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Implementing an All-Volunteer Force in Taiwan

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PREFACE

The Institute for Defense Analyses (IDA) prepared this publication under IDA's Independent Research Program. It explores how the Republic of China might best meet its needs for military personnel in a challenging demographic environment.

Lawrence Goldberg of IDA and Saul Pleeter in the Office of the Secretary of Defense were the technical reviewers for this document.

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A. INTRODUCTION

Despite a relatively high demand for personnel per capita, Taiwan plans to completely transition to an all-volunteer active-duty military by 2014. Thereafter, it faces a long-term decline in the youth population. With high demand and declining supply, a major challenge for Taiwan will be personnel costs. This paper explores the issue and suggests ways for meeting the challenge.

I start by placing Taiwan's problem in an international context. However, most of the paper discusses policies for lowering personnel costs by reducing demand and increasing supply. The U.S. experience is drawn upon for examples of policies, both good and bad. I conclude with a research agenda to develop required manpower policies for Taiwan.

B. HIGH DEMAND FOR MILITARY PERSONNEL

Table 1 compares the demand for military personnel in the United States and selected Asian countries. A far larger fraction of Taiwan's total population is on active duty than is the case in the United States. After completing the transition from a draft in 2014, Taiwan may have a larger fraction of its population in the active military than any other country with a volunteer force. As its youth population shrinks, this situation will be exacerbated.

Table 1. Fraction of Population in the Active Military

	Active Personnel	Active Personnel Per 1000 Population
China	2,255,000	1.7
India	1,414,000	1.2
Japan	239,900	1.9
Kazakhstan	65,800	4.2
Mongolia	9,100	3.4
North Korea	1,106,000	46.0
Pakistan	700,000	4.2
Russia	1,037,000	7.3
South Korea	687,000	14.2
Taiwan	290,000	12.6
United States	1,473,900	4.8
Vietnam	484,000	5.5

Note: Shading indicates countries with volunteer military services.

But while the challenge facing Taiwan is substantial, it is not unprecedented. The fraction of the U.S. population in the active military during the cold war exceeded that of Taiwan today. In 1962, before the escalation of the war in Vietnam, 1.5 percent of the U.S. population was in the military. At that time the United States still had conscription but draft calls were very low, so it was essentially a volunteer force. In 1974, when the all-volunteer force was successfully launched in the United States, one percent of the population was on active duty.

C. DECLINING SUPPLY OF MILITARY PERSONNEL

Motivated by a desire to professionalize its military, Taiwan started to reduce conscription in 2005. By 2008 non-conscripts accounted for 60 percent of the force. It is expected that conscription for the active force will be eliminated by 2014.

While the male youth population in Taiwan will remain stable over the next 10 years, it will decline markedly after that (Table 2). Considering that Taiwan requires an unusually high percentage of its population to serve in the military, this trend will pose a particular challenge.

Table 2. Numbers of Entry-Age Military Cohorts in Taiwan by Year, 2006–2024

Year	Number of Individuals (Thousands)
2006	145.7
2007	120.9
20082	110.3
2009	114.6
2010	121.8
2011	113.4
2012	121.1
2013	117.1
2014	117.4
2015	118.2
2016	117.6
2017	112.6
2018	112.5
2019	115.4
2020	97.5
2021	99.3
2022	103.0
2023	89.5
2024	84.6

We now turn to the tools available for dealing with this kind of challenge and the risks that can arise when they are not used effectively.

D. MANAGING A VOLUNTEER MILITARY

1. Cautionary Tale

The United States has been operating a successful all-volunteer military for 35 years. The military leadership recognizes that the quality, experience, and motivation of personnel are higher today than they were under conscription. But managing the all-volunteer force has not been trouble free. Recruiting in a volunteer environment is inherently cyclical. It is harder to attract recruits in economically good times and easier in bad times.

