2016

Hard lessons: combat deployment and veteran interest in higher education

Armey, Laura E.; Lipow, Jonathan

Taylor and Francis

Laura E. Armey, Jonathan Lipow, "Hard lessons: combat deployment and veteran interest in higher education," Applied Economics Letters, v.23, no.11, (2016), pp. 768- 772.

https://hdl.handle.net/10945/51963

APPLIED ECONOMICS LETTERS, 2016
VOL. 23, NO. 11, 768–772
http://dx.doi.org/10.1080/13504851.2015.1105918

Routledge
Taylor & Francis Group

Hard lessons: combat deployment and veteran interest in higher education

Laura E. Armey and Jonathan Lipow

Naval Postgraduate School, Monterey, CA, USA

ABSTRACT

Over 2.5 million Americans served in the wars in Afghanistan and Iraq. In this short article, we consider the impact of these experiences on their future welfare. Specifically, we ask if those who served in Afghanistan and Iraq are more or less likely to exploit their GI Bill benefits in order to pursue higher education than service members who did not directly participate in these conflicts. We exploit a comprehensive administrative dataset that the US Armed Forces' Defense Manpower Data Center (DMDC) provided to us. We find across models that deployment to Afghanistan or Iraq significantly increases the likelihood that veterans will take advantage of their educational benefits, but that exposure to violent combat significantly decreases it.

KEYWORDS

GI Bill; education; deployment; combat; veterans

JEL CLASSIFICATION

H52; H56; I28; J24

I. Introduction

Over 2.5 million Americans served in the wars in Afghanistan and Iraq (OEF/OIF).[1] Given the size of this cohort, it is of the utmost importance that both veterans and the public develop a good understanding of the socio-economic consequences of veterans' recent experiences. In this short article, we ask whether those who served in OEF/OIF are more or less likely to take advantage of the Montgomery GI Bill (MGIB). The MGIB provides up to 36 months of benefits worth as much as $70 000 towards education expenses for veterans who commence studies within 10 years of discharge from military service.

Selection biases and limited data make it difficult to study how combat deployment affects veterans. All those who served in OEF/OIF, for example, were volunteers. Hence, fundamental differences in character and personality between those who seek out military service and those who avoid it bias any naïve comparison of life outcomes. Furthermore, much of the data gathered on veterans is inherently unreliable self-reported information gathered from those who bother to respond to surveys.

To overcome these problems, the seminal Angrist (1990) analysis of the impact of the Vietnam era draft on the earnings of veterans exploited the draft lottery and aggregate Social Security data. Angrist's approach, however, could not differentiate between draftees who spent two years in an office at Fort Sill, two years in an office in Saigon or a year fighting in the Mekong Delta. Hence, his findings shed little light on how actual deployment and combat, as opposed to military service in general, affects veterans.

One feature of OEF/OIF, however, has made it possible to overcome selection bias in identifying the impact of deployment on veterans. Simply put, no one who participated in the earliest phases of these conflicts actually volunteered to serve in Afghanistan or Iraq. Rather, they volunteered for specific specialties in the US Armed Forces during peacetime, and then were assigned to various units based on military requirements. Some of those units, in turn, were assigned to OEF/OIF while other units were not.

A number of recent papers – Lyle (2006), Engel, Gallagher, and Lyle (2010), and Cesur, Sabia, and Tekin (2013) – have exploited this feature of OEF/OIF in order to evaluate the impact of combat deployment on veterans' mental health and the school performance of their children. These papers, however, still rely on surveys. Furthermore, they compare outcomes for all soldiers deployed in OEF/OIF with outcomes for all those who were not. Since deployed soldiers disproportionately specialized in combat and combat support professions, there is still potential for bias.

In this article, we overcome many of the statistical challenges faced by these earlier studies by exploiting

CONTACT Laura E. Armey larmey@nps.edu

[1]OEF stands for 'Operation Enduring Freedom' and OIF stands for 'Operation Iraqi Freedom.'

a comprehensive database compiled from administrative records. In Section II, we describe our data. In Section III, we describe our econometric strategy. In Section IV, we report our results. Section V concludes this article.

II. Data

Defense Manpower Data Center (DMDC) has provided us with data that covers all enlisted members of the US Armed Forces who volunteered for service prior to September 2001 but had yet to complete their first term of service by that date – a total of 384 005 individuals. By focusing on this cohort, we eliminate any possibility that attitudes towards 9/11 or the prospect of imminent combat deployment could have influenced volunteers' decisions to join the armed forces or their preferences for a particular Military Occupation Specialty (MOS) or unit. Also, our sample made the decision to leave, and for the most part to use, the MIGB program before they had the additional option of the post-9-11 GI Bill that went into effect in 2008.

