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## Analytical Framework for Retirement Policy Decisions

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## Analytical Framework for Retirement Policy Decisions

### Disciplines

Economics

### Comments

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# **Positioning Pensions for the Twenty-First Century**

Edited by Michael S. Gordon,  
Olivia S. Mitchell, and Marc M. Twinney

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## Chapter 11

# **Analytical Framework for Retirement Policy Decisions**

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Constance F. Citro and Eric A. Hanushek

It is commonly recognized that the process of policy development and implementation is not closely linked to research and analytical efforts. This situation became very clear during recent policy debates on health care. As task forces, executive branch agencies, and Congress strove to define new organizational and regulatory policies to improve provision of health services, they repeatedly found that knowledge about key underlying relationships was missing. The dearth of relevant information was most apparent when analysts attempted to price out reforms and arrived at conclusions that differed by integer multiples. In some key ways, however, the situation with respect to health care policy is better than the situation with respect to retirement income policy. The heterogeneity of circumstances and the long delays between policy and effects place special analytical requirements on modeling retirement income policy. Moreover, the analytical infrastructure for many policies actively being considered today is noticeably weak.

In recognition of this situation, the Pension and Welfare Benefits Administration of the U.S. Department of Labor requested that the National Research Council form a Panel on Retirement Income Modeling.<sup>1</sup> This panel of experts was charged with recommending how the government could be better positioned to make decisions concerning various elements of retirement policy,<sup>2</sup> and here we describe the issues taken up by the Panel. The Appendix lists some of the specific recommendations issued by the Panel.

### **Background Perspective**

This effort is not aimed at designing public policies. Instead, its objective is to ensure that appropriate analytical tools are available when policies

are being designed. The development of appropriate tools, however, is complicated by the difficulty of the problem.

Retirement income for any individual results from a series of lifetime decisions and an array of current and past governmental policies. Some of these decisions appear quite remote from anything to do with retirement, even though they have strong implications for ultimate retirement income and well-being of the individual. For example, the private pension income of an individual is directly linked to occupational and firm employment choices made throughout the lifetime, even though the immediate circumstances of income and job satisfaction may loom much larger in these career choices. Government tax regulations may similarly affect the path of savings accumulation of individuals, having significant effects on the security provided by private savings.

The lengthy time periods involved in savings and retirement and decisions present special modeling challenges. Actions taken today will not have their full effects for many years to come; similarly, the need for various policies may not be apparent today because the problem will not be felt until some time in the future. Understanding savings and retirement decisions that unfold over the work life of individuals necessitates either extensive longitudinal data sets that follow individuals across careers and/or strong assumptions about how today's outcomes might relate to those in the future.

In many areas of research, we attempt to infer what will develop over time for one group by comparing this group today to an older group today. For example, if we are interested in life-cycle earnings of people with different amounts of education, we frequently take data from a cross-section of individuals and implicitly assume that today's 25-year-old twenty years from now will look like today's 45-year-old. Recently, however, data have become available both for repeated cross sections (e.g., the Current Population Survey) and for true panels that follow a set of individuals over time (e.g., the Panel Study on Income Dynamics or the National Longitudinal Surveys). Analyses of these suggest that observations and inferences about the future earnings of 25-year-olds differ significantly from those that would result from simple cross-sectional projections. At the very least, the economic environment and the relative demands for individuals with varying amounts of schooling have changed dramatically over the past two decades, and, while there are still debates about the correct interpretation of how earnings patterns have changed, there is no disagreement that the simple cross-sectional analysis is prone to very distorted pictures. The availability of rich longitudinal data has taken us along the road of being able to separate the natural life-cycle changes from effects of different time periods and from being in different age cohorts (even though analytical difficulties still remain).

With savings and retirement decisions, the same basic analytical difficulties are present and are, if anything, stronger. Analysis of individual decisions in these areas must sort out life-cycle changes from other effects that occur over time. But layered on top is the much more central role of governmental policies that are in place at any point in time and that might be expected to change over time. A similar statement holds for the policies of firms and organizations providing private pensions. Thus, the active and continuing decisions of individuals are conditioned by expectations about firm and governmental decisions, making the evolution of decisions much more complicated. Moreover, because of the undeniable importance of the evolving policy environment, the data and modeling requirements become much more central—or, put the other way, assumptions required to convert simple cross-sectional analyses into statements about future outcomes are much more tenuous.