As Figure 1 shows, the number of high-quality recruits—high-school graduates who are in the top half of the mental distribution according to entry-test scores—fell in the United States by 45 percent between 2003 and 2007. This period coincides with a drop in unemployment from 6 to 4.5 percent. It also was a time of increasing difficulty regarding the war in Iraq. Unlike the boom of the 1990s, when the Army was able to apply additional resources to counteract much of the impact of the strong economy, the response to the more recent recruiting downturn was less effective. The recession has allowed recruiting quality to return to its customary level.

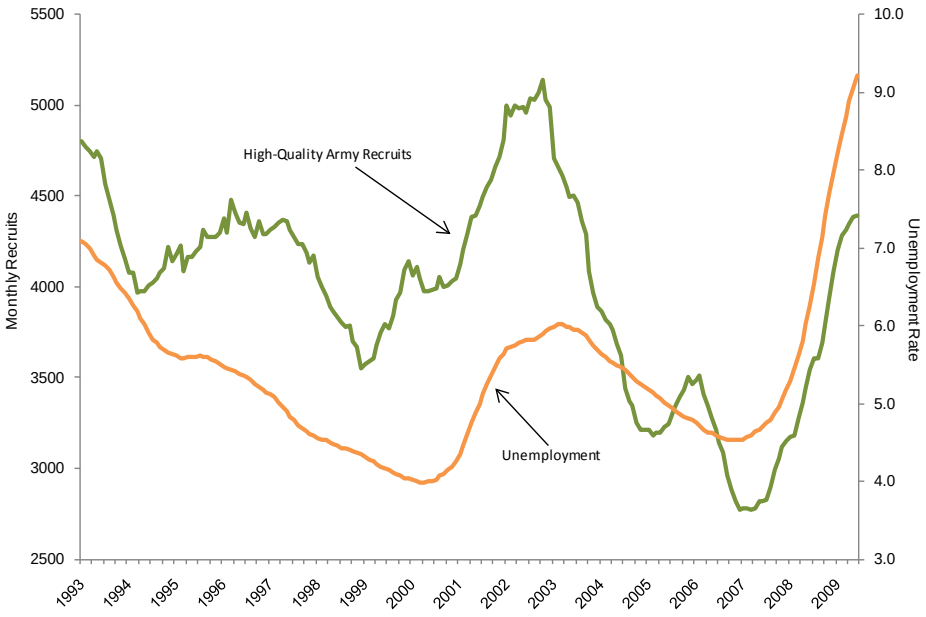

Figure 1. High-Quality U.S. Army Recruits, 1993–2009

The lesson I would draw is that a high-quality volunteer military can be maintained even in good economic times, but it must be managed well, and it must respond to changes in the market. But a well-managed volunteer force that adjusts to market changes is not cheap. When relevant expenses outside the budget of the Department of Defense are included, personnel costs are a bit under 40 percent of defense-related expenses in the United States; the percentage rises when civilian employees are included.[1]

2. Management Principles

Several overarching principles should be borne in mind when considering the design and management of an all-volunteer force:

- *Reduce the demand for male recruits.* Consider alternative sources of manpower and retain people longer. If fewer people leave, fewer recruits are needed.
- *Keep strategic goals in mind.* From an economist's perspective, the purpose of a military compensation system is to provide the human resources needed to accomplish strategic goals. Other goals—rewarding people after the fact for patriotic service and providing equal compensation for all of a given rank—can be pursued, but they will likely raise the cost of providing the human resources necessary to accomplish strategic goals.
- *Provide incentives.* In a volunteer environment the only way to overcome difficulties in attracting and retaining the desired number and kind of people is to make it more attractive for them to enter and remain in the military. That is not to say that patriotism does not attract people to the military, but patriotism is not the only thing most people consider when choosing to join or remain in military service. Pay matters too.