DMDC has provided data on each individual's race and gender, as well as percentile scores on the Armed Forces Qualification Test (AFQT). The data also includes annual updates of marital status, number of children, educational attainment and MOS for as long as the individual is in uniform. These variables could influence veterans' interest in tertiary education. DMDC (2013) also provided information on each individual's OEF/OIF deployments – including their location and dates, as well the number of deaths sustained by the individual's unit during each deployment, something we treat as a proxy for the intensity of the combat experienced during the deployment. The Veterans Administration (VA) provided the MGIB usage data. Table 1 provides descriptive

Table 1. Descriptive statistics.

	All first-term enlisted			First-term enlisted combat		
Variable	Obs.	Mean SD	Min. Max.	Obs.	Mean SD	Min. Max.
AFQT percentile	3 84 005	63.3584	0	58 771	56.61127	0
		24.57459	99		18.84451	99
Age end first term	3 71 210	23.7028	17	57 181	23.20246	17
		3.111969	54		2.914045	54
Children end first term	3 71 213	0.44322	0	57 181	0.4110281	0
		0.821683	9		0.0821968	9
Married end first term	3 71 213	0.387597	0	57 181	0.3312114	0
		0.487202	1		0.470653	1
Some college end first term	3 67 958	0.033485	0	56 534	0.0250292	0
		0.179899	1		0.1562151	1
College end first term	3 67 958	0.01913	0	56 534	0.0116744	0
		0.136982	1		0.1074165	1
Beyond college end first term	3 67 958	0.991536	0	56 534	0.0009729	0
		0.039155	1		0.0311759	1
Medical MOS	3 84 005	0.058991	0			
		0.0235609	1			
Support MOS	3 84 005	0.101882	0			
		0.302493	1			
Combat MOS	3 84 005	0.153048	0			
		0.360034	1			
Black	3 50 767	0.236673	0	53 019	0.128084	0
		0.42504	1		0.3341469	1
Hispanic	3 83 328	0.117349	0	58 687	0.120657	0
		0.321836	1		0.3257311	1
Asian	3 83 328	0.029304	0	58 687	0.019834	0
		0.168657	1		0.1394309	1
Female	3 84 004	0.16903	0			
		0.374779	1			
Deployed	3 84 005	0.162602	0	58 771	0.1950452	0
		0.369003	1		0.3962389	1
Unit deaths deployed	3 84 005	0.041333	0	58 771	0.1132531	0
		0.583931	32		0.8917998	32
Duration deployed	3 84 005	1.142972	0	58 771	1.430178	0
		3.14643	40		3.471497	34
Rank end first term	3 71 213	4.033681	1	58 771	3.959759	1
		0.936277	9		1.004453	9
Contract end during deployment	3 84 005	0.039528	0	58 771	0.0546018	0
		0.194848	1		0.2272032	1

statistics of these variables for two samples, one covering all first term enlisted personnel and a second covering personnel with a combat MOS.

III. Econometric strategy

Simon, Negrusa, and Warner (2010) studied the impact of changes in the value of MGIB benefits on its use. Following their approach, we estimate the semi-parametric Cox-proportional hazard model to identify the cumulative probability of MGIB usage. This model has the advantage of not imposing a functional form on the unobserved baseline hazard rate. Our sample includes all personnel who were discharged at the end of their first term. We also separate the sample into groups with or without combat MOSs. In addition to our variables of interest – deployment, deployment length and our proxy for combat intensity, we add controls for age, family status, AFQT scores, prior education, race and MOS.

As a test for the robustness of our findings, we once again follow Simon, Negrusa, and Warner (2010) and consider a Heckman style selection model to control for common factors driving the decision to leave the military and the decision to use the MGIB subsequent to leaving. The first stage is a probit that identifies the group that leaves at the end of their first term of service. This model includes two additional independent variables. First, service member's rank at the end of their first term – those who have attained higher rank are doing better in their military careers and hence are less likely to leave. Second, whether the service member's first term concluded in the middle of an OIF/OEF deployment – additional financial benefits accrued to those who reenlisted while deployed, and hence they too are less likely to leave. Once we control for selection, we conduct a probit analysis of the likelihood of using one's MGIB.

IV. Results

We find that across all groups and models, deployment increases use of the MGIB, while combat intensity lowers the use of the MGIB. In Table 2, we report the Cox-proportional hazard results, and in Table 3 we report similar Heckman probit results.

