort volunteering for the military because they serve but were not drafted, but are unable to observe those who would have volunteered had they not been drafted. Assuming that no individuals will always do the opposite of what they are assigned to, we can infer that 14% of a cohort serve because they were drafted but otherwise would not have volunteered.[13] While the 27% rate of service in Denmark is higher than the 4%-26% in the U.S. Vietnam-era (Angrist, 1990), it is lower than the 40% of the Netherlands Hubers and Webbink, 2015).[14] Although we find some variation in compliance rates across the different sub-populations (not shown), the variation in Denmark is much less than between Whites and non-Whites in the U.S.

III. Data

We use administrative records from the Ministry of Defense on fit-for-service men for birth cohorts 1975-1995 . The data to which we have access is for AFQT scores,

[12] We are unable to distinguish conscientious objectors from others who are drafted but do not serve. Thus, in our analysis conscientious objectors are classified as not serving.

[13] Of a cohort 14% serve because they are drafted, as 20% are drafted and serve and 6% would serve even if they were not drafted (21% of fit-for service are always-takers and 28% of a cohort are drafted as shown in figure1).

[14] While rates of *compliance* with the draft are much higher in Denmark (73%) than in the U.S. Vietnam era (23%), U.S. rates are percentages of everyone with a selected date of birth and do not account for ineligibility (Angrist and Chen, 2011). In Denmark only those fit for service enter the draft lottery. For comparison with the U.S., assuming that lots were drawn in Denmark regardless of fitness and that 44% of a cohort was drafted but none of the unfit men served, the 8% of a cohort not serving would increase to 24% once we include the additional 16% (37% of a cohort unfit multiplied by 0.44 draft probability). Thus we would obtain a *hypothetical* Danish rate of service for those drafted of 45% (20/(20+24)).

height, lottery number, the AFD half-year, and the potential starting half-year for their military service.[15] The Danish AFQT, a cognitive test called the Børg Prien Prøve, was developed for Danish Armed Forces recruitment and has been used since 1957 on about 1.5 million men.[16] The test comprises 78 items with an even balance of logical (matrices), verbal (analogies), numerical (series), and spatial (geometry) reasoning. Tests are time-limited, items are not multiple choice, and total test score is the sum of correct items, together measuring fluid intelligence rather than acquired knowledge.[17]

We combine administrative records from the Ministry of Defense with the Danish data from PIAAC. Data from the Danish PIAAC encompasses a representative sample of adult aged 16-65 years interviewed between August 2011 and March 2012 (7,328 persons). We also have access to a representative sample of persons born in 1984 and interviewed in PISA in 2000 (4,235 persons), and re-interviewed in 2004 (3.072 persons) of which 1,881 were also interviewed in the PIAAC. The PIAAC, developed by OECD were collected in 33 countries and was designed to

[15]These are the first years of Ministry of Defense records with computerized lottery numbers. Albæk et al. (2017) digitize records for the 1964 birth cohort from one recruitment district.

[16]See Teasdale (2009) for psychometric properties of the Danish AFQT and a review of its applications. Mortensen, Reinisch and Teasdale (1989) show that the Børg Prien Prøve is correlated 0.82 with the Wechsler Adult Intelligence Scale. Teasdale et al. (2011) show that test scores are invariant to attitudes towards the military, suggesting that the test's reliability is not undermined by lack of motivation or under performance among those taking the test.

[17]For more recent cohorts,Bingley, Lundborg and Lyk-Jensen (Forthcoming) validate AFQT scores with scores obtained in mandatory tests taken at the end of compulsory school (9th grade) and show that AFQT scores are a good measure of intelligence and are not undermined by strategic behavior on the test. Moreover, given the requirements of the military, our sample of men is somewhat positively selected in terms of academic performance.

measure key cognitive and workplace skills needed for individuals to advance in their job and participate in society. The survey includes an assessment of cognitive skills in three domains: numeracy, literacy, and problem solving in technology-rich environments. These domain are described in more detail in OECD (2013).

