Effects of Health Insurance and Medical Care Inflation on Voluntary Enlistment in the Army: An Empirical Study of the United States

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Voluntary enlistment in the military is motivated by a variety of factors, including economic forces such as employment opportunities, income prospects, and employer-provided benefits such as health insurance. This study investigates two research questions that to date have been neglected, namely: (1) does a higher percentage of the civilian population without health insurance act as an incentive for more civilians to voluntarily enlist in the U.S. Army?; and (2) does a higher level of medical care inflation act as an incentive for more civilians to voluntarily enlist in the U.S. Army? Within a cost-benefit framework, the empirical analysis uses annual data for the years 1974 through 2008, 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. The empirical estimates support the propositions that the greater the percentage of the civilian population without health insurance, the greater the rate of voluntary enlistment in the U.S. Army and that the greater the medical care inflation rate, the greater the rate of voluntary enlistment in the U.S. Army.

I. Introduction

Myriad dimensions of the health care and health insurance industries have attracted the attention of researchers. The issues investigated by these researchers range from those of pharmaceutical expenditures, hospital profitability, and hospital efficiency to those of moral hazard and health insurance, the effectiveness of preventive health care measures, mental health expenditures, medical malpractice, nurse training and staffing, physician staffing, and causes of health care inflation (Chirikos, 1998-99; Daniels and Gatsonis, 1999; Given, 1996; Glied, 2003; Goodman and Stano, 2000; Hart et al., 1997; Jordan, 2001; Karsten, 1995; Koch and Cebula, 1992; Lauridsen, et al., 2010; Moscone and Knapp, 2005; Okunade, 2001, 2003; Olsen, 1996).One of the most important and contentious issues in this research, the one receiving the greatest increase in attention in recent years is health insurance coverage or the lack thereof (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; Newhouse, 1994; Nyman, 2003; Swartz, 2001; 2003).

This intensive and extensive research can be attributed to several issues. Presumably, as argued in Dushi and Honig (2003, p. 252), at least part of this increased research attention can be attributed to the fact that there has been a noticeable decline in health insurance coverage in the U.S., especially over the last two decades. Indeed, over 15 years 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. Amidst the national debate in recent years over health care reform in the U.S., claims of the extent of the uninsured have run as high as 47 million (Cebula, Nair-Reichert, and Taylor, 2010).

The present study endeavors to provide insights into two very different dimensions of the overall health insurance/healthcare issue. In particular, this study first 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. Army, *ceteris paribus*, paralleling in principle the rather different specifications found in Cebula, Nair-Reichert, and Taylor (2010). Next, this study hypothesizes that the greater the medical care inflation rate, the greater the incentive at the margin for civilians to enlist in the U.S. Army, *ceteris paribus*, thusly addressing a key issue overlooked in Cebula, Nair-Reichert, and Taylor (2010).

In the interest of relevance, the study period runs from 1974 through 2008, thereby beginning with the first full year after the end of military conscription (the "draft") in the U.S. Within the context of a cost-benefit framework, the study includes as independent variables such factors as the percent of the civilian population without health insurance, the medical care inflation rate, the degree of unionization of the labor force, a measure of real income growth, the percent of the population with a "veteran" status, and a control variable used as a general measure of risks associated with military service during ongoing military conflicts.

II. Review of Related Literature

Prior to providing the framework and empirical results, this study briefly reviews some of the recent published literature on health insurance coverage determinants on the one hand and on military enlistment determinants on the other hand. We begin with the observation by Swartz (2003, p. 283) 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...," and where the likelihood of purchasing health insurance is therefore lower.

In the analysis by Dushi and Honig (2003), the perspective involving healthcare insurance is rather different. More specifically, in Table 1 of their study, Dushi and Honig (2003, p. 253) provide the reader 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 (Dushi and Honig, 2003).

In his study relating to health insurance, Newhouse (1994) 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."

Frick and Bopp (2005) observe that the classic utility-insurance model makes it patently clear that having a very low income seriously restricts 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 variables being the most dominant influence.

Finally, the study by Cebula (2006) uses a state-level cross-section data set to examine the percent of the population *without* health insurance in the year 2000. The most interesting finding in this study 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, as found in Swartz (2003) and Frick and Bopp (2005), involves the inability of people to *afford* health insurance.

