Does a Lack of Health Insurance Elicit an Increase in the Rate of Voluntary Military Enlistment in the U.S.? The "Military Health Care Magnet Hypothesis," 1974-2007

Cebula, Richard and Nair-Reichert, Usha and Taylor, Kyle

Jacksonville University, Georgia Tech, Armstrong Atlantic University

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Richard J. Cebula (Corresponding Author)
Department of Economics
Armstrong Atlantic State University
Savannah, Georgia, U.S.A
E-mail: Richard.Cebula@armstrong.edu

Usha Nair-Reichert
Department of Economics
Georgia Institute of Technology
Atlanta, Georgia, U.S.A
E-mail: Usha.Nair@gatech.edu

Kyle Taylor
Department of Economics
Armstrong Atlantic State University
Savannah, Georgia, U.S.A
E-Mail: cebulari@mail.armstrong,edu

Abstract

This study addresses a question that has not been researched much previously, namely, does the unavailability of health insurance act as an incentive for persons to enlist in the military in the U.S.? This relationship is proffered as the "Military Health Care Magnet Hypothesis." The present study endeavors to provide insight into this issue within a cost-benefit framework. The empirical analysis uses annual data for the years 1974 through 2007, the only years to date for which all of the variables in the model are dependable after the end of military conscription in the U.S. in 1973. Both OLS and 2SLS results demonstrate, among other things, that the greater the percentage of the civilian population without health insurance, the greater the rate of enlistment in the U.S. Army.

Keywords: Military enlistment, Health insurance unavailability, Cost-benefit model

1. Introduction

In recent years, various dimensions of the health care industry have attracted considerable attention. The topics debated range from hospital costs, profitability, and efficiency issues to medical malpractice to physician staffing to the health care inflation rate (Chirikos, 1998-99; Daniels and Gatsonis, 1999; Given, 1996; Glied, 2003; Goodman and Stano, 2000; Hart et al., 1997; Jordan, 2001; Karsten, 1995; Koch, 1992; Okunade, 2001, 2003; Olsen, 1996).One of the most important and contentious issues in U.S. healthcare that has received the greatest increase in attention in recent years is health insurance coverage (Bharmal and Thomas, 2005; Bundorf and Pauly, 2002; Cebula, 2006; Dushi and Honig, 2003; Frick and Bopp, 2005; Gruber, 2003; Harris and Keane, 1999; Holahan et al, 2003; Kronick and Gilmer, 2002; Marstellar et al, 1998; de Meza, 1983; Newhouse, 1994; Nyman, 2003; Swartz, 2001; 2003).

This tremendous scrutiny and debate can be attributed to several reasons. Presumably, as argued in Dushi and Honig (2003, p. 252), at least part of this increased attention can be attributed to the fact that there has been a noticeable decline in health insurance coverage over the last two decades. Indeed, over a decade ago, Cutler (1994, p. 20) had observed that "About 15 percent of the population…are uninsured." More recently, for the year 2003, Bharmal and Thomas (2005, p. 643) observe that the number of uninsured reached 43.6 million or 17.3 percent of persons under the age of 65. Even more recently, Frick and Bopp (2005) also emphasize that 17 percent of this population is without health insurance.

To provide perspective, "economic" concerns can in effect largely be categorized into those relating to efficiency issues and those relating to equity issues. The topic of the percent of the population without health insurance effectively falls into both of these categories. From a purely financial perspective, those persons without health insurance create an efficiency problem in that the healthcare system must, in the final analysis, "balance its books," i.e., payments for the uninsured must somehow be made. At issue is the efficiency/equity question of having those with private insurance and/or some other entity (be it government, taxpayers in general, or other source of funds) pay for the medical care of those without health insurance. From the perspective of medical care *per se*, one provocative issue is whether or not those without health insurance receive the same quality and quantity of medical care as those with health insurance. It could be argued that those without health insurance should not receive the same level and quality of medical care because their revealed preference/demand for health insurance is lower and therefore they value health care at a lower level than the medically insured do. This argument might seem substantive if in fact not having health insurance merely reflected health insurance preferences as opposed to limited purchasing power/income and/or other constraints to obtaining health insurance. For whatever reason, the percent of the U.S. population without health insurance is an issue of considerable political interest, as evidenced by the major health care reform pursued by the Obama administration in 2009.