Literacy: ability to understand, evaluate, use and engage with written texts to participate in society, to achieve one's goals, and to develop one's knowledge and potential. Numeracy: ability to access, use, interpret, and communicate mathematical information and ideas in order to engage in and manage the mathematical demand of a range of situations in adult life ICT skills: ability to use digital technology, communication tools and networks to acquire and evaluate information, communicate with others and perform practical tasks. PIAAC measures each of the three skill domain on a 500-point scale. PIAAC provides 10 plausible values for each respondent and each skill domain. The questionnaire also includes background information about labor-market status, earnings and we can also combine these information with register from Statistics Denmark for the whole Danish population since 1980. However, most part of our analyse focus on men born 1975-1995, who also participate in the Danish draft board lottery and were fit-for-service and answer the PIAAC questions after their service.

Our main outcome measures are skills: numeracy, literacy and problem-solving skills.

[Table 1 about here]

Table 1 presents descriptive statistics for our fit-for-service sample, according to service status and a 5% representative sample of men. Within our fit-for-service sample, differences by service status are small. In comparison to the general population, our fit-for-service sample differs most according to AFQT scores of 3 points higher—an unsurprising result as AFQT score is an explicit selection criterion—but otherwise, differences are also small.

[Table 2 about here]

Table 2 presents descriptive statistics for our PIAAC sample by draft status and service status.

[Table 3 about here]

As the tests on the AFD take place before the lottery, we can use the test results, together with other pre-assignment variables, to assess whether the lottery randomization is balanced. Table 3 shows coefficients from four separate OLS regressions explaining draft assignment by the lottery and, as expected, no covariates predict assignment status, confirming that the lottery is a balanced random assignment.

IV. Method

We want to know the effect of military service on subsequent skills $s = \{literacy, numeracy, problem-solving\}$, which we model as follows:

$$y_{its} = \pi_0 + \pi_1 MILITARY_i + X_i\pi_2 + \upsilon_{it},$$

where y_{its} refers to the skills s of individual i at time t, $MILITARY$ is an indicator of participating in military service, and X is a set of control variables. However, an OLS estimate of π_1 would be biased because of non-compliance with the draft, making military service status endogenous. To deal with this endogeneity problem, we exploit the draft lottery and instrument $MILITARY$ according to:

$$MILITARY_i = \delta_0 + \delta_1 LOTTERY_i + X_i\delta_2 + \eta_i.$$

Here, $LOTTERY_i$ refers to an indicator variable for drawing a lottery number below the threshold and thus being assigned to military service. Our IV estimator provides a Local Average Treatment Effect (LATE), which reflects the effect of military service among the group of compliers, i.e., in our case men who would serve if randomly assigned to do so but that would otherwise not have volunteered. The effect on draft compliers is of interest for measuring the cost of forced ser-

vice.[18]

We are also interested in the effect of service across men with different labor market prospects. Neal and Johnson (1996) show that AFQT scores in the U.S. are a good proxy for labor market prospects because they constitute a basic skills measure predicting job performance. We perform separate regressions by AFQT score (below and above the median).

V. Results

We begin our analyses by estimating the mean relationships between draft status, service status and earnings, before presenting our main estimates of service effects on skills. Finally we consider heterogeneous effects of military service by AFQT scores (below and above the median).

Table 4 presents regression coefficients for the relationships between draft status, service status, and skills. In Panel A, we show coefficients on an indicator for service in separate OLS regressions explaining different skills. Estimates are quite stable across specifications, showing that those serving have significantly lower skills than those who serve.

[Table 4 about here]

[18]The risk of being drafted may impose psychological costs associated with planning uncertainty. We do not consider these psychological costs.

In Panel B, we turn to our causal analysis and show reduced form, or intention-to-treat (ITT), estimates of the effect of draft status on skills. Those drafted have higher skills than those not drafted, reflecting positive effect of serving for those forced to serve through the lottery assignment.

To estimate the LATE of serving, we need to relate the ITT estimate to the fraction of compliers. First-stage estimates of the effect of draft status on actual military service are shown in Panel C. Being drafted increases the probability of service by 32 percentage points, and F-statistics show that draft status is very relevant for explaining service status (Stock, Wright and Yogo, 2002).