Examining the hazard ratios from the exponentiated coefficients given in Table 2, we find that deployment increases MGIB usage by 32%. The results for combat personnel suggest a 48% increase. Turning to duration, the model predicts a 2% increase in MGIB usage for each additional month spent deployed for the whole sample and a 1% increase for those with a combat MOS. Offsetting this, combat intensity decreases use of the MGIB. We estimate a 2% decrease per death in the probability of using the MGIB for the whole sample and a 3% reduction per death for the combat MOS sample.

Table 2. Survival analysis GI Bill use.

Variables	All first-term w/o reenlist	First-term combat MOS	First-term noncombat
AFQT percentile	0.00599***	0.119***	0.00543***
	(0.000145)	(0.000469)	(0.000152)
Age end first term	0.0220***	0.00882**	0.0246***
	(0.00127)	(0.00354)	(0.00136)
Children end first term	−0.116***	−0.139***	−0.114***
	(0.00626)	(0.0178)	(0.00670)
Married end first term	−0.108***	−0.115***	−0.100***
	(0.00823)	(0.0230)	(0.00882)
Some college end first term	0.0478**	−0.160***	0.0740***
	(0.0190)	(0.0593)	(0.0201)
College end first term	−0.828***	−1.224***	−0.789***
	(0.0325)	(0.106)	(0.0342)
Beyond college end first term	−0.825***	−0.213	−0.938***
	(0.110)	(0.251)	(0.122)
Medical MOS	0.111***		
	(0.0143)		
Support MOS	0.0667***		
	(0.0113)		
Combat MOS	0.158***		
	(0.00980)		
Black	−0.0525***	−0.0599*	−0.505***
	(0.00980)	(0.0309)	(0.00936)
Hispanic	0.212***	0.252***	0.208***
	(0.0142)	(0.0381)	(0.0153)
Asian	0.282***	0.322***	0.278***
	(0.0217)	(0.0579)	(0.0233)
Female	0.399***		
	(0.00161)		
Deployed	0.279***	0.395***	0.250***
	(0.0147)	(0.0339)	(0.0162)
Duration deployed	0.0238***	0.00997***	0.0270***
	(0.00161)	(0.00372)	(0.00178)
Unit deaths deployed	−0.0209**	−0.0297**	−0.0173
	(0.00836)	(0.0129)	(0.0112)
Observations	1 81 704	28 040	1 53 664

Notes: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Standard errors in parentheses.

Turning to our selection models in Table 3, we find very similar results. Deployments, and longer deployment durations, significantly discourage reenlistment. For those who do leave, we find that both deployment and duration encourage MGIB use. Combat intensity has a similarly negative impact on the likelihood one will leave service, and continues to discourage use of the MGIB.

V. Discussion

On average, those deployed to OIF/OEF served for 7 months 'in theatre' and experienced 0.25 in-unit

Table 3. GI Bill use with selection.

	All first-term enlisted	All first-term enlisted	First-term combat MOS	First-term combat MOS
	GI Bill used	Discharged	GI Bill used	Discharged
AFQT percentile	0.00589***	0.00610***	0.0107***	0.00605***
	(0.000115)	(0.000101)	(0.000393)	(0.000344)
Age end first term	−0.0183***	−0.00533***	−0.0262***	−0.00397
	(0.00112)	(0.000903)	(0.00300)	(0.00252)
Children end first term	−0.152***	−0.163***	−0.197***	−0.189***
	(0.00463)	(0.00339)	(0.0126)	(0.00929)
Married end first term	−0.163***	−0.159***	−0.176***	−0.220***
	(0.00660)	(0.0134)	(0.0180)	(0.0148)
Some college end first term	0.105***	0.159***	−0.0438	0.101**
	(0.0160)	(0.0134)	(0.0462)	(0.0405)
College end first term	−0.420***	0.377***	−0.667***	0.535***
	(0.0219)	(0.0178)	(0.0675)	(0.0578)
Beyond college end first term	−0.356***	0.477***	−0.0179	0.338*
	(0.0729)	(0.0604)	(0.211)	(0.192)
Medical MOS	0.0954***	−0.139***		
	(0.0123)	(0.0101)		
Support MOS	0.0433***	−0.0737***		
	(0.00935)	(0.00787)		
Combat MOS	0.160***	−0.0427***		
	(0.00805)	(0.00693)		
Black	−0.0744***	−0.272***	−0.0615***	−0.248***
	(0.00717)	(0.00587)	(0.0236)	(0.0194)
Hispanic	0.158***	−0.420***	0.225***	0.0186
	(0.0120)	(0.00997)	(0.0326)	(0.0286)
Asian	0.147***	−0.0890***	0.231***	−0.0542
	(0.0186)	(0.0149)	(0.0517)	(0.0442)
Female	0.417***	0.0883***		
	(0.00765)	(0.00644)		
Deployed	0.145***	0.239***	0.329***	0.535***
	(0.0128)	(0.0119)	(0.0302)	(0.0310)
Duration deployed	0.0164***	0.0319***	0.00695**	0.0284***
	(0.00144)	(0.00134)	(0.00334)	(0.00331)
Unit deaths deployed	−0.0504***	−0.0526***	−0.0655***	−0.0571***
	(0.00627)	(0.004211)	(0.00970)	(0.00715)
Rank end first term		−0.694***		−0.675***
		(0.00342)		(0.00824)
Contract end during deployment		−1.043***		−0.983***
		(0.0134)		(0.0292)
Constant	−0.439***	2.840***	−0.427***	2.664***
	(0.0258)	(0.0227)	(0.0691)	(0.0600)
Athrho	0.804		0.964	
	(0.01005)		(0.0257)	
Rho	0.666		0.746	
	(0.00559)		(0.0114)	
Observations	3 35 735	3 35 735	50 964	50 964