Economics of the military draft as well as the political context thereof and the subsequent formation of the AVMF (all-volunteer military force) are set forth in the very insightful studies by Tollison (1970) and Tollison, *et al.* (1973). Beyond the scope of these studies, Seeborg (1994) conducted a study based on data derived from the National Longitudinal Survey of Youth, a study 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. The Seeborg (1994) analysis also reveals that a extremely large percentage of enlistees in the early 1980s who were living in poverty at age 17 had in fact escaped that poverty by 1990, i.e., the military serves as a mechanism for upward economic/financial and social mobility for disadvantaged youth.

The study by Segal, *et al.* (1999) examines differentials in the propensity to enlist of various subgroups of potential enlistees into the U.S Military. The analysis furthers the idea that black youths regard the military as a vehicle for upward social and economic mobility. Thus, black youths are more likely to enlist in the military as compared to white youths. 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 with recent studies such as Kleykamp (2006) and Cebula, Menon, and Menon (2008), that find that the institutional and cultural presence of the military within an environment exercises a significant positive 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 youths.

Another pertinent 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.

The study by Cebula, Menon, and Menon (2008) provides panel least squares (PLS) evidence at the state level regarding factors influencing military enlistment. This study deals with data for the 2003 through 2005 period and finds that, consistent with Kleykamp (2006) and Segal, *et al.* (1999), the stronger the institutional and cultural presence of the military, the greater the proportion of the age-eligible civilian 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. The latter finding is consistent with a study by Cebula, Nair-Reichert, and Taylor (2010), that also finds that the higher the percentage of the population without health insurance, the greater the incentive for military enlistment. Unlike the present study, that by Cebula, Nair-Reichert, and Taylor (2010) fails to allow for medical care inflation.

This literature review indicates that the lack of health insurance coverage substantially reflects affordability issues. In addition, the military has served as an avenue to improve one's socio-economic status, especially when the opportunity cost is low and alternative opportunities are scarce. Arguably, one important way in which the military has contributed to enlistees' well being has been by providing health care, especially given that medical care inflation is greater than that of the overall CPI (Council of Economic Advisors, 2010, Table B-64). Accordingly, the argument is made in this study that, especially if medical care inflation is high, access to health care through the military has provided a particularly important incentive to enlist. Alternatively stated, this study

fundamentally investigates two hypotheses: (1) the greater the percentage of the civilian population without health insurance, the greater the propensity for civilians to enlist in the all-volunteer Army; and (2) the greater the medical care inflation rate, the greater the incentive for civilians to enlist in the all-volunteer Army.

III. The Framework

The framework adopted in this study focuses on the decision to enlist in the U.S Army as a cost-benefit decision. More specifically, the decision to enlist in the Army, 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 as a decreasing function of the *expected gross costs* of enlistment, EGC^{enlist}, such that:

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

As evidenced in the studies included in the literature review above, there are a number of variables that typically are expected to exercise an influence over U.S. Army enlistment rates. To begin addressing these, the focus is initially on the EGB^{enlist}, where:

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

The first of the two central hypotheses being empirically investigated in this study is that the greater the percentage of the *civilian* population without health insurance [UNINS], the greater the propensity to enlist in the U.S. Army, *ceteris paribus*. This hypothesis, dubbed the "Army Health Care Magnet Hypothesis," is based fundamentally on the fact that those enlisted in the U.S. Army, along with their immediate families (spouse, children), receive free medical care provided through the Army. Given the high cost of private health insurance plans and given the increased proportion of the civilian population in the U.S. without health insurance since 1974, free medical care provided by the U.S. Army should have acted act as an attraction/incentive to potential enlistees, i.e., should have acted to increase the EGB^{enlist}. Alternatively stated, the expected economic benefits associated with Army enlistment in the aggregate arguably would be greater the higher the percentage of the civilian population that is *without* health insurance [UNINS], *ceteris paribus*, and this is because said enlistment brings with it health care without any health insurance premiums.

The second central hypothesis being empirically investigated in this study is that the higher the medical care inflation rate [MCI], the more attractive U.S. Army enlistment should have been over the 1974-2008 study period. This is because the greater the medical care inflation rate, the greater the financial burdens for those without health insurance coverage and hence the greater value of the free medical care accompanying voluntary enlistment, *ceteris paribus*.

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 veterans (Kleykamp, 2006; Segal, Bachman, and O'Malley, 1999; Cebula, Menon, and Menon, 2008; Cebula, Nair-Reichert, and Taylor, 2010). 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 function of PVET, *ceteris paribus*.

Hence, equation (2) initially becomes:

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

The level of EGC^{enlist} is expected to be an increasing function of the 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), Cebula, Menon, and Menon (2008), and Cebula, Nair-Reichert, and Taylor (2010), and based on opportunity-cost reasoning, it is hypothesized that EGC^{enlist} is an increasing function of GRRGDP, *ceteris paribus*.