Panel D shows IV estimates of the effect of service on skills. In all specifications, military service increases skills.[19]

[Table 5 about here]

Table 5 presents estimates of the relationships between draft status, service status, and skills split by above and below median AFQT score. OLS regressions show service is negatively associated with skills across the baseline AFQT score distribution. Reduced form estimates show that those drafted have higher skills, especially if they have high baseline AFQT scores. First stage regressions show that being drafted increases the probability of serving by 28 (36) percent for those

[19]Including draft status *and* lottery number as instruments for military service, we find estimates of the effect of military service on skills very similar to those obtained when we instrument only by draft status. In the remainder of the paper, we use a binary draft status indicator as our only excluded instrument.

below (above) median baseline AFQT score. F-statistics show that draft status remains a relevant instrument across the AFQT score distribution. Our IV estimates show that service increases skills, especially for men with above median baseline AFQT scores.

VI. Conclusions

Military conscription is widespread, with many men around the world performing months of service. While the effects of service on a variety of outcomes have been studied, little is known about what skills are learned during service. We use the Danish draft lottery in combination with skills data from the Program for the International Assessment of Adult Competencies to estimate what is learned from military service. While military service is *associated* with reduced skills, we find a positive *causal* effect on skills measured 10 years after service – problem solving, numeracy and especially literacy – for men forced to serve who otherwise would not have served. The positive service effect on skills is largest for high ability men.

References

Albrecht, James W. 1999. "Career Interruptions and Subsequent Earnings: A Re-examination Using Swedish Data." *Journal of Human Resources*, 34(2): 294 – 311.

Altman, S. H., and A. E. Fechter. 1967. "The supply of military personnel in the absence of a draft." *American Economic Review*, 57: 19 – 31.

Altman, Stuart H., and Robert J. Barro. 1971. "Officer Supply – The Impact of Pay, the Draft, and the Vietnam War." *American Economic Review*, 61(4): 649 – 664.

Angrist, Joshua D. 1990. "Lifetime Earnings and the Vietnam Era Draft Lottery: Evidence from Social Security Administrative Records." *American Economic Review*, 80(3): 313 – 336.

Angrist, Joshua D., and Stacey H. Chen. 2011. "Schooling and the Vietnam-Era GI Bill: Evidence from the Draft Lottery." *American Economic Journal: Applied Economics*, 3(2): 96 – 118.

Bingley, Paul, Petter Lundborg, and Stéphanie Vincent Lyk-Jensen. Forthcoming. "The Opportunity Costs of Mandatory Military Service: Evidence from a Draft Lottery. Journal of Labor Economics." *Journal of Labor Economics*.

Eynde, Oliver Vanden. 2016. "Military service and human capital accumulation: Evidence from Colonial Punjab." *Journal of Human Resources*, 51(4): 1003–1035.

Friedman, Milton. 1962. *Capitalism and freedom: With the assistance of Rose D. Friedman.* University of Chicago Press.

Grönqvist, Erik, and Erik Lindqvist. 2016. "The making of a manager: evidence from military officer training." *Journal of Labor Economics*, 34(4): 869–898.

Hageman, I, A Pinborg, and HS Andersen. 2008. "Complaints of stress in young soldiers strongly predispose to psychiatric morbidity and mortality: Danish national cohort study with 10-year follow-up." *Acta Psychiatrica Scandinavica*, 117(2): 148–155.

Hanes, Niklas, Erik Norlin, and Magnus Sjöström. 2010. "The civil returns of military training: A study of young men in Sweden." *Defence and Peace economics*, 21(5-6): 547–565.

Hansen, W. L., and B. A. Weisbrod. 1967. "Economics of the military draft." *Quarterly Journal of Economics*, 81: 395 – 421.

Hisnanick, John J. 2003. "A great place to start: The role of military service on human capital formation." *Labour*, 17(1): 25–45.

Hubers, Frank, and Dinand Webbink. 2015. "The long-term effects of military conscription on educational attainment and wages." *IZA Journal of Labor Economics*, 4(1): 10.

Mortensen, Erik L., June M. Reinisch, and Thomas W. Teasdale. 1989. "Intelligence as measured by the WAIS and a military draft board group test." *Scandinavian Journal of Psychology*, 30(4): 315 – 318.

Neal, Derek A., and William R. Johnson. 1996. "The Role of Premarket Factors in Black-White Wage Differences." *Journal of Political Economy*, 104(5): 869 – 895.

OECD. 2013. *OECD skills outlook 2013: First results from the survey of aldult skills.* Organisation for Economic Cooperation and Development. Paris.

Oi, Walter Y. 1967. "The economic cost of the draft." *American Economic Review*, 57: 39 – 62.