Notes: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Standard errors in parentheses.

deaths, leading to an increase in MGIB usage of 55%. The average deployed combat specialist spent 7.3 months in theatre and experienced 0.58 in-unit deaths, leading to an increase in MGIB usage of 57%. These very large impacts strongly suggest that, for young people, participating in a war is a seminal experience that influences their life long after they return home. But is this experience on the whole positive or negative?

At a minimum, their greater overall usage in the MGIB suggests that OEF/OIF veterans should fare relatively well in financial terms as they go through life – papers such as Angrist (1993) and Angrist and Chen (2011) have found that veterans who exploit their educational benefits do indeed enjoy higher lifetime incomes. But there is clearly more to it than that.

Greater interest in higher education implies a lower time discount rate, something that itself is arguably associated with greater emotional maturity. If that is the case, then wartime deployment may actually benefit young people. It is an opportunity for them to take on serious responsibilities early on, and hence helps them grow up faster.

Our results, however, suggest that exposure to actual combat and violence is detrimental and can handicap veterans' efforts to get on with their lives. The survival analysis showed that unit deaths had a large and statistically significant negative impact on combat soldiers' interest in higher education. For

noncombat soldiers, however, the result, while still negative, was much smaller and not statistically different from zero – something remarkable given the sample size.

We can offer two hypotheses consistent with these results. First, it is conceivable that combat units are more tightly knit groups – hence deaths within their ranks are felt more acutely. Second, the combat that support personnel experience is primarily passive – deaths occur as a result of shelling or improvised explosive devices while they are going about their business. Combat personnel, however, deal not only with dying but also with killing – including killing noncombatants and the accidental fratricide of their comrades. It is conceivable that exposure to killing rather than dying does the most harm to veterans who survive and return home.

Disclosure statement

No potential conflict of interest was reported by the authors.

References

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

Angrist, J. D. 1993. "The Effect of Veterans Benefits on Education and Earnings." *Industrial and Labor Relations Review* 46 (4): 637–652. doi:10.1177/001979399304600404.

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

Cesur, R., J. J. Sabia, and E. Tekin. 2013. "The Psychological Costs of War: Military Combat and Mental Health." *Journal of Health Economics* 32 (1): 51–65. doi:10.1016/j.jhealeco.2012.09.001.

Defense Manpower Data Center. 2013. Selected extracts from U.S. Army Active Duty Casualties, Deployment, GI Bill, and Personnel Files for years 2000–2012.

Engel, R. C., L. B. Gallagher, and D. S. Lyle. 2010. "Military Deployments and Children's Academic Achievement: Evidence from Department of Defense Education Activity Schools." *Economics of Education Review* 29: 73–82. doi:10.1016/j.econedurev.2008.12.003.

Lyle, D. S. 2006. "Using Military Deployments and Job Assignments to Estimate the Effect of Parental Absences and Household Relocations on Children's Academic Achievement." *Journal of Labor Economics* 24 (2): 319–350. doi:10.1086/jole.2006.24.issue-2.

Simon, C. J., S. Negrusa, and J. T. Warner. 2010. "Educational Benefits and Military Service: An Analysis of Enlistment, Reenlistment, and Veterans' Benefit Usage 1991–2005." *Economic Inquiry* 48: 1008–1031. doi:10.1111/j.1465-7295.2009.00233.x.