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New Dynamic Public Finance

Mikhail Golosov and Aleh Tsyvinski*

Many problems in public finance and macroeconomics, such as the taxation of capital or the provision of Social Security and disability insurance, are dynamic in nature. The individuals who pay taxes or claim benefits are long-lived. The tax and benefit policies in place in one period can affect their behavior in other periods. For example, increasing retirement benefits may affect individuals’ behavior and savings in earlier years.

The New Dynamic Public Finance literature extends the traditional literature on optimal income tax and optimal program design, much of which focused on settings in which individuals made decisions in a single period, to focus on such dynamic settings.¹ While the same efficiency-equity tradeoffs that apply in single-period settings also arise in dynamic settings, there are additional tradeoffs between providing insurance and preserving incentives. When individuals live for many periods, they may experience both favorable and unfavorable “shocks” as they age: unexpected increases in their wages, or the early onset of a disability, for example. Public policy can provide insurance against adverse shocks, but it may do so at some cost in incentives. Much of the

research in New Dynamic Public Finance is directed at understanding how one can design social insurance or redistribution systems that achieve distributional objectives while ensuring necessary incentives to provide effort or work throughout individuals’ lives.

When designing policy in dynamic settings, it is important to take account of the random shocks that confront individuals over time. These may be shocks to earnings capacity, or health status, or financial market returns. In each case, individual taxpayers or program beneficiaries are likely to have more information on their circumstances than the government does. The government cannot easily observe health status or hourly wage rates, and it cannot condition its tax or social insurance rules on them. The policy challenge is to preserve incentives for individual work and saving while still raising the necessary funds for redistribution or government revenue.

Consider a simple example of a dynamic social insurance problem: an able young worker may become disabled later in life. It may be possible to claim to be disabled even if one is able to work. For example, one can pretend to be suffering from back pain which is very difficult to verify. The fundamental challenge in designing a disability insurance system is to provide adequate transfers to truly disabled workers while discouraging fake disability applications. What a

worker believes about his future decisions regarding whether to claim disability will affect his labor supply and saving choices while young. If he believes that he is very unlikely to apply for and receive disability benefits in the future, for example, then he is likely to save more in his younger years. Similarly, an individual’s past saving choices may affect his willingness to fake disability and to claim disability benefits at an older age.

We highlight two sets of findings that have emerged from our own research, and that of other scholars, in the area of New Dynamic Public Finance. First, the tax treatment of saving is a key policy instrument for affecting dynamic incentives, and policymakers may need to consider its impact on a variety of labor market incentives. Second, the availability of private insurance against various risks may have an important effect on the way that government tax and transfer programs influence household behavior.

Tax Policy toward Saving Can Affect Dynamic Incentives

In our work with Narayana Kocherlakota, we develop an important insight about policy design in dynamic settings. When agents receive random shocks to their earnings capacity, one feature of government policies that achieves a Pareto-efficient allocation—one in which no one could be made better off with-

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out making someone else worse off—is a tax that discourages savings.² This result holds quite generally, as long as there is some uncertainty about future individual shocks. Our work on disability insurance suggests that a key feature of policies that preserve incentives while achieving redistributive goals is an *asset-test* in which disability (or more, generally, retirement) benefits are paid only to individuals who have assets below a specified limit³. That is, asset testing is an implicit tax on savings that discourages fake applications for disability insurance. More generally, in both tax and social insurance settings, policies may be conditioned on the amount of savings that an individual accumulates, and they may be history-dependent in the sense that eligibility for benefits may depend on the applicants' past actions and experiences.

In the disability example above, we can provide an intuition for the potential role of a tax on savings. Consider a system of disability transfers that gives a disabled worker \$1000 per month once he or she is classified as disabled. An able worker contemplates whether to continue working, or to claim disability next month. Assume for simplicity that the disability verification process works poorly, so that if he reports that he is disabled, he will surely receive the \$1000 monthly disability payment going forward. If he does not fake disability, however, and claims disability only if he is truly disabled, his income switches from being a certain \$1000 per month on disability to a “lottery”: \$1000 per month if he is disabled, and a higher amount if he is able and continues to work. Someone who intends to fake disability will prepare for that eventuality by saving more in earlier periods, because he knows that at some point he will claim disability and his income will drop to \$1000/month. A disability insurance scheme that introduces a tax on savings, for example by paying benefits only to those with low levels of assets, will help to discourage fake applicants.

One of the central insights of the New Dynamic Public Finance research program is that when designing a taxation or social insurance system, one must

take into account agents' saving decisions. Building on work by Christophe Chamley and Ken Judd⁴, we know that efficient long-run policies set the tax rate on capital income to zero. A key difference between our analysis and theirs is that we allow for individuals to experience various “shocks” over time, which means that insurance considerations can affect the nature of the efficient policy.