A related issue is the interaction of individual and institutional decisions. If we take the traditional view that retirement income results from a combination of Social Security support, individual pension incomes, and private savings, it is immediately apparent that interactions among the various components are likely to be very important. Decisions that materially affect the expected pattern of Social Security payments almost certainly will have an impact on how individuals prepare for retirement through their own savings behavior. They may also influence the patterns of firm-provided pension plans. Thus, even though individual components of the retirement income package might usefully be separated for some purposes, understanding the full implications for retirement income security of policy initiatives is unlikely to be possible without careful consideration of the interactions across areas.

Many of the most important implications for the consideration of retirement income policy flow from distributional considerations. Specifically, the heterogeneity of circumstances—related to past employment decisions, individual savings behavior, health considerations, and luck—implies that retirement situations vary widely. Moreover, some of the worst off in terms of retirement incomes are just those who are least self-sufficient or least able to deal with unfortunate circumstances. Because these people typically are a focal point of public policy concerns, it is important to understand the distribution of possible retirement outcomes and how public policies will affect this distribution. Obtaining information about distributional outcomes adds yet a further complexity to modeling efforts. Many approaches to understanding behavioral outcomes are better suited to describing average behavior than to identifying the distributional impacts. This, again, is further complicated by the presence of important programmatic and behavioral interactions across areas.

The difficulties of modeling and projecting the impacts of various policies itself introduces another element. The complexity suggests that there will remain considerable uncertainty about the ramifications of any given policy. Read backwards, the development of sound policies would be aided by an understanding of the magnitude of any uncertainty in the analysis. Importantly, because projections and uncertainty may vary significantly across different policies proposals, estimation of the underlying uncertainty involved would allow proposals to be compared in natural ways.

The provision of information about uncertainty is, however, seldom done in any policy setting. There are natural reasons for this. First, many models used to assess possible effects of policy are very complex, making conventional calculation of uncertainty, confidence intervals, and the like very difficult. Second, projections of the impacts of policies can seldom be compared with what actually happened, because the policies that are simulated are seldom actually put into place. In other words, in developing a set of policies, a wide range of alternatives is frequently discussed and evaluated, but the ultimate policy might not even be among those that were evaluated. Third, as discussed previously, the projections of outcomes far into the future makes assessment of accuracy difficult or impractical if it is necessary to wait for the full evolution of outcomes. Fourth, there has never been very strong desire by policy-makers to have information about uncertainty in policy analyses. Indeed, they frequently make known their explicit preferences for point estimates of any outcomes. Nonetheless, a sensitivity to uncertainty in analyses would seem valuable if not essential, but providing such information requires different approaches than commonly available now.

### **Some Immediate Conclusions**

Within this background and following the preliminary analysis of the Panel on Retirement Income Modeling, some conclusions begin to emerge. While details on how to design a research and modeling program to prepare best for future policy decisions are unclear at this time, some basic foundations emerge.

#### *Current Lack of Integrated Models*

Current retirement modeling is marked by special-purpose models which focus on very specific factors or issues. Perhaps the broadest model in regular use is the Social Security model(s) that provide projec-



tions of the status of the Social Security system. This cell-based approach to understanding the evolution of Social Security income is the primary tool for evaluating proposed changes in the Social Security system, such as those flowing from the current imbalances in the trust fund. While powerful from the narrow viewpoint of the Social Security system, this model does not provide for consideration of other components of retirement income and their interactions, does not provide distributional information about retirement incomes, and does not assess the underlying analytical uncertainty involved. (Additionally, as discussed below, the model itself is not available for use or assessment by outside researchers and users.)

While there have been past attempts to integrate the various components of retirement income in microsimulation efforts, these proprietary models have not been maintained or evaluated in recent years. The most significant of these (DYNASIM2 and PRISM) do not provide a current basis for analyzing policy issues and would require considerable modification and updating to be useful. Some other scattered efforts to model retirement incomes are available, but few would believe that these are ready to be used in active policy debates.

Almost any effort to provide policy analysis and advice will require some way to integrate the effects of policies across different components of retirement income (and across the underlying behavioral decisions). This is not to say that all modeling efforts will have to be the "grand model" that considers all facets, but it is to say that there must be mechanisms for understanding the feedbacks within and across areas of policy changes.

### Data Shortcomings

Matched data that combines administrative information with other descriptions of individuals have been particularly important in modeling retirement incomes and behavior. During the 1970s, important efforts were made to obtain exact matches of individual Social Security histories with Current Population Survey data. These databases, remarkably, provide the most up-to-date historical information that is publicly available. (A subsequent exact match by Social Security has not been available for public use.) Such matches of administrative records and of basic survey data provide an extraordinarily important source of information upon which to build models of retirement income.