Poutvaara, Panu, Andreas Wagener, et al. 2007. "Conscription: economic costs and political allure." *Economics of Peace and Security Journal*, 2(1): 6–15.

Stock, James H, Jonathan H Wright, and Motohiro Yogo. 2002. "A survey of weak instruments and weak identification in generalized method of moments." *Journal of Business & Economic Statistics*, 20(4): 518–529.

Teasdale, Thomas W. 2009. "The Danish draft board′s intelligence test, Børge Priens Prøve: psychometric properties and research application through 50 years." *Scandinavian Journal of Psychology*, 50(6): 633 – 638.

Teasdale, Thomas W., Peter V.W. Hartmann, Christoffer H. Pedersen, and Mette Bertelsen. 2011. "The reliability and validity of the Danish Draft Board Cognitive Ability Test: Børge Prien′s Prøve." *Scandinavian Journal of Psychology*, 52(2): 126 – 130.

VII. Tables and Figures

TABLE 1—SUMMARY STATISTICS - FIT-FOR-SERVICE SAMPLE

	Fit-for-service sample			5 percent
	All	served=1	served=0	population
	(1)	(2)	(3)	(4)
Height (cm)	180.38	180.39	180.37	179.93
	(6.59)	(6.52)	(6.64)	(6.77)
AFQT	44.61	44.51	44.69	41.28
	(8.32)	(8.09)	(8.50)	(10.30)
Individuals	152,269	66,813	85,456	7,486[†]
Raised in single-parent family	0.18	0.18	0.17	0.19
	(0.38)	(0.39)	(0.38)	(0.39)
Placed in out-of-home care	0.04	0.04	0.03	0.05
	(0.19)	(0.21)	(0.18)	(0.22)
Son of immigrant	0.04	0.04	0.04	0.04
	(0.20)	(0.19)	(0.20)	(0.20)
Birth weight (gr)	3,371	3,359	3,381	3,342
	(653)	(647)	(657)	(599)
Household income at age 15 (DKK)	134,047	132,738	135,071	130,579
	(57,582)	(56,377)	(58,487)	(56,554)
Mother's years of schooling	11.67	11.58	11.74	11.69
	(2.88)	(2.84)	(2.91)	(2.80)
Father's years of schooling	12.04	11.95	12.11	12.19
	(3.17)	(3.13)	(3.20)	(3.04)
Individuals	152,269	66,813	85,456	14,390[‡]

NOTE.—Means, standard deviations in parentheses. Statistics in columns 1-3 relate to fit-for-service 1976-1983 male birth cohorts ; statistics in column 4 indicated by [†] are for 1988-90 male birth cohorts attending the AFD; statistics in column 4 indicated by [‡] are for full 1976-1983 male birth cohorts. AFQT is taken on the AFD, and height is measured. Birth weight is measured by midwife at birth. Raised in single-parent family is an indicator variable for household status on 17th birthday. Placed in out-of-home care is an indicator variable taking the value one for living in out-of-home care (institutions or foster home) before age 18. Household income at 15 is equivalized according to the formula (sum of income in the household plus transfers minus taxes)/(1*first_adult+0.7*second_adult+0.5*number_of_children) and deflated to 2012 prices by the CPI. Mother's and father's schooling are measured when son is age 15.

TABLE 2—SUMMARY STATISTICS - ESTIMATION SAMPLE

	served=1 (1)	served=0 (2)	drafted=1 (3)	drafted=0 (4)
Served	1	0	.4605	.2052
Drafted	.6972	.4106	1	0
Literacy	-.0640 (1.0004)	.0322 (.9982)	.0899 (1.0107)	-.0922 (.9804)
Numeracy	-.0650 (1.0120)	.0327 (.9923)	.0787 (1.0077)	-.0808 (.9855)
Problem Solving	-.0969 (.9989)	.0487 (.9970)	.0714 (1.0225)	-.0733 (.9709)
Height (cm)	180.3 (6.8)	180.3 (6.4)	180.1 (6.7)	180.5 (6.4)
AFQT score	.0149 (1.0181)	-.0079 (.9895)	.0218 (1.0097)	-.0213 (.9891)
Birth weight (kg)	3.450 (.593)	3.479 (.550)	3.453 (.556)	3.487 (.573)
Father schooling				
Compulsory	.1176	.1153	.1042	.1282
High school	.0411	.0394	.0347	.0453
Vocational	.4147	.4335	.4150	.4398
Some college	.0676	.0554	.0637	.0552
Bachelors	.1764	.1737	.1776	.1715
Masters	.0911	.1065	.1158	.0867
Mother schooling				
Compulsory	.1685	.1500	.1506	.1621
High school	.0428	.0346	.0433	.0312
Vocational	.3542	.3636	.3427	.3789
Some college	.0314	.0346	.0282	.0390
Bachelors	.2628	.3073	.3032	.2812
Masters	.0514	.0519	.0602	.0429
Individuals	360	716	545	531