The present study seeks to provide at least preliminary insights into a very different dimension of the overall health insurance issue. In particular, this study empirically investigates what is proffered here as the *"*Military Health Care Magnet Hypothesis.*"* In particular, this study hypothesizes that the greater the percentage of the civilian population that is without health insurance, the greater the incentive at the margin for civilians to enlist in the U.S. military, *ceteris paribus*. In the interest of relevance, the study period runs from 1974 through 2007, thereby beginning with the first full year after the end of military conscription (the "draft") in the U.S. and controls for the Gulf War of 1990 and the wars in Iraq and Afghanistan. We adopt a cost-benefit framework to empirically test this hypothesis. We include as independent variables factors such as the percent of the civilian population without health insurance, measures of real income growth in the U.S., the percent of the population with a "veteran" status, the risks associated with military service during ongoing military conflicts, and other factors that are relevant to the enlistment decision process. Both OLS and 2SLS results provide considerable support for the central health care insurance/enlistment hypothesis.

2. Review of Related Literature

Before providing the framework and results of the present study, we review briefly some of the recent published literature on health insurance coverage determinants on the one hand and on military enlistment determinants on the other hand. Beginning with the former, the following observation by Swartz (2003) is relevant. In particular, Swartz (2003, p. 283) makes the observation that, simply put, many of those who do not have health insurance "…simply cannot afford to purchase it…" Swartz (2003, p. 283) proceeds to observe that many households "…cannot afford to purchase health insurance unless it is heavily subsidized." Swartz (2003, p. 283) also claims that most of those households that "…do not have access to employer-sponsored coverage…must purchase…health insurance in the non-group [individual] market…where insurance is typically twice as expensive [to the household] as employer-group coverage…," where the likelihood of purchasing health insurance is lower than otherwise (because of "the law of demand").

In the study by Dushi and Honig (2003), the focus involving healthcare insurance is rather different. In particular, in Table 1 of their study, Dushi and Honig (2003, p. 253) provide evidence on gender differences in the propensity to purchase group health insurance when the latter is available. Their data

reveal that, overall, females in the labor force tend to have a lower "take-up" rate than males in terms of health insurance plans: 73 percent of the time for females versus 88 percent of the time for males. Dushi and Honig (2003) argue that some significant portion of this male-female take-up disparity is attributable to married women opting to rely on a spouse's health insurance plan. This male-female take-up disparity notwithstanding, when a health insurance plan is available through the employer, nearly three-fourths of the time women *do* take advantage of the option. Moreover, the presence of labor unions appears to increase health insurance availability.

Newhouse (1994) approaches the question regarding the propensity of the elderly to purchase health insurance from a different perspective. He observes that that most of the U.S. population age 65 and older are covered by Medicare. He also stresses that as a person advances in years, so does the incidence of health problems. Given the limitations on Medicare coverage, Newhouse (1994, p. 7) observes that many elderly persons regard Medicare coverage as insufficient to meet their needs. Indeed, apparently because of the latter consideration, Newhouse (1994, p. 7) finds that "…over 80 percent of Medicare beneficiaries…had some form of supplemental health insurance, with a third having individually purchased insurance."

The study by Frick and Bopp (2005) is concerned with the fact that between 15 and 20 percent of the U.S. population do not have health insurance. Frick and Bopp (2005) observe that the classic utility-insurance model makes it patently clear that having a very low income can seriously restrict the ability to purchase health insurance. The Frick and Bopp (2005) study not only focuses on the effects of poverty on health insurance purchases but also on other factors. Frick and Bopp (2005) deals with pooled cross-sectional/time series data, with the empirical estimation process revealing the following: the percent of the population *without* health insurance is an increasing function of the percent of the population whose income lies below the poverty level, the percent of the population that is female, and the percent of the population with only a high school diploma, with the first of these three variables being the most dominant.

