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NATIONAL DEFENSE RESEARCH INSTITUTE

A New Tool for Assessing Workforce Management Policies Over Time

Extending the Dynamic Retention Model

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Prepared for the Office of the Secretary of Defense

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Summary

The dynamic retention model is a state-of-the-art modeling capability that permits analysis of the effects on workforce size, experience mix, and cost of changes to compensation and personnel policies. Much of the empirical application of the model has been for the U.S. military. In the military context, the DRM is a behavioral model of each service member's decision to stay or leave the military where members are rational and forward-looking, differ in their preference for the military versus the civilian sector, and face uncertainty about future events that may cause them to value military service more or less than civilian life. To date, the DRM has been used to assess the effects of policy changes in the steady state. In the case of the military, where the typical military career is 30 years, it would take 30 years to reach the new steady state as a result of a policy change.

Policymakers are often concerned about the effects of a policy change in the transition to the steady state, i.e., during the 30-year period before the new steady state is reached, and how different implementation strategies can affect the 30-year time path. A common implementation strategy is to "grandfather" existing members so only new entrants are covered by any policy change. Grandfathering is often desirable because policymakers do not want to break the implicit contract with existing members and so wish to ensure that "promises are kept." This is exactly the implementation strategy and logic suggested by Secretary of Defense Leon Panetta in an August 19, 2011, interview with the *Army Times* when he was discussing possible future changes to the military retirement system:

> People who have come into the service and put their lives on the line, been deployed to the war zones, fought for this country, and who have been promised certain benefits as result of that—I'm not going to break faith with what's been promised to them (Tilghman, 2011).

The problem with this approach is that it can take a long time before the effects of a policy are realized. Policymakers must wait until existing members flow through and separate and new members get enough experience to be affected by the policy. One solution to this problem, as we describe below, is to grandfather existing members but also give them the choice to switch to the new system. By offering a choice, the shift to a new policy allows members under the existing policy to continue with it, or, if they prefer, to opt for the new policy. More people will be under the new system more quickly, if substantial numbers choose to switch, so it allows policymakers to move

toward the steady state faster. Furthermore, faith has not been broken, and those who decide to change would do so only if they expect to be better off under the new policy.

Existing methodologies typically used to assess the transition phase and the effects of transition strategies are either severely limited or logically inconsistent. For example, personnel inventory projection models cannot be used to analyze the effects of allowing grandfathered members to switch to a new system because they do not include a model of decisionmaking that would logically allow members to change their behavior during the transition. Similarly, the so-called annualized-cost-of-leaving (ACOL) approach in which estimates of retention responsiveness to pay are used to simulate the retention effects of pay changes over some time period has been shown to be inconsistent with rational optimizing behavior and assumes away the possibility that individuals may change their mind when new information is revealed to them.

The DRM has neither of these disadvantages; it is logically consistent and can permit analysis of behavioral changes among incumbent members during the transition period. However, to date, few have actually used the DRM in this way, mostly because of the huge challenges in constructing a DRM that incorporates the transition to the steady state. The steady state version of the DRM is already extremely complex, in part because it keeps track of time in three different ways (time in the active component, time in the Reserve component, and total time elapsed). Extending it to include the transition period adds a fourth time dimension (time elapsed since a policy change occurred), substantially increasing the complexity of the model.

The research summarized in this document tackles this problem. We extend the mathematical model that defines the DRM to incorporate the fourth time clock. Specifically, we add a clock that accounts for the member's state when the policy occurs. We call this state the member's cohort, defined by the member's years of service (YOS) when the policy change occurs. We then use recent DRM parameter estimates for Army enlisted personnel to develop computer code that implements the extended model and permits us to simulate retention behavior for each cohort. Importantly, the extended model allows us to simulate both the retention behavior of each cohort over time and the retention behavior of all cohorts in the aggregate for each time period since the policy change occurred. Thus, the total force can be observed in each period as a force planner or programmer might want to see it. We can simulate retention behavior in the 30-year transition.

We demonstrate this capability with two examples. The first is a separation bonus paid to members who reach 11 YOS. The second is a reform to the military retirement system. We consider these examples because they represent the types of policies that are currently under consideration by policymakers, though the specific examples we consider