These principles allow us to identify a range of ways in which Taiwan can ease recruiting problems. For example the demand for male recruits can be reduced by:

- Broadening the market. Greater reliance on women, civilian employees, and contractors would reduce the number of male recruits needed and make filling requirements easier.
- Using people who can be drawn on in an emergency to fill roles that don't require full-time peacetime attention. Reservists fall into this category, as do contractors who are offered contingency contracts to provide services on short

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1 Based on calculations using material in Stephen J. Balut, Dennis C. Blair, Lei Yuanshen, Maohai Zhan, David Finkelstein, John Hanley, and Stanley A. Horowitz, "Proceedings of the 1st IDA-CIISS Workshop: Military-to-Military Relations and Defense Personnel Costs," IDA Document D-3161, August 2006, and Dennis J. Blasko, Chas W. Freeman, Stanley A. Horowitz, Evan S. Madeiros, and James C. Mulvenon, "Defense-Related Spending in China: A Preliminary Analysis and Comparison with American Equivalents," The United States-China Policy Foundation, May 2007.

notice when needed. Greater reliance on post-mobilization assets reduces the need for active-duty recruits.

- Increasing retention. This can be done by paying career personnel more, targeting pay increases on specific problem areas, requiring long-term commitments before providing marketable skills, and not providing unintended incentives to leave (like early retirement and post-service educational benefits).

The supply of recruits can be expanded by:

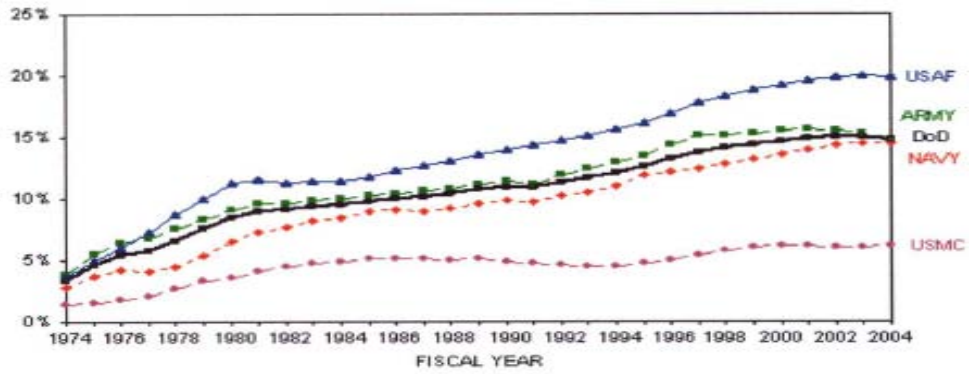
- *Raising pay for recruits.* This was essential to the initial success of the all-volunteer force in the United States. Entry-level pay was raised by 68 percent in late 1971 and additional increases followed.[2]
- *Devoting more resources to recruiting and advertising.*[3]
- *Taking advantage of economic downturns.* Recall from Figure 1 that it is easier to recruit high-quality personnel when the civilian economy is less attractive.

The remainder of this section discusses some of these options in greater detail, drawing on American experience to illustrate their use.

3. Reducing the Demand for Male Recruits

a. Increasing Reliance on Women

Figure 2 displays the trend in the fraction of enlisted personnel in the U.S. military who are women by military service. The overall percentage rose from 3 percent in 1974 to 14 percent in 2004. Today, over 90 percent of career fields are open to women.



Source: Chapter 3, "Active Component Enlisted Force," Office of the Assistant Secretary of Defense (Force Management Policy), Fiscal Year 99, November 2000.

Figure 2. Women as a Fraction of U.S. Enlisted Personnel

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2 Bernard Rostker, *I Want You! The Evolution of the All-Volunteer Force*, RAND Corporation, 2006, p. 180.

3 An example of the considerable research done on the impact of such resources is Lawrence Goldberg and Dennis K. Kimko, "An Army Enlistment Early Warning System," IDA Paper P-3783, May 2003.