Finally, the study by Cebula (2006) uses an aggregate state-level cross-section data set to examine the percent of the population without *health* insurance in the year 2000, and includes as an explanatory variable a measure of the effects of being either self employed or an independent contractor. The most interesting finding is that the percent of the population without health insurance is an increasing function of the percent of the population that is either self employed or independent contractors. The study also concludes that the percent of the population without health insurance is a decreasing function of median family income and the percent of the population age 65 and older and an increasing function of the percent of the population that is Hispanic. Thus, a basic conclusion found in the Cebula (2006) study involves the inability of people to *afford* health insurance, as found in Frick and Bopp (2005).

The political basis and economics of the military draft and the subsequent formation of the AVMF (all-volunteer military force) are set forth in a series of insightful, original studies by Tollison (1970) and by Tollison, Amacher, Miller, Pauly, and Willett (1973). Beyond the scope of these studies, Seeborg (1994) conducted a provocative study based on data derived from the National Longitudinal Survey of Youth, in which he concluded that the probability of enlistment is directly related to minority and poverty status, while controlling for ability and a number of other socioeconomic background variables. In addition, the Seeborg (1994) analysis of poverty "transitions" shows that a very large percentage of enlistees in the early 1980s who were living in poverty at age 17 had escaped poverty by 1990, i.e., that the military can serve as a mechanism for upward economic mobility for disadvantaged youth.

Segal, Bachman, and O'Malley (1999) study the differences in the propensity to enlist of various subgroups of potential enlistees into the U.S Military. The analysis furthers the idea that black youth regard the military as a vehicle for upward social and economic mobility. Hence black youth are more likely to enlist in the military compared to white youth. Furthermore the presence of a military parent, military grandparent or a military sibling within the family increases the propensity of a potential enlistee to enlist. This is consistent at least in principle with recent studies such as Kleykamp (2006) and Cebula, Menon, and Menon (2008), that find the institutional and cultural presence of the military within an area has a significant influence on enlistment decisions.

Warner, Simon, and Payne (2003) conclude that civilian job opportunities are the key consideration for high school graduates when pondering the decision to enlist. Although post high school educational

opportunities and access played a role in such a decision, it was the overall economic opportunity available that was the most significant factor in an enlistment decision, especially among rural youth.

A very relevant recent study by Kleykamp (2006) highlights three areas of influence on military enlistment: individual educational goals; the institutional presence of the military in communities (as observed above); and race and socioeconomic status. The study was conducted in the state of Texas and based on individual survey data. The study analyses the relative risk ratios associated with each choice made by a potential enlistee.

Lastly, a study by Cebula, Menon, and Menon (2008) provides panel least squares (PLS) evidence at the state level for factors influencing military enlistment. This study deals with data for the 2003 through 2005 period and finds that, consistent with Kleykamp (2006) and Segal, Bachman, and O'Malley (1999), the stronger the institutional and cultural presence of the military within an area, the greater the proportion of the age-eligible population that enlists in the military. Furthermore, Cebula, Menon, and Menon (2008) also find that the greater the opportunity costs to military enlistment, the lower the enlistment rate, a finding consistent with Warner, Simon, and Payne (2003), as well as Seeborg (1994). Moreover, this study also finds a higher casualty rate as discouraging military enlistment.

Our review of the literature indicates that the lack of health care coverage reflects substantially the inability of the people to afford healthcare costs. The military could serve as an avenue to improve one's socio-economic status, especially when the opportunity cost is low and alternate opportunities are scarce. One important way in which the military could contribute to an individual's well being is by providing health care. Hence the argument that in an era of rising heath care costs access to health care through the military could provide an important incentive to enlist. The flip side of this issue is also poses an interesting question: If our hypothesis were indeed to be true, how would universal health care coverage impact military enlistment?

3. The Basic Framework

The basic framework adopted in this study focuses on the decision to enlist in the U.S military as a cost-benefit decision. In particular, the decision to enlist in the military, D^{enlist}, is predicated upon the *expected net benefits* of enlistment, ENB^{enlist}. The latter is treated as an increasing function of the *expected gross benefits* of enlistment, EGB^{enlist}, and a decreasing function of the *expected gross costs* of enlistment, $EGC^{enlist,}$ such that:

$$ENB^{enlist} = f(EGB^{enlist}, EGC^{enlist}),\ D^{enlist}{}_{EGBenlist} > 0,\ D^{enlist}{}_{EGCenlist} < 0 \qquad (1)$$