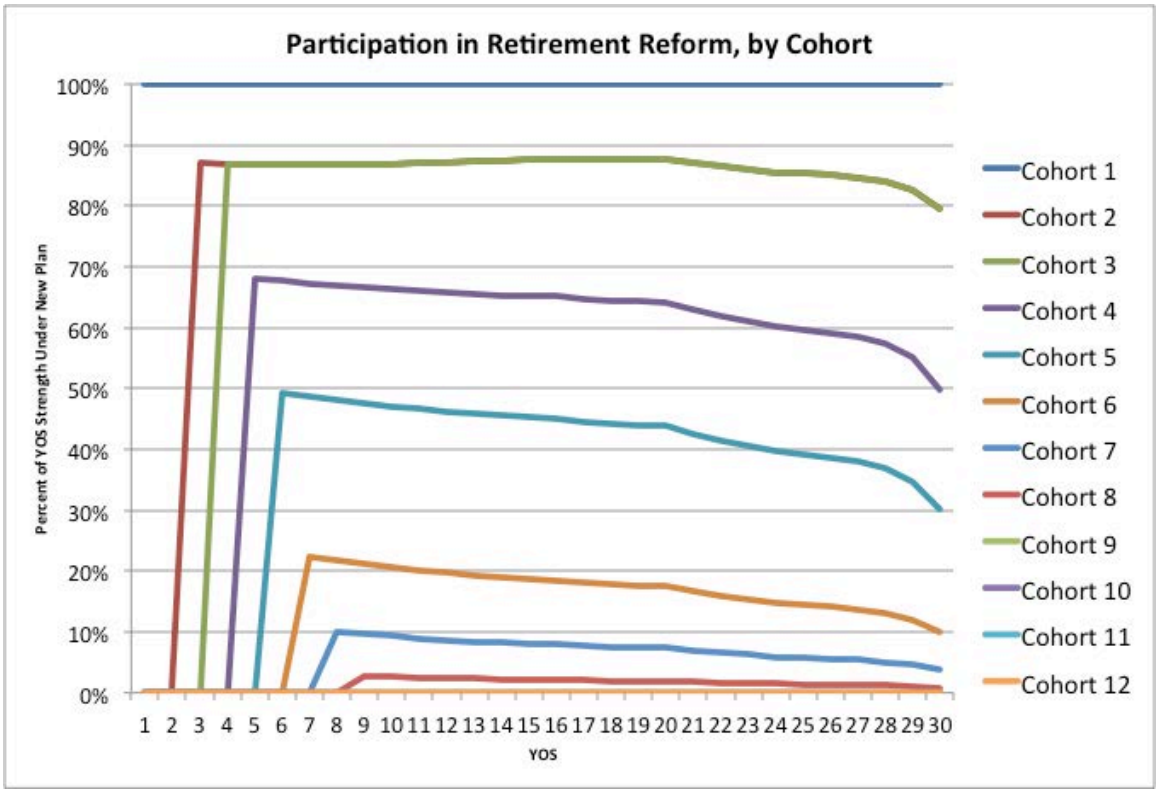
are unlikely to ever be adopted (nor do we recommend that they be adopted). Their purpose is to illustrate our new capability.

We apply the extended capability to consider a number of implementation strategies. In the case of the separation bonus, we consider the effects of grandfathering existing members under the current policy and only requiring new members to be covered by the new policy. We also consider the effects of targeted grandfathering. In this case, only members with more than 5 YOS are grandfathered, and those with 5 or fewer years are automatically placed under the new policy. We contrast the results of these policies with the results when all members, both existing and new members, are automatically placed under the new system and there is no grandfathering. As expected, we find that grandfathering results in a slower time path than the immediate conversion case. That is, the effects on retention take much longer to be realized when members are fully grandfathered than when they are immediately placed under the new system. Targeted grandfathering results in a more intermediate pace of change.

In the case of retirement reform, we contrast the effects of an implementation strategy that fully grandfathers existing members under the current system with the effects of one that fully grandfathers them but also allows them to choose to switch to the new retirement system if they prefer to do so. New members are automatically moved to the new system. Incorporating this choice option required that we extend the DRM even further to allow each member the choice to switch to the new system if the value of their future career is greater by doing so, given their cohort and preference for military service. That is, we extended the DRM to incorporate not just the decision to stay or leave the military but also the decision to switch to a new compensation system if permitted to do so.

To exercise the model, we created an illustrative new retirement system. The new system was designed to maintain retention across years of service at the current levels and also to reduce cost. Figure S.1 shows our simulation results on the percentage of each cohort that chooses to switch to the new system at each year of service. We find that 100 percent of the first cohort (cohort = 1) participates in the new system because, by design, new entrants are automatically covered by the new system. However, we also find that almost 90 percent of cohorts 2-3 choose to participate. These represent existing members with between 2 and 3 YOS at the time the policy change occurred who opted to switch to the new system. However, older cohorts at the time of the policy change are less likely to switch. For example, about 50 percent of those in cohort 5 opt to switch, and nobody in cohort 9 opts to switch. The reason more senior members do not opt to switch is that they are close enough to the 20-year vesting point in the current system that staying in it is always more valuable to them than switching to the new system.