From a different perspective, the higher the degree of civilian labor force unionization [UNION] in the economy, (a) the greater the value of fringe benefits [often including of health insurance] *and* (b) the higher [on average] the wage rate (Dushi and Honig, 2003). Thus, a higher degree of civilian labor force unionization implies a greater incentive *not* to join in the all-volunteer U.S. Army because unionization tends to elevate the opportunity costs associated with that enlistment, *ceteris paribus* (Dushi and Honig, 2003).

It is also expected that individuals manifesting risk-averse behavior would treat a greater degree of risk in the form of a greater probability of being wounded or becoming a fatality under wartime conditions, namely, in the Gulf War of 1990, the War in Afghanistan, and in Operation Iraqi Freedom, WARRISK, as increasing the EGC^{enlist}, *ceteris paribus* (Cebula, Menon, and Menon, 2008).

Hence, the EGC^{enlist} is expressed as:

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

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

$$ENB^{enlist} = f\ (UNINS, MCI, PVET, GRRGDP, UNION, WARRISK),$$
$$f_{UNINS} > 0,\ f_{MCI} > 0,\ f_{PVET} > 0,\ f_{GRRGDP} < 0,\ f_{UNION} < 0,\ f_{WARRISK} < 0 \quad (5)$$

IV. The Empirical Analysis

Based on the model expressed in equation (5), the following model is estimated:

$$ARMYRECR_t = a_0 + a_1\ UNINS_{t-1} + a_2\ MCI_{t-1} + a_3 PVET_{t-1}$$
$$+ a_4\ GRRGDP_{t-1} + a_5\ UNION_{t-1} + a_6\ WARRISK_t + \mu \quad (6)$$

where [data sources are in parentheses]:

$ARMYRECR_t$ = the number of army recruits in year t, as a percentage of the U.S. population in year t aged 18-44 (National Priorities Project Database, 2010);

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; 2010);

MCI_{t-1} = percentage inflation rate of the consumer price index for medical care in year t-1 (Council of Economic Advisors, 2010, Table B-64);

$PVET_{t-1}$ = 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, 2010, Table B-34);

$GRRGDP_{t-1}$ = the percentage growth rate of real GDP (expressed in year 2005 dollars) over year t-1 (Council of Economics Advisors, 2010, Table B-4);

$UNION_{t-1}$ = the percentage of the civilian labor force that was unionized in year t-1

(U.S. Census Bureau, 1976; 1978; 1980; 1984; 1987; 1990; 1994; 1996; 1998; 2001; 2003; 2004; 2005; 2006; 2008; 2009; 2010);

$WARRISK_t$ = 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 2008. The data for variable ARMYRECR deals with the *total* annual number of army recruits in the US; hence, it is not possible to distinguish by gender or race at the aggregate level.

The ADF and PP unit roots tests reveal that five of the variables in this initial specification are not stationary in levels: three variables, MCI, PVET, and ARMYRECR, are stationary only in first differences; one variable, UNINS, is stationary only in second differences; and one variable, UNION, is stationary in first differences with a trend variable. The variable GRRGDP is stationary in levels. Accordingly, in the estimation of equation (6), the following apply: MCI, PVET, and ARMYRECR are expressed in first differences; UNION is expressed in first differences, and a linear trend variable (TREND) is included; and UNINS is expressed in second differences.

Column (a) of Table 1 provides the results for our baseline model. The model has been estimated by OLS, adopting the Newey-West (1987) heteroskedasticity correction. We find that the estimated coefficients on all six of the explanatory variables exhibit the hypothesized signs, with four statistically significant at the one percent level, one statistically significant at the 2.5 percent level, and one statistically significant at the ten percent level. In addition, the TREND variable is statistically significant at the one percent level. The R^2 is 0.71, so that the model explains more than seven-tenths of the variation in the Army recruitment rate variable. The F-statistic is statistically significant at the one percent level, attesting to the overall strength of the model. Finally, the DW and *Rho* statistics reveal no autocorrelation issues.