Naturally, as evidenced in the studies referenced in the literature review above, there are a number of variables that typically are expected to exercise an influence over enlistment rates. To begin addressing these, the first focus is on the EGB^{enlist}, where:

$$EGB^{enlist} = g\ (\text{economic benefits, Family/Cultural benefits}) \qquad (2)$$

The central hypothesis being empirically tested in this study is that the greater the percentage of the population without health insurance [UNINS], the greater the propensity to enlist [ENLIST] in the U.S. military, *ceteris paribus*. This hypothesis, dubbed here as the Military Health Care Magnet Hypothesis, is based fundamentally on the fact that those enlisted in the U.S. armed forces, along with their immediate families (spouse, children) receive free medical care provided through the military. Given the increased proportion of the U.S. population without health insurance since 1974, free medical care provided by the armed forces should act as an attraction/incentive to potential enlistees, i.e., increase the EGB^{enlist}. Alternatively stated, the expected economic benefits associated with enlistment are expected to be greater the higher the percentage of the population *without* health insurance (UNINS), *ceteris paribus*. This is because enlistment brings with it health care without any health insurance premiums. Thus, the higher the percentage of the population without health insurance, the greater the EGB^{enlist} level.

In addition, the "family/cultural benefits" of enlistment are expected to be greater in an environment which has a higher presence of persons who are military veterans (Kleykamp, 2006; Segal, Bachman, and O'Malley, 1999; Cebula, Menon, and Menon, 2008). This is because enlistment is viewed as a socially approved and admired behavior and presumably receives positive psychological reinforcement, encouragement, and social approval in environments with a higher percentage of the population being

veterans (PVET). Thus, the family/cultural benefits from enlistment are an increasing of PVET, *ceteris paribus*.

Hence, (2) initially becomes:

$$EGB^{enlist} = g\ (UNINS, PVET),\ g_{UNINS} > 0,\ g_{PVET} > 0 \quad (3)$$

The level of EGC^{enlist} is expected to be an increasing function of opportunity costs of enlistment. These opportunity costs can be measured by potential economic opportunities from non-enlistment sources, measured here in the broad sense by the percentage growth rate of real GDP, GRRGDP. Accordingly, *in principle* paralleling Warner, Simon and Payne (2003) and Cebula, Menon, and Menon (2008), based on opportunity-cost reasoning, it is hypothesized that EGC^{enlist} is an increasing function of GRRGDP, *ceteris paribus*.

Furthermore, it is also expected that risk-averse behavior would treat a greater degree of risk in the form of the greater probability of being seriously wounded or a fatality under wartime conditions, namely, in the Gulf War of 1990, the War in Afghanistan, and in Operation Iraqi Freedom, WARRISK, as elevating EGC^{enlist}, *ceteris paribus* (Cebula, Menon, and Menon, 2008). Hence, the EGC^{enlist} is initially expressed as:

$$EGC^{enlist} = h\ (GRRGDP, WARRISK),\ h_{GRRGDP} > 0,\ h_{WARRISK} > 0 \quad (4)$$

Substituting from (3) and (4) into (1) yields the following:

$ENB^{enlist} = f\ (UNINS, PVET, GRRGDP, WARRISK),$

$$f_{UNINS} > 0,\ f_{PVET} > 0,\ f_{GRRGDP} < 0,\ f_{WARRISK} < 0 \quad (5)$$

4. The Empirical Analysis

Based on the model expressed in (5), the following model is to be estimated *initially*:

$$ARMYRECR_t = a_0 + a_1\ UNINS_{t-1} + a_2\ PVET_{t-1} + a_3\ GRRGDP_{t-1} + a_4\ WARRISK_t + \mu \quad (6)$$

where (data sources in parentheses):

$ARMYRECR_t$ = the number of army recruits in year t, as a percentage of the U.S. population in year t (National Priorities Project Database, 2008);

a_0 = constant;

$UNINS_{t-1}$ = percentage of the civilian U.S. population without health insurance coverage in year t-1 (U.S. Census Bureau, 1976; 1978; 1980; 1984; 1987; 1990; 1994; 1996; 1998; 2001; 2003; 2004; 2005; 2006; 2008; 2009);

$PVET_{t-1}$ = the percentage of the U.S. population who have served in the U.S. military as of year t-1 (Congressional Research Service, 2008; Council of Economic Advisors, 2009, Table B-34);

$GRRGDP_{t-1}$ = the percentage growth rate of real GDP (expressed in year 2000 dollars) over year t-1 (Council of Economics Advisors, 2009, Table B-4);

$WARRISK_t$ = a binary dummy variable =1 for the year 1990 (first Gulf War) and the years of the Wars in Afghanistan and Iraq; and

μ = stochastic error term.