In part, this trend reflects changes in societal attitudes toward women in the military; it also reflects a conscious decision on the part of personnel managers to recruit more women specifically to reduce the requirement for male recruits.

b. Civilianization

Some skills the military needs are not intrinsically military. They draw on the same kinds of ability as civilian jobs of the same kind do. These may include occupations like lawyers, doctors, information technology support technicians, and some administrative functions. Perhaps some positions in these occupations should be filled by military personnel, but the requirement for uniformed people should not be taken for granted.

Civilians may be less expensive than military personnel, especially in a tight labor market for military manpower. Also, they draw on different manpower pools, ones with fewer age restrictions, for example.

A few years ago the U.S. Defense Department made a concerted effort with modest success to identify military billets that could be effectively civilianized. Almost 10,000 medical positions were shifted from uniformed personnel to civilians. This was not an easy process. The military medical establishment was not anxious to eliminate active duty positions it was accustomed to having. The leadership of the military services was ultimately convinced that civilianization was a cost-effective alternative that could focus military personnel on more inherently military tasks.

c. Recruiting versus Retention

One virtue of a volunteer military is that people will stay in service longer on average. If all entry-level personnel want to be in their military jobs, more will want to stay, reducing the need for new entry-level recruits. Figure 3 shows that both average age and level of experience of enlisted servicemembers rose after the end of conscription. The average experience level increased by over a year, from 70 months in 1974 to 83 months in 2004. The bulge of even higher experience levels in the 1990s was due to the low levels of recruiting that followed the end of the cold war.

Offering incentives to increase retention will raise the fraction of personnel who remain on active service, reducing the need for new recruits. Figure 4 illustrates this tradeoff for U.S. Air Force physicians.

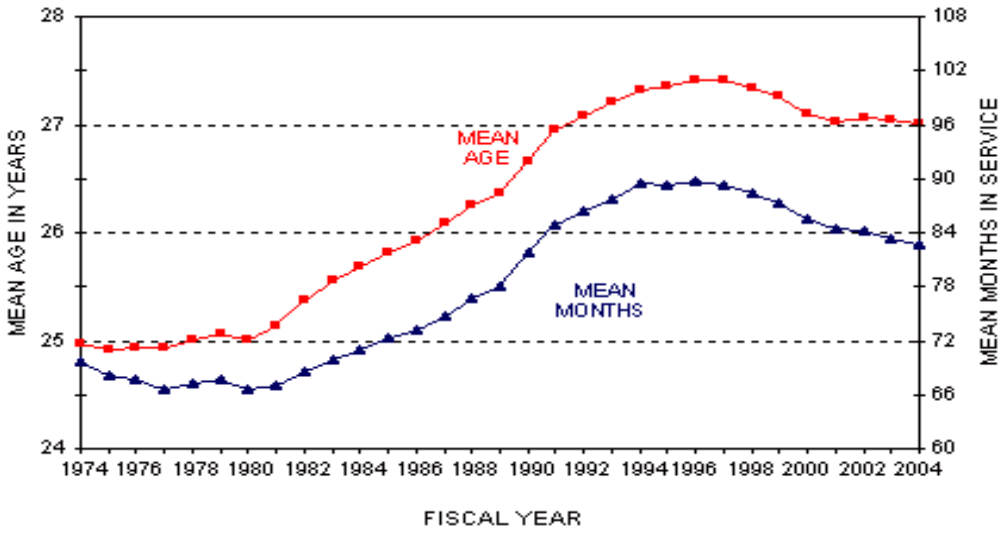
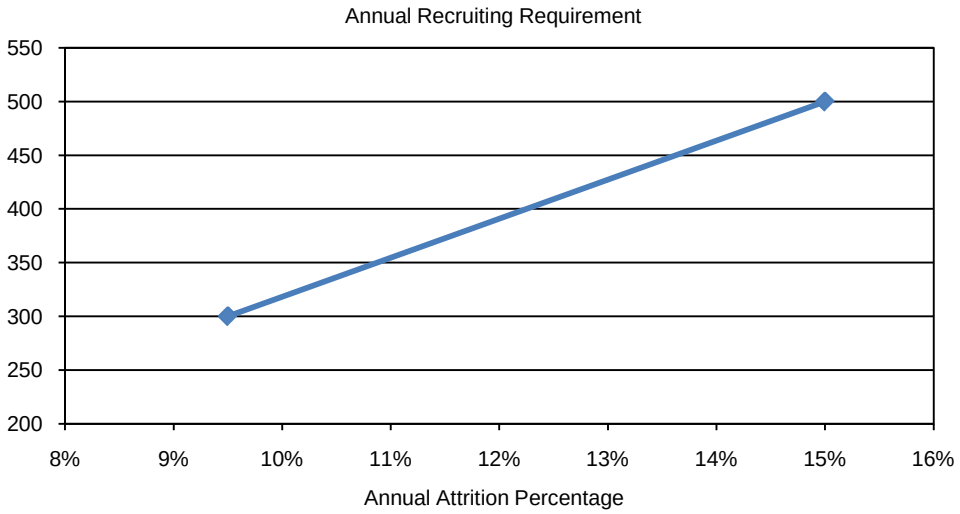