NOTE.—Means, standard deviations in parentheses.

TABLE 3—RANDOMIZATION BALANCE CHECK FOR DRAFT ASSIGNMENT. DEPENDENT VARIABLE: DRAFT STATUS=1.

	(1) Basic	(2) Extended
Height (cm)	-0.12992	-0.05898
	(0.07708)	(0.09237)
Height squared	0.00035	0.00016
	(0.00021)	(0.00025)
AFQT score normalized	0.01043	0.01178
	(0.01456)	(0.01589)
AFQT score squared	0.00566	0.01109
	(0.01150)	(0.01208)
Birth weight (kg)		-0.20414
		(0.19256)
Birth weight squared		0.02716
		(0.02903)
Maternal schooling		
Compulsory		-0.10656
		(0.07300)
High School		-0.04244
		(0.10295)
Vocational		-0.06072
		(0.06261)
Some college		-0.02218
		(0.08339)
Bachelors		-0.05988
		(0.07099)
Masters		-0.04276
		(0.08130)
Paternal schooling		
Compulsory		-0.08542
		(0.07503)
High School		0.03271
		(0.10498)
Vocational		-0.08617
		(0.06946)
Some college		-0.11661
		(0.11619)
Bachelors		-0.02392
		(0.07330)
Masters		0.04419
		(0.09747)
F-Statistic	1.11387	0.89792
F-Stat p-value	0.34851	0.58131
Partial-R2	0.00442	0.01764
Observations	1038	948

NOTE.— The columns contain coefficients from different OLS regressions. The dependent variable is an indicator taking the value one if the lottery draw was below the threshold and the individual was drafted. These regressions also control for birth year and birth month. Standard errors in parentheses.* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

TABLE 4—DRAFT STATUS, MILITARY SERVICE STATUS AND SKILLS

	(1) Literacy Basic Controls	(2) Literacy Extended Controls	(3) Numeracy Basic Controls	(4) Numeracy Extended Controls	(5) Problem solving Basic Controls	(6) Problem solving Extended Controls
Panel A. OLS regressions: outcome skills						
Service status=1	-0.108***	-0.118***	-0.118***	-0.127***	-0.151***	-0.181***
	(0.0173)	(0.0178)	(0.0169)	(0.0177)	(0.0176)	(0.0181)
Adjusted R^2	0.317	0.330	0.343	0.347	0.294	0.292
Panel B. Reduced form regressions: outcome skills						
Draft status=1	0.147***	0.125***	0.0885***	0.0715***	0.0743***	0.0400**
	(0.0178)	(0.0184)	(0.0175)	(0.0183)	(0.0182)	(0.0188)
Adjusted R^2	0.319	0.331	0.342	0.345	0.290	0.285
Panel C. First-stage regressions: outcome service status=1						
Draft status=1	0.322***	0.321***	0.322***	0.321***	0.322***	0.321***
	(0.00963)	(0.0101)	(0.00963)	(0.0101)	(0.00963)	(0.0101)
Adjusted R^2	0.125	0.134	0.125	0.134	0.125	0.134
F-stat excl. inst.	1121	1015	1121	1015	1121	1015
Mean of dep var	0.335	0.335	0.335	0.335	0.335	0.335
Panel D. Second stage IV regressions: outcome skills						
Service status=1	0.457***	0.388***	0.275***	0.222***	0.230***	0.124**
	(0.0579)	(0.0594)	(0.0554)	(0.0577)	(0.0573)	(0.0589)
Mean of dep var	0	0	0	0	0	0
Individuals	1038	948	1038	948	1038	948