The study period runs from 1974 through 2007. Basic descriptive statistics are provided in Table 1. The ADF and PP unit roots tests reveal that three of the variables in this initial specification are not stationary in levels: one (ARMYRECR) is stationary only in first differences; one (UNINS) is stationary in only second differences; and one (PVET) is stationary in levels but with a trend variable. The variable GRRGDP is stationary in levels. The ADF and PP results are provided in Table 2. Accordingly, in the estimate of equation (6), ARMYRECR is expressed in first differences, UNINS is expressed in second differences, and a TREND variable is included. The data deals with total annual number of army recruits in the US, hence it is not possible to distinguish by gender or race at the aggregate level.

Table 3, column (a) provides the results for our baseline model. We find that all four of the estimated coefficients exhibit the hypothesized signs, with three statistically significant at the one percent level and one statistically significant at five percent level. In addition, the TREND variable is statistically significant at the one percent level.[i] The estimated coefficient on the ΔPVET variable is positive (as expected) and statistically significant at the three percent level, implying that an environment where there is a greater concentration of veterans is conducive to a greater propensity to enlist in the U.S. Army (Segal, Bachman, and O'Malley, 1999; Kleykamp, 2006; Cebula, Menon, and Menon, 2008). Consistent in principle with Seeborg (1999) Warner, Simon, and Payne (2003), and Cebula, Menon, and Menon (2008), the estimated coefficient on the GRRGDP variable is negative and statistically significant at the one percent level. This finding implies that the stronger the growth rate of the economy, the higher the opportunity costs of enlistment and the lower the net benefits thereof and hence the lower the rate of enlistment. Next, the coefficient on the WARRISK variable is negative and statistically significant at the one percent level. The latter finding implies that volunteers for U.S. Army duty are deterred from enlisting during actual war-time conditions, presumably because of the perceived higher risks of being either seriously wounded or killed in military engagements (Cebula, Menon, and Menon, 2008).

Finally, there is the finding for the key health care variable. The estimated coefficient on the variable UNINS is positive and statistically significant at the one percent level, implying that the greater the percent of the civilian population without health insurance, the greater the propensity for eligible young men and women to enlist in the U.S. Army. Thus, this result provides strong empirical support for the "Military Health Care Magnet Hypothesis."

We test for the robustness of our baseline model with three alternate specifications, the results of which are reported in columns (b), (c) and (d) of Table 3. We include the following additional variables in these specifications (data source in parentheses):

$POPPRES_{t-1}$ = the Presidential job approval rating in year t-1, an index that ranges from

0 to 100 (Gallup Poll, 2008);

$TERROR_t$ = a binary variable for the terrorist attach of September 11th : $TERROR_t$ = 1 for the year 2001 and = 0 otherwise;

$COLLEGE_{t-1}$ = percentage of the adult population age 25 and older with at least a bachelors degree in year t-1 (U.S. Census Bureau, 1976; 1978; 1980; 1984; 1987; 1990; 1994; 1996; 1998; 2001; 2003; 2004; 2005; 2006; 2008; 2009).

If a given U.S. President is very popular, his policies, including actual or potential military policies, may attract enlistees who "believe" in his cause. Alternatively, under certain conditions, even if temporary, there may be expected benefits from enlistment if a potential enlistee experiences or expects to experience greater self esteem from serving his/her country. For example, after the terrorist attacks on U.S. soil on September 11th of 2001, a surge of patriotism seemingly swept across the nation and at some level united Americans. Thus, the experience of terrorism on September 11th of 2001 (TERROR) and the manifestation of a popular President (POPPRES) each may act to increase the expected benefits of enlistment, *ceteris paribus*. Finally, the greater one's educational attainment, the greater one's labor force options. Hence, the greater proportion of the population with a college degree, the less appealing military enlistment will be (Seeborg, 1999: Warner, Simon, and Payne, 2003), *ceteris paribus*.