Figure 3. Average Age and Experience of U.S. Enlisted Personnel



Source: Data from Edward G. Keating, Marygail K. Brauner, Lionel A. Galway, Judith D. Mele, James J. Burks, and Brendan Saloner, "Air Force Physician and Dentist Multiyear Special Pay: Current Status and Potential Reforms," RAND Corporation, 2009, p. 73.

Figure 4. Tradeoff between Retention Levels and Recruiting Requirements for Air Force Physicians

Increasing retention by 5.5 percentage points would allow physician requirements to be met with 40 percent fewer accessions.

d. Role of Deferred Compensation

Deferred compensation is money or services received after the recipient leaves active duty. Deferred compensation provides servicemembers with an incentive to remain in active service until they are eligible for the benefits, at which point it provides an inducement to leave. It can be effective tool for reducing retention where desired. But it should be used sparingly when lower retention is not desired.

The United States offers its service members quite a generous package of deferred compensation. Its retirement system provides 50 percent of base pay for those who retire after 20 years of service. With minor exceptions, no retirement benefits are provided those who leave before 20 years.[4]

Educational benefits available to veterans have recently been expanded. Not only do they cover the cost of college tuition at most public institutions, they also provide the same housing benefits available to active-duty personnel, which often amount to over $10,000 a year.

The Department of Veterans Affairs provides medical services and disability payments to veterans. Disability compensation is available for injuries and illnesses that occurred during the period of active service even if they are not work-related. The Department of Veterans Affairs spends over $80 billion a year.

Because deferred compensation accounts for over half of U.S. spending on military personnel, it must have a substantial impact on retention.[5] The magnitude of deferred compensation in the United States is not the result of the use of incentives to shape the force in a particular way. It stems in part from once having had a conscript force. In that sense, deferred compensation can be seen as a way to make up for having underpaid conscripts when they were on active duty. It also stems in part from the desire of Congress to be generous to veterans.

It is true that generous deferred compensation does induce additional people to join the military in the first place, but it is not an efficient recruiting tool. Research has shown

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4 The incentive effects of the military retirement system have been analyzed extensively. See, for example, Beth J. Asch and John T. Warner, "A Policy Analysis of Alternative Military Retirement Systems," RAND Corporation, 1994.

5 Stephen J. Balut, Dennis C. Blair, Chester Arnold, John T. Hanley, Katy O. Hassig, Stanley A. Horowitz, David E. Hunter, Gong Xianfu, Jiang Shilang, Chen Yongxing, Chen Wei, and Kenneth W. Allen, "Proceedings of the Second IDA-CIISS Workshop: Common Security Challenges and Defense Personnel Costs (Revised)," IDA Document D-3412 (Revised), January 2008, p. 81.

that new recruits have high discount rates.[6] That is, they are influenced much more by money now than by promises of money in the future. It is not efficient for the United States to have so much of its personnel benefits in the form of deferred compensation.