Interaction between Private and Public insurance

New Dynamic Public Finance places central emphasis on the insurance element of public programs, so it is no surprise that the structure of *private* insurance markets is a key consideration in public program design. Our work examines how the impact of various government transfer and insurance programs depends on the other insurance options available to households.⁵ In many circumstances, private markets can provide insurance against shocks that individuals experience. Private insurers offer health, disability, and property-casualty insurance. They also offer annuities to insure against longevity risk. The presence of private competitive insurance markets may significantly change the economic effects of government policies, and the trade-off between redistribution and the provision of incentives. Suppose there is no government insurance against disability shocks. One can expect then that the private insurance markets will arise to provide insurance. That does not mean that the private insurance markets will be able to provide perfect insurance—the problem of determining who is truly disabled is still present. But it is possible, for example if the key market failure is the inability to observe true disability status, for the private market to be able to provide the same degree of insurance as the government. If the government were to create a public disability program in this setting, its only effect would be to completely “crowd-out” private insurance. If a government provides more insurance, the competitive markets will provide correspondingly less: the government insur-

ance and the market insurance are perfect substitutes.

Our research suggests that relatively specific features of the private insurance market, such as whether an insurer can restrict an insurance buyer to purchasing insurance against a particular risk from only one insurer, or whether an insurer can monitor all of the other insurance contracts that an individual purchases, play a key role in determining whether government provision of insurance can lead to a more efficient allocation of risk and can improve the tradeoff between insurance and the provision of incentives. For this purpose, “insurance contracts” should be interpreted quite broadly. For example, an individual who saves today to prepare for adversity tomorrow can be thought of as purchasing insurance.

The key takeaway from our work is that considering what private insurance markets can and cannot do is essential to evaluating the welfare effects of increasing government provision of insurance. In many cases, the only effect of government is crowding out of private insurance. In other cases, the government may be able to correct inefficiencies in the provision of private insurance. It is important to remember, however, that the set of private insurance markets is not fixed over time. When government policy changes, the set of insurance contracts offered by private firms may also change. Policy designers should be careful about assuming that the nature of insurance arrangements offered by the private sector might generate a misleading account of how new government social insurance programs affect the private insurance marketplace.

The Way Forward

A key challenge for researchers in New Dynamic Public Finance is developing concrete, data-based practical implications of theoretical models. Progress on this front is just beginning. In our work with Troshkin (2009), we show how techniques that are familiar to public finance economists from the analysis of static taxation models can be extended to the dynamic settings. Adding dynamics to the

standard economic model introduces both analytical challenges and greater richness for the possible set of policies that might be implemented. It is possible, for example, to consider history-dependent policies, (taxes or transfers that depend on past work and savings decisions), and dynamic incentives such as asset-testing improve incentives and redistribution.

Many unresolved questions lie ahead, and answering them will require both a general algorithm that will allow us to solve quantitatively a broader set of models and empirical work that provides realistic distributions for earnings and health shocks to individuals. It is also important to bridge the gap between the research in this literature and the earlier research which addressed many similar questions but did not incorporate dynamic elements.⁶

¹ For a survey see M. Golosov, A. Tsyvinski, and I. Werning, "New Dynamic Public Finance: A User's Guide," in NBER Macroeconomics Annual, D. Acemoglu, K. Rogoff, and M. Woodford eds., Cambridge, MA: MIT Press, 2006; and N. Kocherlakota, *The New Dynamic Public Finance*, Princeton University Press, forthcoming 2010.

² The general proof is provided in M. Golosov, N. Kocherlakota, and A. Tsyvinski, "Optimal Indirect and Capital Taxation," *Review of Economic Studies*, Vol. 70, No. 3, 2003.

³ M. Golosov and A. Tsyvinski, "Designing Optimal Disability Insurance: A Case for Asset Testing," NBER Working Paper No. 10792, September 2004, and *Journal of Political Economy*, Vol. 114, No. 2, 2006.

⁴ K.L. Judd, "Redistributive Taxation

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⁵ M. Golosov and A. Tsyvinski, "Optimal Taxation with Endogenous Insurance Markets," *Quarterly Journal of Economics*, Vol. 122, No. 2, 2007.

⁶ E. Saez, "The Desirability of Commodity Taxation Under Non-Linear Income Taxation and Heterogeneous Tastes," NBER Working Paper No. 8029, December 2000, and *Journal of Public Economics*, Vol. 83, No. 2, 2002; and P. Diamond, "Optimal Income Taxation: An Example with a U-Shaped Pattern of Optimal Marginal Tax Rates," *American Economic Review*, Vol. 88, No. 1, 1998.

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Efraim Benmelech is a Faculty Research Fellow in the NBER's Programs on Corporate Finance and Development of the American Economy. He is also an associate professor of economics at Harvard University.

Benmelech received a B.A. in economics and an M.B.A. from the Hebrew University at Jerusalem, and a Ph.D. in financial economics from the University of Chicago's Graduate School of Business. He joined Harvard's faculty when he graduated from the University of Chicago in 2005.

Benmelech's research is mainly in the field of corporate finance, focusing on bankruptcy, financial contracts, and the real effects

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Benmelech lives in Newton with his wife, Shikma, and their four children: Machol, Shoham, Attar, and Millo.