NOTE.— Each cell contains the coefficient of interest from different regressions. The dependent variable in Panels A, B and D is standardized PIAAC skills. Columns differ according to the set of other explanatory variables included and which skills measure is considered. Columns 1, 3 and 5 use a basic specification including year of birth dummies, month of birth dummies, and quadratic functions of AFQT and height. Columns 2, 4, and 6 use an extended specification which also includes controls for a quadratic in birth weight and dummies for mother and father level of schooling. Standard errors in parentheses.* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

TABLE 5—DRAFT STATUS, MILITARY SERVICE STATUS AND SKILLS BY AFQT SCORE

	(1) Literacy AFQT <median	(2) Literacy AFQT >median	(3) Numeracy AFQT <median	(4) Numeracy AFQT >median	(5) Problem solving AFQT <median	(6) Problem solving AFQT >median
Panel A. OLS regressions: outcome skills						
Service status=1	-0.108***	-0.118***	-0.118***	-0.127***	-0.151***	-0.181***
	(0.0173)	(0.0178)	(0.0169)	(0.0177)	(0.0176)	(0.0181)
Adjusted R^2	0.154	0.175	0.154	0.175	0.154	0.175
Panel B. Reduced form regressions: outcome skills						
Draft status=1	0.101***	0.186***	0.0606**	0.111***	0.0173	0.105***
	(0.0277)	(0.0257)	(0.0267)	(0.0263)	(0.0283)	(0.0263)
Adjusted R^2	0.203	0.194	0.235	0.187	0.170	0.160
Panel C. First-stage regressions: outcome service status=1						
Draft status=1	0.288***	0.362***	0.288***	0.362***	0.288***	0.362***
	(0.0150)	(0.0142)	(0.0150)	(0.0142)	(0.0150)	(0.0142)
Adjusted R^2	0.154	0.175	0.154	0.175	0.154	0.175
F-stat excl. inst.	368.6	644.1	368.6	644.1	368.6	644.1
Mean of dep var	0.358	0.313	0.358	0.313	0.358	0.313
Panel D. Second stage IV regressions: outcome skills						
Service status=1	0.352***	0.514***	0.210**	0.307***	0.0602	0.292***
	(0.0993)	(0.0753)	(0.0938)	(0.0747)	(0.0982)	(0.0742)
Mean of dep var	-0.454	0.420	-0.460	0.426	-0.428	0.396
Individuals	466	482	466	482	466	482

NOTE.— Each cell contains the coefficient of interest from different regressions. The rows contain different dependent variable skill measures split by AFQT score above the median in Columns 2, 4 and 6 and below median in Columns 1, 3 and 5. The dependent variable in Panels A, B and D is standardized PIAAC skills. All columns include the extended specification as in Table 3, Columns 2, 4 and 6. Standard errors in parentheses.* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