Since Taiwan wants to efficiently encourage accessions while not discouraging retention, suggestions to increase deferred compensation should be considered carefully before adoption.

4. Increasing the Supply of Recruits

a. Compensation and Recruiting Success

Our emphasis will now shift from tools that can reduce the need for young male recruits to those that make it easier to fill the demand for them. Increasing salaries is the most obvious way to induce a greater supply of new recruits. It is also the most widely studied. A substantial body of econometric research shows a reliable, statistically significant relationship between military pay and recruiting success.

Analyses performed at the Institute for Defense Analyses indicate that a 10 percent increase in military pay relative to civilian pay can be expected to induce a 7-percent increase in the number of high-quality recruits enlisting in the Army. Other research has estimated an even greater impact. During the boom of the 1990s, military pay lagged civilian pay and Army recruiting fell by 15 percent as a result.

In the early 1980s, pay increases of over 25 percent late in the Carter administration and early in the Reagan administration overcame the greatest threat to the viability of the all-volunteer force, which arose because of a failure of military pay to keep pace during the high inflation of the 1970s. Shortly after the pay increases were approved, the economy went into a recession. The combined effects of these factors completely changed the recruiting environment.[7]

In order to assure that military pay does not fall too low, the United States military tries to maintain compensation levels at least equal to that of the 70th percentile of civilian employees of similar age and educational attainment. This level was selected as a

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6 John T. Warner and Saul Pleeter, "The Personal Discount Rate: Evidence from Military Downsizing Programs," *American Economic Review* 91 (1), 2001, pp. 33–53.

7 Lawrence Goldberg and Dennis K. Kimko, op. cit., p. 35. This paper develops the elasticity estimate presented here, cites other relevant research, and documents the experience of the late 1970s and early 1980s.

result of experience. Whenever compensation fell below the 70th percentile, problems resulted. Evidence indicates that military pay in Taiwan falls short of this level.[8]

b. Occupational Targeting of Compensation

Attracting and retaining people in some occupations requires the military to pay more than in other occupations. Higher pay may be needed because of competition from civilian employers; examples of such occupations may include information technology and health professions. It also may be needed to compensate for dangerous or unpleasant working conditions; submarine service and handling explosives may be examples of this. The U.S. military offers various forms of bonuses for selected occupations.

Table 3 shows that recruiting and retention bonuses are offered to a relatively small proportion of the enlisted population, but such bonuses can amount to a significant increase in compensation for those who are eligible.

Table 3. Targeted Enlistment and Reenlistment Bonuses for Enlisted Personnel (1999)

	Army		Air Force		Navy	
	Percentage Receiving	Percentage of Basic Pay	Percentage Receiving	Percentage of Basic Pay	Percentage Receiving	Percentage of Basic Pay
Enlistment Bonus	3.0	26.6	1.7	18.4	2.2	20.9
Reenlistment Bonus	11.2	10.0	10.1	15.5	15.4	22.5

Some special occupational pays are not explicitly linked to recruiting or retention but, in fact, are offered to induce continuing service. Table 4 lists some of these. They can be quite substantial, particularly for highly demanded medical specialties.

Table 4. Some Occupation-Related "Special Pays" (2004)

Aviation officer, 7 years of aviation service	$6,500
Submarine officer, 7 years of service	$7,140
Enlisted submariner, 7 years of service	$3,600
Board-certified medical officer	$15,500
Orthopedic surgeon	$36,000

While special pay and targeted bonuses are expensive, they are often better than the alternatives. The cost of paying everyone of a given rank the same amount while

8 Brian Hsu, "Taiwan Military Begins Accepting Volunteer Recruits," *Taipei Times (Internet Version-WWW)*, April 2003.

paying enough to attract people in hard-to-fill occupations is even more expensive. Failure to meet the market price for specialized skills will lead to personnel shortages.