Table 1: Empirical Estimations [Dependent Variable: ΔARMYRECR]

Variable\Column	(a)	(b)	(c)
Constant	-0.0004	-0.0007	-0.0004
ΔΔUNINS	0.000075*** (5.16)	0.000073*** (5.27)	0.000072*** (4.86)
ΔMCI	0.00007*** (2.52)	0.00008*** (3.08)	0.00007*** (2.74)
ΔPVET	2.55# (1.81)	2.26# (1.79)	-------
GRRGDP	-0.00004*** (-3.54)	-0.00003** (-2.16)	-0.00004*** (-3.13)
ΔUNION	-0.00026*** (-5.78)	-0.00022*** (-3.69)	-0.00024*** (-6.47)
WARRISK	-0.00037*** (-4.81)	-0.00037*** (-4.88)	-0.00036*** (-4.87)
TREND	0.00002*** (5.24)	0.00003*** (6.43)	0.000024*** (5.10)
UNEMPLOY	-------	0.00004# (1.83)	-------
ΔΔCOLLEGE	-------	-0.00002 (-0.33)	-------
R^2	0.71	0.73	0.70
adjR^2	0.58	0.58	0.59
F	5.29***	3.85***	6.27***
DW	2.11	2.15	2.04
Rho	-0.06	-0.08	-0.03

Terms in parentheses are t-values. ***Statistically significant at the one percent level; **statistically significant at the 2.5 percent level; * statistically significant at the five percent level; # statistically significant at the ten percent level.

The estimated coefficient on the ΔPVET variable is positive and statistically significant at the ten percent level, implying [albeit weakly] that an environment where there is a higher percentage of the population that is classified as 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) and Warner, Simon, and Payne (2003), the estimated coefficient on the GRRGDP variable is negative and statistically significant at the one percent level. This finding implies that the stronger the real growth rate of the economy, the higher the opportunity costs of enlistment and hence the lower the net benefits of enlistment and the lower the actual rate of Army enlistment. Next, as expected, the coefficient on the WARRISK variable is negative and statistically significant at the one percent level. This finding implies that volunteers for U.S. Army duty are discouraged from enlisting during actual war-time conditions, presumably because of the perceived higher risks of being either wounded or killed in military engagements (Cebula, Menon, and Menon, 2008). The coefficient on the ΔUNION variable is negative and statistically significant at the one percent level, implying that (as hypothesized) the higher the percentage of the civilian labor that is unionized, the greater the opportunity costs to voluntary enlistment in the U.S. Army (Dushi and Honig, 2003).

Finally, there are the findings for the two key health care variables. First, the estimated coefficient on the variable ΔΔUNINS is positive and statistically significant at the one percent level, implying that the greater the percentage 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 "Army Health Care Magnet Hypothesis." Second, the estimated coefficient on the ΔMCI variable is positive and statistically significant at beyond the 2.5 percent level. Thus, there is strong empirical evidence for the hypothesis introduced in this study that the higher the medical care inflation rate, the greater the incentive to enlist in the U.S. Army and hence the greater the actual U.S. Army enlistment rate.

We test for the robustness of the baseline model with two alternate specifications, the results of which are reported in columns (b) and (c) of Table 1. In the estimate provided in column (b), the following two additional variables are included, i.e., added to the baseline model [data source are in parentheses]:

$COLLEGE_{t-1}$ = 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; 2010); and

$UNRATE_{t-1}$ = percentage unemployment rate of the civilian labor force in year t-1

(Council of Economic Advisors, 2010, Table B-42).

Regarding the variable COLLEGE, it is hypothesized here that the greater one's educational attainment, the greater one's labor force options, i.e., the greater the opportunity costs to enlistment in the U.S. Army. Hence, it is hypothesized that the greater

the proportion of the population with a college degree, the lower the Army enlistment rate should be (Seeborg, 1999: Warner, Simon, and Payne, 2003; Cebula, Nair-Reichert, and Taylor, 2010), *ceteris paribus*. Next, the higher the civilian unemployment rate, the lower the opportunity costs to military enlistment (Warner, Simon, and Payne, 2003). Accordingly, U.S. Army enlistment is hypothesized to be an increasing function of UNRATE, *ceteris paribus*.

The ADF and PP unit roots tests reveal that the variable COLLEGE is stationary in second differences over the study period; therefore, this variable is expressed in second differences form [ΔΔCOLLEGE]. On the other hand, the ADF and PP unit roots tests reveal that the variable UNRATE is stationary in levels over the study period; hence, this variable is expressed in levels in the estimation.

Estimating the expanded model by OLS, adopting the Newey-West (1987) heteroskedasticity correction, yields the results reported in column (b) of Table 1.

As shown in column (b), all eight of the estimated coefficients exhibit the hypothesized signs, with four statistically significant at the one percent level [ΔΔUNINS, ΔMCI, ΔUNION, and WARRISK], one statistically significant at the five percent level [GRRGDP], and two statistically significant at the ten percent level (ΔPVET, UNRATE].