Concerns about confidentiality of data frequently enter these discussions, as they rightfully should. On the other hand, a variety of statistical, legal, and organizational approaches are available to protect the confi-

dentiality of individuals. None of the concerns, if dealt with in an appropriate manner, appears sufficient to overcome the importance and usefulness of creating new matched data sets that incorporate the wealth of historical data available from administrative records.

Panel data on individuals over time have also proved to be an essential element of modeling efforts for behavior that evolves over the life cycle. In recent years, researchers and analysts have discovered the power of panel data for distinguishing the effects of individual differences from more fundamental behavioral responses. Further, the insights gained from observing how individuals respond to different stimuli and circumstances are often clearer and less complicated than efforts not based on actual data about specific individuals. Panel data are considerably more expensive because the same people must be followed and coaxed into repeated responses, but there is a growing appreciation for the fact that panel data are sufficiently superior to more extensive data available only as a single cross section to warrant such spending.

The importance of obtaining panel data is built into recent efforts such as the Health and Retirement Study (HRS). The HRS effort is designed as an ongoing panel with data collections already fielded in 1992 and 1994. Nonetheless, because of the expense of panels and because many budgetary decisions are made myopically, there is constant pressure to let large panel data efforts lapse. Doing so in the area of retirement decisions would be very shortsighted.

Finally, because an important component of retirement income comes from firm-based pension plans, any general modeling effort must consider the interaction of individuals and firms. Yet few data that match individuals with firms are currently available. Such data as exist generally are very limited in information about firms (if based on household surveys) or on individuals (if based on firm surveys). The need for better data matching individuals and firms has been long recognized, but concerns about expense and about confidentiality have prevented such developments. For understanding the full character of retirement plans and prospects, more attention to such data seems essential. Further, in line with the previous point, panel data offer exceptional analytical promise, even though such data are almost never available for firms.

### Organizational Issues

A series of organizational issues also seems important to questions of developing adequate policy models. At the top of the list comes a concern about the fractionated nature of policy concerns and policy modeling. Within the federal government many different organizations and agen-

cies, each with its own mission, enter into policy decisions. The Social Security Administration is perhaps largest and most noticeable, but the Department of Labor, the Department of Health and Human Services, and the Department of the Treasury have important programs and policies that influence the income and security of retired persons. From initial investigation, it would appear that each of the separate agencies involved in retirement income policies tends to stick quite closely to its mission and not to allow its policy analysis and modeling to stray far off into other areas. This would be sensible if policies could be segregated and well-insulated from other institutions—a situation that does not appear to hold.

Fundamentally, it appears critical that any design of sensible retirement income policies comes from the joint efforts of the affected agencies. A corollary is that developing useful policy models should involve the active interaction (and support) of the various agencies. As with many collective action problems, achieving good results will almost certainly involve some organizational changes, such as cross-agency commissions or the more active involvement of the Office of Management and Budget. Without taking a position on the specific institutional structure, it is clear that some institutional structure is needed.

Another aspect of the organization of modeling efforts relates directly to the construction of integrated models. In the past, private contractors have developed some of the most complete models related to retirement incomes (DYNASIM2 and PRISM). These very large microsimulation models were a result of the available technology. They attempted to manipulate data and simulate complicated family behavior at the level of the individual household. As such, they were constructed to operate on mainframe computers. The pattern of funding and support also dictated that, while complicated, little documentation was available. As a result, they have always been black boxes that have not been subjected to close scrutiny and validation efforts by people other than their designers. A similar story holds for the models of individual government agencies. For example, the details of the one or more models supporting Social Security Administration projections are unknown to outside researchers and analysts.

Given the current changes in technology, which make most computational efforts a relatively small portion of total costs, it is natural to expect (and demand) that future developments proceed in much different ways. Specifically, modeling efforts, capitalizing on current computer technologies, should be much more transparent and portable. The idea behind this is quite simple: scrutiny by the scientific community is likely to improve the reliability and acceptance of policy models. Further,

there is little argument for government creation of analytical monopolies in situations where the government is a primary funder of development and where the results of the modeling efforts could have important ramifications for the formulation of public policies.

The implementation of such an idea is complicated. It rests not only on how models are developed but also on issues of documentation, portability across computer platforms, ease of use, and the like. Nevertheless, the general principle is clear, even though not a central part of any past decisions.

A final organizational issue relates to the interaction between the research community and the policy community. The design of databases and of policy models is a complicated issue fraught with possibilities for serious mistakes. Because we do not currently have an existing structure to build on in developing integrated policy models of retirement income, the best way to proceed is uncertain. One implication, since both initial and continuing design decisions can have very long-term effects, is that regular mechanisms for getting both the broad policy community and the broad researcher community to evaluate plans and progress should be instituted. An ongoing and broadly based advisory panel is an obvious approach.

