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How Have Deployments During the War on Terrorism Affected Reenlistment?

James Hosek, Francisco Martorell

Prepared for the Office of the Secretary of Defense
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Summary

This monograph analyzes the relationship between deployment and reenlistment during the war on terrorism. It reviews trends in deployment and reenlistment and recent literature on deployment and its consequences. It also presents theoretical and econometric models of the effect of deployment on reenlistment and empirical estimates of the effect based on survey and administrative data. In addition, it presents estimates of the effect of bonuses on reenlistment and describes the role of bonuses in sustaining reenlistment.

Deployment Trends and Recent Literature

The key indicator of deployment in our analysis is the receipt of hostile-fire pay (HFP). The number of active-component service members receiving HFP was typically under 50,000 per month from 1996 to 2001, climbed rapidly to 300,000 per month by spring 2003, decreased to 150,000 per month by fall 2003, and climbed again to 200,000 per month in 2007. The increases were greatest for the Army and Marine Corps. Because the operations in Iraq and Afghanistan were staffed on a unit rotational basis, a large fraction of soldiers and marines were deployed for hostile duty. From 2003 to 2007, roughly 80 percent of soldiers at the first-term reenlistment and 60–80 percent of soldiers at the second-term reenlistment point had been deployed on hostile duty at some point during the three years prior to reenlistment. The literature review found generally positive effects of deployment on reenlistment but growing concern about the mental health consequences of deployment. Studies found that exposure to combat can have long-lasting effects on mental health, that exposure to combat was higher in Iraq and Afghanistan than in other locations, and that separation rates from the military for those with mental health concerns were higher for personnel who had been deployed to Iraq or Afghanistan as compared with other locations. However, a study found that, among service members who had married since 2002, the effect of deployment was to reduce the likelihood of marital dissolution.

Theoretical and Econometric Models

The theoretical model assumes that reenlistment depends on expected utility in the military versus the best alternative. Expected utility in the military depends on home time, deployed time, and income, including deployment pay. The model predicts that reenlistment will be lower if the amount of deployment time is much less or much greater than expected and that

deployment pay and reenlistment bonuses can help to compensate for this. In joining the military, individuals will select the service and occupation most in line with their preference for deployment. Therefore, controls for service and occupation in empirical work will help to control for selection.

The econometric model relates reenlistment to deployment, bonuses, and other variables. We discuss possible biases in estimates of the deployment effect and the bonus effect, and we suggest that deployment effects are likely to be unbiased in models controlling for occupational specialty, service, and year or, alternatively, for occupation by quarter and service. Occupation, service, and year controls also help to reduce possible bias in the bonus effect, but not all of the bias will be eliminated, and the remaining bias may be either negative or positive.

Findings from the Survey Data

Our survey data consist of 10 Status of Forces Surveys of Active Duty Personnel administered via the Internet in 2002 to 2005. The surveys have been linked to administrative files on personnel and pay. The survey data contain variables not available in the administrative data, such as work stress, personal stress, intention to stay in the military, number of days longer than the usual duty day, whether time away was less or more than expected, and individual and unit preparedness. Similarly, the administrative data contain information not available in the survey, such as actual reenlistment, deployment, Armed Forces Qualification Test (AFQT) category, and reenlistment bonus. Regression analysis pooled the respondents from the various surveys. Deployment is coded according to deployment involving hostile duty and deployment involving no hostile duty (“nonhostile deployment only”).

The key findings are that, among survey respondents, hostile deployment tended to increase work stress and personal stress and reduce the intention to reenlist. It also tended to reduce actual first-term reenlistment but increase second-term-plus reenlistment. The effects of deployment change when variables for overtime work (the number of days longer than the usual duty day) and whether the respondent spent more or less time away than expected are added to the model. With those variables included, first-term hostile deployment had no effect or a negative effect on work stress and personal stress, a negative effect on intention to reenlist, and no effect on actual reenlistment. The results are similar for second-term-plus personnel, except that hostile deployment has no effect on intention to reenlist (with the exception of the Navy, where the effect is positive). The effect on actual reenlistment is positive. The results suggest two reasons that deployment increases stress and reduces the intention to reenlist: Deployments often involve long days, and expectations about the length of deployment might not be met.