Based on the results in column (b), the Army enlistment rate in the U.S. is a decreasing function of the unionization rate variable [ΔUNION], the growth rate of real GDP [GRRGDP], and WARRISK variables, results consistent with the counterpart results in column (a). In addition, there is evidence, although only weak evidence, that the Army enlistment rate is directly impacted by the unemployment rate [UNRATE] and percent-veterans variable [ΔPVET]. Furthermore, the coefficient on the ΔΔCOLLEGE variable, although negative, is not statistically significant at even the ten percent level; thus, this variable does not appear to exercise a perceptible impact on Army enlistment.

On the other hand, there is strong empirical evidence that the Army enlistment rate has been an increasing function of both the percent of the civilian population without health insurance [ΔΔUNINS] and the medical care inflation rate [ΔMCI]. The estimated coefficients corresponding to the latter two variables are both statistically significant at the one percent level and hence provide further strong empirical support for the two basic hypotheses upon which this study is focused. In particular, there is additional strong evidence in column (b) supporting the hypotheses (1) that the greater the percentage of the civilian population *without* health insurance, the greater the rate of voluntary enlistment in the U.S. Army *and* (2) that the greater the medical care inflation rate, the greater the rate of voluntary enlistment in the U.S. Army.

Finally, as a further test of the robustness of the basic model, the estimate in column (c) of Table 1 omits all variables from the models in columns (a) and (b) that were not statistically significant at an "acceptable," i.e., five percent, level. As shown, all five of the estimated coefficients in column (c) exhibit the expected signs and are statistically significant at the one percent level.

From column (c) of Table 1, it can be reasonably inferred that the U.S. Army enlistment rate has been negatively impacted by the unionization rate. In addition, the greater the growth rate of real GDP, the lower the Army enlistment rate has been. Furthermore, it can be inferred that wartime conditions and the associated greater expected risk of being wounded or killed create a disincentive to enlist. Finally, the coefficients on the health insurance variable and medical care inflation rate are again both positive and statistically significant at the one percent level, implying strong support for the hypotheses at the core of this paper. Alternatively stated, the evidence once again is compellingly in support of the two hypotheses (1) that the greater the percentage of the civilian population *without* health insurance, the greater the rate of voluntary enlistment in the U.S. Army [the "Army Health Care Magnet Hypothesis"] *and* (2) that the greater the medical care inflation rate, the greater the rate of voluntary enlistment in the U.S. Army.

V. Conclusion

This study empirically investigates the following two hypotheses: (1) that a higher percentage of the civilian population without health insurance acts as an incentive for more civilians to voluntarily enlist in the U.S. Army [the Army Health Care Magnet Hypothesis]; and (2) that a higher level of medical care inflation acts as an incentive for more civilians to voluntarily enlist in the U.S. Army. The empirical results in this study provide compelling evidence that the greater the percentage of the civilian population without health insurance, the greater the rate of voluntary enlistment in the U.S. Army, thereby strongly supporting the Army Health Care Magnet Hypothesis. In addition, the empirical results strongly support the hypothesis that the greater the medical care inflation rate, the greater the rate of voluntary enlistment in the U.S. Army.

Furthermore, U.S. Army enlistment has been negatively impacted by a more rapidly growing economy (a proxy for higher opportunity costs), military conflicts/wars (risk-averse behavior with military conflict being a risk factor that elevates the expected probability of being wounded or killed), and by a higher degree of civilian labor force unionization. Thus, the AVMF (all-voluntary military force) market appears to function as the free enterprise system would predict.

In closing, it may be worth observing that if the Army Health Care Magnet Hypothesis is valid, then it also follows that if *de facto* universal health care in the form of The Patient Protection and Affordable Care Act proceeds according to schedule, there may be unforeseen problems from a military recruitment perspective. In particular, implementation of *de facto* universal health care in the U.S. could result in a decline in the expected gross benefits of enlistment.

Clearly, as the AVMF market factors the availability of *de facto* universal health care *outside* the confines of the military into its enlistment decision calculus, for many the expected net benefits of enlisting will decline sufficiently to create a no-enlist decision. In turn, it follows that some form of additional incentives may be needed in order to induce sufficient U.S. Army enlistment. Thus, full implementation of The Patient Protection and Affordable Care Act [signed into law on March 23, 2010] could increase the cost of

military recruitment [and retention] in the future. Recruitment [and retention] may require higher salaries and/or higher other incentives in order to reach Army human resource needs. The resulting implications for the Defense budget are obvious.

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