## **Conclusions**

The conclusions are simple. First, we appear to be a long way from having an adequate base for making informed decisions about retirement income policy. Part of this is very explicable. The problems are particularly difficult, and solutions will demand the joint efforts of different agencies and researchers when an appropriate institutional structure is currently lacking. Nevertheless, almost any general consideration of future policy debates would place various aspects of retirement income high on the agenda. The issue is simply whether or not we make these decisions based on a good understanding of the likely ramifications of any policies. Second, much of any more complete policy modeling effort will require more extensive data than are currently available. Because there are long lead times in developing good databases, efforts should be directed at these issues immediately (and currently existing efforts such as the Health and Retirement Study (HRS) and the Study of the Assets and Health Dynamics of the Oldest Old (AHEAD) efforts should receive continued support). Third, the organization of the research and development effort will undoubtedly have a strong influence on the results. The current approach of highly compartmentalized efforts seems inefficient and possibly very limiting.

## Appendix

The translation of the various considerations into operating principles for government agencies is easiest to see through the recommendations in the Panel's interim report (National Research Council, 1995).

### Openness in Governmental Model Development

Much of prior policy modeling sponsored by the government and conducted by various agencies has not been widely available to outside users and analysts. While there are some circumstances which might justify closed modeling, in general it leads to inferior policy analysis. The models escape scrutiny of other analysts and cannot be subject to the same verification process.

*Recommendation 1.* Retirement-income-related policy models that are operated by government agencies or that are developed with government funds should be made publicly available to the policy and research communities in a timely manner.

*Recommendation 2.* Retirement-income-related policy models should be adequately documented so that analysts other than the model developers can readily use them.

*Recommendation 3.* Government agencies should take advantage of the dramatic changes in computing technology and the dramatic reductions in computing costs to develop (or support the development of) retirement-income-related policy models that are fully accessible to the research community

### Ensuring Availability of High Quality Data

One lesson of many policy initiatives of the past has been that having relevant data at the time of discussion is extremely important. Analysis can seldom overcome the limitations of incomplete or erroneous data. At the same time, data collection efforts must begin well before any analytical uses are contemplated. There must also be a commitment to continuing the data collection efforts, particularly given the greatly enhanced value of having panel data.

*Recommendation 4.* Relevant agencies should continue to support existing retirement-income-related panel surveys of individuals. Such surveys, which permit analyzing behavioral responses to policy changes over time, are essential for retirement-income-related research that can inform the development of adequate policy models. They must be contin-

ued if they are to provide sufficient longitudinal information for analysis purposes.

*Recommendation 5.* Relevant agencies should develop and implement data collection systems that provide improved information on the nature and extent of employer retirement-income-related benefits and on employer and worker behavior relevant to retirement. The new data should include panel studies of employers and samples of their employees. Researchers and policy analysts who will use these data should be involved from the outset in the design of the data systems.

*Recommendation 6.* Relevant statistical and administrative agencies should create up-to-date matched files of survey responses and administrative records that, with suitable protections to maintain the confidentiality of individuals or employers, are available for retirement-income-related research and policy analysis use.

### Organization of Modeling and Research

The difficulties of mounting a coherent research effort with decentralized agencies and without good mechanisms for agency/academic cooperation are especially noteworthy. While coordinating devices have the chance of introducing extra regulation and bureaucracy, some balance seems necessary.

*Recommendation 7.* Relevant agencies should explore ways to integrate retirement-income-related research, data collection, and policy modeling, so as to obtain the most cost-effective use of available resources. Such integration should represent a high priority goal in order to minimize duplication of effort, ensure that important issues are not overlooked, and ensure that priorities are set in light of the full range of policy concerns.

*Recommendation 8.* Relevant agencies should explore mechanisms for bringing academic researchers and government analysts together on a regular, routine basis to facilitate the development of high quality, relevant models and associated data for addressing retirement-income-related policy concerns.

### Notes

1. Financial support for this panel was also provided by the National Institute on Aging and by TIAA-CREF. See National Academy of Sciences (1995).

2. The Panel members were Henry Aaron (Brookings Institution), Alan J. Auerbach (University of California, Berkeley), Christopher Bone (Actuarial Sciences Association), Peter Diamond (MIT), Eric A. Hanushek (University of Rochester), Michael Hurd (SUNY, Stony Brook), Olivia S. Mitchell (University

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