Figure S.1
Percentage of Personnel at Each YOS Who Participate in Retirement Reform by Cohort (Defined by YOS at the Time of the Policy Change)

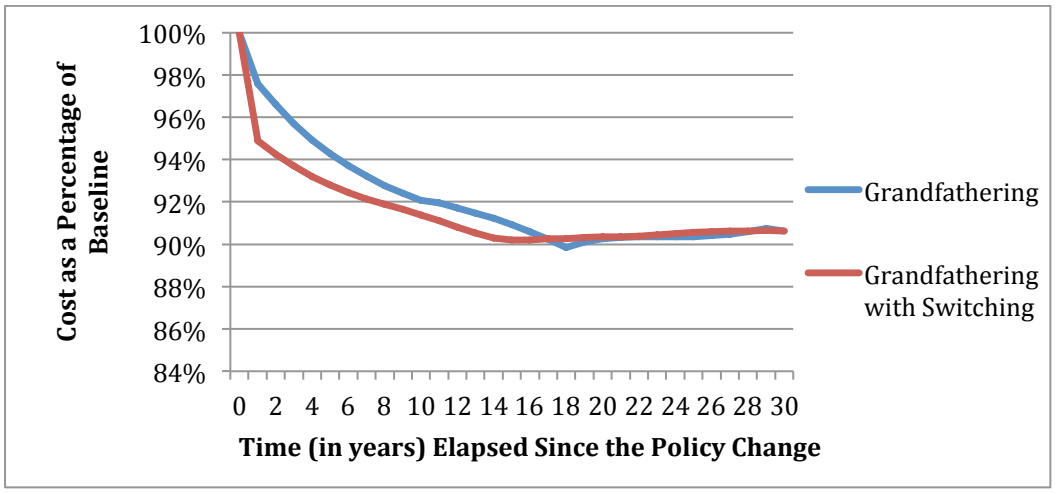


NOTE: Cohorts 9–12 are not seen in the figure because the participation rate is 0 percent.

Because we designed the retirement reform so that retention is unchanged—which maintains the size and experience mix of the force—one of the main differences between the two implementation strategies is in how quickly cost savings are realized. In the new steady state, we estimate that our retirement reform proposal would save about $1.8 billion annually for Army enlisted personnel. That is, the reform would allow the Army to sustain its current force size and experience mix at a cost of nearly $2 billion less per year, in the steady state. Figure S.2 shows the time pattern of reaching these cost savings under the fully grandfathered case versus when members have the option to switch to the new system. The figure shows the total cost of Army enlisted personnel under retirement reform as a percentage of the current baseline total costs when grandfathered members are permitted to switch to the new system and when they are not. As shown in Figure S.2, when members have the option to switch, the cost savings of the new policy are realized more quickly. Much of these cost savings occur because switching behavior enables the Department of Defense (DoD) to substantially reduce the accrual charge that is used to fund the military retirement system. The figure shows that the cost savings are

greatest after 19 years have elapsed in the case of full grandfathering and is greatest after 14 years in the case where grandfathered members can switch. In the case of full grandfathering, DoD incurs the cost associated with paying transition pay to those covered by the new plan beginning in YOS 20. This additional cost stops the continuous decline in cost, and in fact, partially increases cost relative to the 19th year. In the case of grandfathering with switching, DoD incurs the costs associated with transition pay even earlier, after 14 years, when those who switched are eligible to receive this benefit.

Figure S.2
Total Personnel Costs Under Retirement Reform as a Percentage of Current Baseline Total Costs When Grandfathered Members Do and Do Not Have the Option to Switch, by Time Elapsed Since the Policy Change



While the point of the analysis is not to argue for retirement reform or even a specific implementation strategy, our results do point to some clear policy results. We find that an implementation strategy that grandfathers existing members but gives them the choice to switch maintains the advantages of the full grandfathering policy, namely it allows policymakers to "keep faith" with current members and not break the implicit contract with respect to their compensation system. But unlike full grandfathering alone, allowing members to switch enables cost savings to be realized sooner than would otherwise be the case. Another advantage is that allowing choice is far more consistent with the current philosophy governing military manpower supply in the United States. That philosophy is one where military manpower is supplied by an all-volunteer force where people voluntarily choose to enter and stay in service. Thus, our analysis suggests that grandfathering with choice is an implementation strategy that should be given serious consideration if compensation reform is pursued in the future.

The capability to analyze the transition to a new steady state using the DRM approach represents a major step forward in the analytical tool kit available to researchers concerned with workforce management policy. While our analysis focuses on specific examples, the new capability has the potential to be applied to a wide variety of personnel and compensation policies as well as to workforces other than active duty personnel in the military. The capability is already being applied by related RAND projects.