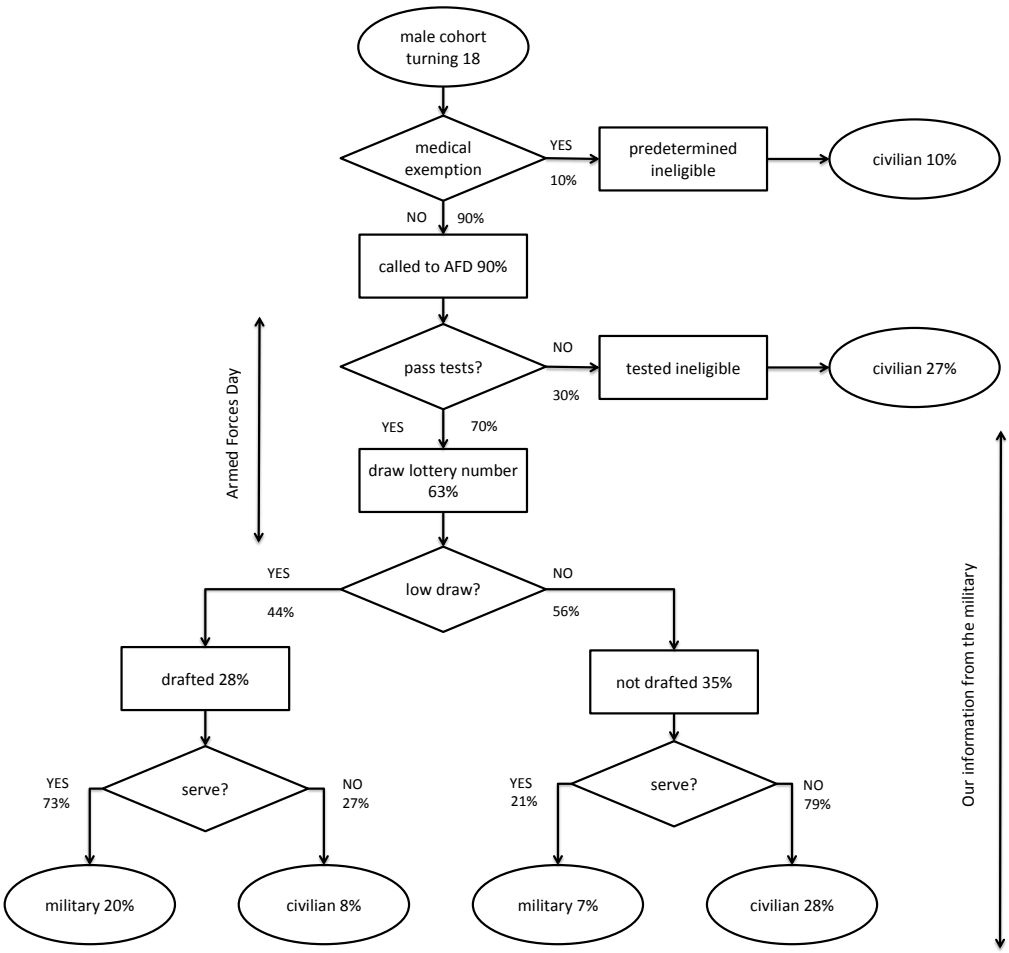

FIGURE 1. FLOW CHART OF THE CONSCRIPTION PROCESS. NUMBERS INSIDE THE SHAPES DENOTE AVERAGE PERCENTAGES OF OUR BIRTH COHORTS 1976-83. NUMBERS TO THE RIGHT OR THE LEFT OF THE ARROWS DENOTE AVERAGE PERCENTAGES FOR TAKING EACH ROUTE CONDITIONAL ON REACHING THE JUNCTION. THE AFD INCLUDES TEST-TAKING AND DRAWING LOTTERY NUMBERS. OUR ESTIMATION DATA SET CONTAINS INFORMATION ON ALL THOSE WHO DREW A LOTTERY NUMBER.

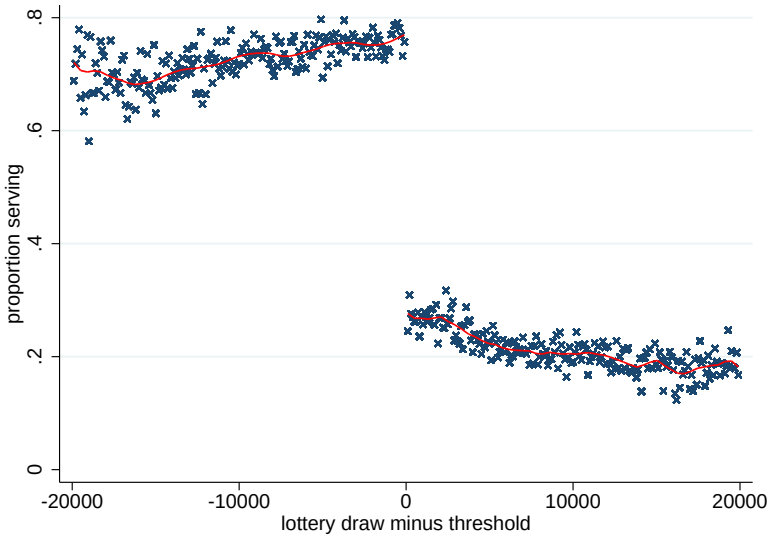

FIGURE 2. SERVICE PROBABILITY BY LOTTERY DRAW. X'S INDICATE PROPORTIONS SERVING AMONG BINS CONTAINING 100 CONSECUTIVE LOTTERY DRAWS ABOVE THE THRESHOLD. THE LINES ARE (EPANECHIKOV) KERNEL-WEIGHTED (SECOND DEGREE) LOCAL POLYNOMIALS ESTIMATED ON THE BIN PROPORTIONS EACH SIDE OF THE THRESHOLD.