In Table 3, column (b), the variable POPPRES is included in the model; in column (c), the variables POPPRES and TERROR are included in the model; finally, in column (d), all three of the additional variables [POPPRES, TERROR, and COLLEGE] are included the model. In all three columns, the estimated coefficients on these additional variables fail to be statistically significant at even the ten percent level. On the other hand, the estimated coefficients on the four basic explanatory variables, UNINS, PVET, GRRGDP, and WARRISK continue to exhibit their expected signs; furthermore, nine of these 12 coefficients are statistically significant at the one percent level, one is statistically significant at the five percent level, and the remaining two are statistically significant at approximately the six percent level. Thus, there appears to be strong evidence that the Army recruitment rate is an increasing function of the PVET variable and a decreasing function of the GRRGDP and WARRISK variables. This conclusion is

strengthened by the fact that the coefficient on the UNINS variable is positive and statistically significant at the one percent level in all three estimates.

As an additional robustness check, we also consider the possibility that there is no reason to expect that there exists a significant time lag between the influence of either (a) the presence a military parent, military grandparent, and/or a military sibling or (b) a stronger institutional and cultural presence of the military on the one hand and the decision to enlist in the Army on the other hand (Segal, Bachman, and O'Malley, 1999; Kleykamp, 2006; Cebula, Menon, and Menon, 2008). Thus, the analysis now investigates the Military Health Care Magnet Hypothesis under the condition that ARMYRECR and PVET are contemporaneous.

Given that ARMYRECR and PVET are being treated as contemporaneous, the possibility of simultaneity bias arises. Accordingly, the analysis undertakes a 2SLS (two-stage least squares) estimation, with the instrumental variable being the two-year lag of the unemployment rate of the civilian labor force, UR_{t-2} (Council of Economic Advisors, 2009, Table B-42). This variable was the instrument of choice because (a) UR_{t-2} is highly correlated with $PVET_t$ and (b) UR_{t-2} is also not correlated with the error terms in the system.

The following equation is now estimated by 2SLS with the Newey-West (1987) heteroskedasticity correction:

$$ARMYRECR_t = b_0 + b_1\ UNINS_{t-1} + b_2\ PVET_t + b_3\ GRRGDP_{t-1} + b_4\ WARRISK_t + \mu' \quad (8)$$

The results are presented in Table 3, column (e); all four of the estimated coefficients exhibit the expected signs and are statistically significant at the one percent level. The DW and Rho statistics imply the absence of any serious autocorrelation problems. Finally, the F-statistic is statistically significant at the one percent level, attesting to the overall strength of the model.

Thus, it can be reasonably inferred that the U.S. Army enlistment rate is positively impacted by a stronger institutional and cultural presence of the military (Segal, Bachman, and O'Malley, 1999; Kleykamp, 2006; Cebula, Menon, and Menon, 2008). In addition, the greater the growth rate of real GDP, the lower the enlistment rate (Seeborg, 1999; Warner, Simon, and Payne, 2003; and Cebula, Menon, and Menon (2008). Furthermore, it can be inferred that wartime conditions and the associated greater expected risk of being seriously wounded or killed create a disincentive to enlist (Cebula, Menon, and Menon, 2008). Finally, the coefficient on the health insurance variable is positive and highly statistically significant, implying strong support for the "Military Health Care Magnet Hypothesis." Clearly, these 2SLS findings are all consistent with the OLS findings.

5. Conclusion

This study addresses the following question: "Does the unavailability of health insurance act as a incentive for persons to enlist in the military?" Within a cost-benefit framework, the present study endeavors to provide insight into this issue, referred to here as the "Military Health Care Magnet Hypothesis". The OLS and 2SLS results provide substantial evidence that the greater the percentage of the civilian population without health insurance, the greater the rate of enlistment in the U.S. Army. Voluntary enlistment in the U.S. Army also is positively impacted by a greater presence of military veterans (which "promotes" enlistment). Furthermore, it is negatively impacted by a more rapidly growing economy (a proxy for higher opportunity costs) and military conflicts/wars (risk-averse behavior with military conflict being a risk factor that elevates the expected probability of being wounded or killed). Thus, the AVMF (all-voluntary military force) market appears to function as the free enterprise system would expect.