Models with a specification using variables available in the administrative data allow a comparison between the estimates for survey respondents versus all service members at reenlistment. In these models, the effect of hostile deployment on first-term reenlistment for survey respondents is negative in the Army, zero in the Navy and Marine Corps, and positive in the Air Force. By comparison, the effect of hostile deployment on first-term reenlistment for the population of service members at reenlistment is negative in the Army and Navy, positive in the Marine Corps, and zero in the Air Force. The effect of hostile deployment on second-term-plus reenlistment for survey respondents is zero in the Army and Air Force and positive in the Navy and Marine Corps. Although there are differences between estimates based on

the survey data and those based on administrative data, there is no systematic pattern for first-term reenlistment such that, say, the effects of hostile deployment are lower in the survey estimates, which might reflect survey response bias. For second-term-plus reenlistment, however, the hostile deployment effects are lower for the survey respondents than for the population. Thus, the findings suggest possible survey response bias at second-term-plus reenlistment, with the survey respondents who were deployed being less likely to reenlist compared to the total population.

Findings from the Administrative Data

We estimate reenlistment models for first- and second-term reenlistment for each service, and we explore many different specifications of the deployment variable, not all of which are summarized here. The models include controls for deployment that involved no hostile duty, years of service at the time of the decision, education, gender, AFQT, race, and an indicator for being promoted more rapidly than is typical. In addition, there are controls for occupational specialty, selective reenlistment bonus multiplier, and year of decision or, when bonus is omitted, for occupational specialty and quarter of decision.

An important advantage of the administrative data is a sufficient number of observations to analyze deployment effects by year. Using an indicator of hostile deployment in the year before reenlistment, we find the following deployment effects by year in 1996–2007:

- First term:
 - Army: positive but decreasing, turning negative in 2006 and 2007
 - Navy: remained near zero
 - Air Force: remained near zero
 - Marine Corps: remained near zero with upturn in 2006 and 2007
- Second term:
 - Army: positive but decreasing, turning negative in 2006 and 2007
 - Navy: positive, decreasing to zero in 2003, then increasing
 - Air Force: positive but decreasing to 2003, then increasing
 - Marine Corps: positive, decreasing to zero in 2003, then increasing.

The change from positive to negative in the effect of deployment on Army reenlistment is notable. Further analysis of the Army data indicates that the effect of deployment became negative because the effect of deployment on reenlistment was negative for those with a high number of months of deployment (12–17 months or 18 or more months) but positive for those with few months of deployment (1–6 months or 7–12 months). By 2006, two-thirds of the soldiers at reenlistment had been deployed for 12 or more months, and the soldiers in this category were subject to a negative deployment effect. Thus, a high cumulative number of months of deployment had a negative effect on reenlistment, and many soldiers had a high cumulative number of months of deployment. We find that it is unlikely that stop-loss caused the negative deployment effect in 2006–2007, though stop-loss might have added to the downward trend in deployment effect. These results are especially interesting when contrasted with those for the Marine Corps, which also experienced a marked increase in the fraction of personnel deployed and in mean months deployed. When broken out by months deployed, we actually find that

a high number of months deployed (18 or more) also had a negative effect for marines at first-term reenlistment. But since these effects are not as large as they are for the Army, and since relatively few marines are in the high-deployment-month bins, the aggregate deployment effect for marines does not turn negative.

The deployment effects for men and women in the Army were similar, though the effect for men was more negative in 2006, probably because of a higher prevalence of men in combat arms. The downward trend in deployment effect was greater in combat arms than in non-combat arms, as might be expected given the greater likely exposure to combat in the combat-arms occupations. The effect of deployment on reenlistment was typically positive and higher for marrieds than for singles, though the effect became negative for both groups in 2006.

The Role of Reenlistment Bonuses

Despite the decreasing effect of deployment on reenlistment in the Army, the Army's reenlistment rate did not decline. Our analysis suggests that the Army's expanded use of bonuses and increased generosity of bonuses provided a positive impetus to reenlist that helped to offset the decreasing, then negative, effect of deployment on reenlistment.

Our estimates of the bonus effect on reenlistment are positive for all services but may be biased. Bias can arise from bonus-setting behavior in response to anticipated high or low reenlistment (reverse causality) or unobserved actions correlated with the bonus, such as career-counselor effort, other reenlistment incentives (such as choice of location or assignment), or limiting the number of reenlistment slots in certain occupations. Our methods partially control for these sources of bias. A reenlistment bonus experiment (i.e., a randomized controlled trial) may be necessary to eliminate bias.

Possible Importance of Deployment Episode Length

Soldiers and marines were extensively involved in the ground operations in Iraq, and the increase in average months of deployment was similar for both, though lower for marines. However, the effect of deployment on first-term reenlistment decreased over time for the Army and became negative in 2006, while the effect of deployment remained near zero for the Marine Corps. Army deployments were 12–15 months long, while Marine Corps deployments were seven months; marines had more episodes of deployment than did soldiers. It is worth studying whether longer deployments, and more prolonged exposure to combat, lead to lower reenlistment and higher prevalence of subsequent mental health conditions, and, if so, what might be done to avoid those outcomes.