E. IDENTIFYING THE BEST MIX OF POLICIES

Demographics and military requirements combine to give Taiwan a difficult military manpower problem, but American experience suggests that solutions can be found. Many tools are available to assure that military manpower requirements are met. It is in Taiwan's interest to meet them economically. An efficient solution begs a better understanding of the costs and effects of alternative policies. In the United States, quantitative econometric research has helped shape policy, though not always as well as one might hope. I believe that Taiwan can benefit from a program of quantitative manpower analysis to support policy development.

1. Elements of an Analytic Program

Building such a program will take time. Necessary steps include:

- *Specifying initial targets for manpower requirements.* This includes the desired distribution of experience levels, the occupational mix, and the numbers of active and reserve personnel. These components will likely change as more is learned about alternatives. For example, it may turn out that a more experienced force than was originally specified could be both cheaper and better.
- *Identifying the policy tools that are available or can be obtained.* These include things like recruiting more women, raising pay in general, and using targeted compensation.
- *Developing the data needed to support empirical analysis.* Economic models can be based on informed speculation; sometimes this approach is necessary. But models are likely to be more accurate if they are based on observed behavior.
- *Building quantitative models relating policy choices to results and costs.* Initial parameter estimates can be derived from analysis of the behavior of non-conscripts in the past, perhaps supplemented by extrapolations from the private sector.
- *Providing a framework for integrating tools.* This can provide policy makers with a tool for assessing the tradeoffs associated with various alternatives, including cost.
- *Committing to research.* Analysis must adapt to changes in circumstances. New issues will arise and require empirical investigation. Also, relationships between policies and responses can vary over time. One must be vigilant to recognize when this happens and modify models appropriately. Models must reflect current reality to be useful.

2. Potential Areas for Analysis

Taiwan would likely benefit from analysis of the following topics:

- *Supply elasticities.* How much does money matter for accessions and for retention? This kind of analysis has been the backbone of manpower modeling in the United States.
- *The effect of the economy, demography, and other things on recruiting.* We have found that the state of the economy makes a huge difference in the market for military manpower. This is likely true in Taiwan as well. Broad demographic trends—not just the size of youth cohorts, but how highly educated they are, for example—will also affect the supply of service members.
- *Opportunities to expand the market.* Taking advantage of such opportunities could be important for a country with such a large military relative to its population.
- *Responding to occupational market variations.* Understanding this kind of variation can help fill requirements without spending more than is necessary.
- *The effect of the deferred compensation.* The United States has probably gone too far in the direction of deferred compensation. Perhaps Taiwan can avoid this fate.
- *Integration of supply and demand.* It is important to understand how the myriad tools available fit together in meeting overall requirements. This is an area where American analysis has lagged, and I think U.S. policy decisions have suffered as a result.

In summary, good policies are easier to develop if you have a quantitative basis for projecting their impact. Economic analysis can provide this basis.

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14. ABSTRACT

This document suggests how the Republic of China (Taiwan) might best meet its needs for military personnel in a challenging demographic environment. Taiwan is striving to complete the transition to an entirely volunteer active duty military by 2014. It faces relatively high personnel costs because of a high demand per capita for military personnel. After 2014 the youth population will decline, which will further increase costs. Completing the transition and then assuring an effective volunteer military over the long run will require the military to successfully compete in the labor market for people of military age. The United States has relied heavily on economic analysis to better understand how to manage its volunteer military efficiently. The paper draws on the American experience to illustrate ways to compete effectively in the labor market for recruits, both by reducing demand and by increasing supply. It concludes that a program of economic analysis could help lower Taiwan's cost of transitioning and maintaining a volunteer force.

15. SUBJECT TERMS

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