Finally, it may be worthy of note that if the "Military Health Care Magnet Hypothesis" is valid, then it logically follows that if a system of *de facto* universal health care is in fact instituted in the U.S., there may be unforeseen externalities from a military recruitment perspective. In particular, implementation of universal health care would naturally result in a decline in the expected gross benefits of enlistment. This is because would-be enlistees will factor the same into their cost-benefit analysis of whether to enlist. Clearly, as the AVMF market factors the availability of universal health care outside the confines of the military into its marginal enlistment decision calculus, for many the expected net benefits (of enlisting) will decline sufficiently as to create a no-enlist decision. In turn, it follows that some form of additional incentives will be needed in order to induce sufficient recruitment/enlistment. We contribute to the debate on universal health care coverage by pointing out the possibility for an unintended consequence, namely a decline in

military enlistment. Thus if universal health care is instituted, it could increase the cost of military recruitment in the future.

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Table 1. Basic Descriptive Statistics

Variable	Mean	Standard Deviation
ARMRECR	0.01639	0.0516
UNINS	14.604	1.0106
PVET	0.0438	0.000154
GRRGDP	2.9333	1.911349
WARRISK	0.2083	0.414851
POPPRES	56.166	10.02461
TERROR	0.041	0.204
COLLEGE	22.29	3.35
UR	6.1615	1.383

Table 2. ADF and PP Unit Root Test Results

Variable	ADF, PP Level	AD, PP Level Plus Trend	ADF, PP First Differences	ADF, PP Second Differences
ARMRECR	-1.53, -1.49	-2.39, -2.32	-4.18*, -4.12*	-------
UNINS	-1.65, -1.62	-2.03, -1.99	-2.59. -2.54	-4.15*, -3.99*
PVET	-1.98, -1.88	-4.02*, -3.79*	-------	-------
GRRGDP	-4.01*, -5.65*	-------	-------	-------
POPPRES	-3.54*, -3.48*	-------	-------	-------
COLLEGE	-1.29, -1.27	-1.45, -1.42	-2.32, -2.22	-5.76*, -5.16*

*Critical value for rejection of null hypothesis at 95 percent confidence level = -2.89.

Table 3. Estimation Results for ΔARMYRECR

Variable	(a)	(b)	(c)	(d)	(e) 2SLS
Constant	-0.002	-0.003	-0.003	-0.003	-0.005
ΔΔUNINS	0.0005***	0.0005***	0.0005***	0.0005***	0.0006***
	(3.5)	(3.52)	(3.53)	(3.04)	(4.02)
PVET	0.54***	0.679**	0.691*	0.679*	1.15***
	(2.42)	(2.16)	(2.08)	(2.01)	(2.70)
GRRGDP	-0.0003	-0003***	-0.0003**	-0.0003***	-0.0003***
	(-4.20)	(-3.98)	(-3.93)	(-3.70)	(-3.62)
WARRISK	-0.028	-0.03***	-0.031***	-0.0315***	-0.0275***
	(-4.63)	(-4.33)	(-4.18)	(-4.10)	(-3.21)
POPPRES	-------	0.00003	0.00004	0.00003	0.0001***
		(1.16)	(1.15)	(-0.8)	(3.61)
TERROR	-------	-------	-0.0004	-0.0004	
			(-0.84)	(-0.68)	
COLLEGE	-------	-------	-------	-0.0003	
				(-0.31)	
TREND	0.0001	0.0001**	0.0001**	0.0001***	

		*	*		
	(4.01)	(-4.19)	-3.9	-4.01	
DW	2.23	2.25	2.31	2.26	2.20
Rho	-0.12	-0.13	-0.16	-0.13	-0.10
R2	0.60	0.63	0.63	0.64	
AdjR2	0.49	0.49	0.46	0.45	
F	5.17	4.54***	3.68**	3.05**	6.25***

Terms in parentheses are t-values. Δ is the first differences operator;

ΔΔ is the second differences operator.

***indicates statistically significant at one percent level.

**indicates statistically significant at five percent level.

*indicates statistically significant at ten percent level.