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Commentary

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Costas Azariadis and Vincenzo Galasso address a basic but very important question about the social security system. What are the incentives for young workers to contribute funds and thus maintain such a system? The issue is to understand the economic and political forces that combine to provide the foundations for a social security system.

The starting point of the analysis is perhaps one of the most familiar propositions in macroeconomics. Consider a simple overlapping generations (OLG) model in which identical agents live and consume in each of two periods and have endowments of goods in both periods of life. Though agents are identical within a generation, the potential exists for exchange across generations. Competitive equilibria of this economy may be inefficient: Owing to the infinite horizon, it may be possible to start at autarky (a competitive equilibrium) and redistribute goods across agents of different generations. The desirability of this intergenerational redistribution comes from the pattern of endowments and the nature of intertemporal preferences as shown in Figure 1 of "Discretion, Rules andVolatility."

NO OUTSIDE ASSET

Here we see the classical problem of the overlapping generations model without an outside asset: How can society support allocations that dominate the competitive equilibrium? There are numerous answers to this question.

One, which Azariadis and Galasso do not discuss, is the introduction of an outside asset such as fiat money. As is well understood, there is a monetary steady state that coincides with the golden-rule allocation. The fact that they do not emphasize this solution does not bother me that much since a social security program facilitates transfers that are quite different from those supported by money.

The second, which Azariadis and Galasso pursue, views the dynamic inefficiency as an argument for the introduction of a social security system. Clearly, the golden-rule allocation is achievable in the presence of a fiscal system that sets a tax on the young and transfers the revenues from the tax to the old.

How do we achieve such a transfer? That is the big question raised by a number of experts, including Azariadis and Galasso. One answer is to simply assume that government can commit, at the beginning of time, to a sequence of taxes on the young, leading to transfers to the old. A government whose objective function corresponds with that of the representative agent will then choose a tax scheme that will support the golden-rule allocation.

IMPORTANCE OF COMMITMENT

Why does this not answer the basic question about the social security system? It does to the extent that a commitment to future policies is feasible. Commitment of this nature is simply too strong for at least two reasons.

First, it ignores the fact that future generations can, in fact, alter policy. It is difficult to imagine a political system with absolutely no flexibility at all. Second, in a stochastic environment, the actual policy would have to be state-contingent, which would be an enormously complex constitutional agreement. Given that such state dependence is infeasible, it is clear that some flexibility must be left to future generations and thus the commitment necessary to support the golden rule is certainly not present. In the United States, we are certainly well aware of this as the debate

over revisions to our own social security system continue.

In the absence of commitment, it is natural to move to the other extreme in which the social security system is revised each period. As discussed elsewhere by many experts, this turns the social security problem into a repeated game. However, there are some differences between this problem and the usual repeated game. First, here we are studying an OLG structure in which the identity of the players is actually changing over time in contrast to an infinitely repeated game by a fixed number of players. Extensions of the folk theorem to overlapping structures is described by Cremer (1986) and Kandori (1992). Second, there are many agents in each generation and thus there is strategic interaction both within and across generations.

A difficulty with the repeated game resolution of the social security problem is the abundance of equilibria. These include the one-shot Nash equilibria in which the generation with voting power (the young in this article) extract as much as possible from the other generation. Generally, this is not the golden-rule allocation. In addition, there are a multitude of other equilibria in which there are some social security transfers supported by the (credible) threat of future punishments in the event of defection. Basically, the young do not deny the old their benefits because the young realize that such an act would jeopardize their own future benefits.

To overcome this abundance of equilibria, Azariadis and Galasso create a partial commitment environment. This is the main contribution of the article. The idea is rather intriguing. Suppose that in each period the young offer the old a new tax rate. The old can choose either the proposal put forth by the young or—and this is critical—the tax rate that was in force in the previous period when the old were young. This gives the old veto power over any changes from the status quo.

The strength of the article is in the rich dynamics Azariadis and Galasso are able to develop from this political structure. Clearly, the game within a period is now dynamic owing to the presence of the status quo as an option for the old. Accordingly, the strategy of a representative young agent is complicated by the fact that an accepted tax proposal will then influence the choices of the next generation of young agents. The authors do a nice job of characterizing the set of equilibria for this game.

A MAJOR CONCERN

My main concern with this article is with the justification for this partial commitment. What supports the order of moves within a period? What supports the right of the old, a minority in the political arena, to veto a proposal of the majority? One cannot expect this to be self-enforcing since the outcome would then be one of the equilibria without commitment. Instead, this process clearly requires partial commitment. But what is the source?

That is a tough question. The difficulty is that we do not have a model of the technology describing the political process. But without such a description, how can we tell what types of commitment are feasible and which are not? In other words, why is it that a society is unable to commit to a particular tax rate that supports the golden rule but can commit to the more complex political process described by Azariadis and Galasso?

To me, a useful way to proceed is to describe the technology of political decision making by a cost structure. This is the approach taken by Kotlikoff, Persson and Svensson (1988) though they also discuss the use of trigger strategies. The idea is that partial commitment arises from the cost of change. One could imagine that this cost would have both a fixed component and a variable component. The fixed component would represent the cost of bringing together a decision-making body and the variable component would be a function of the extent of changes in the system.

Though I have not completely worked out such a model, the result would have to be in the same spirit as (S,s) model: There

would be relatively infrequent changes to policy and such changes would occur when the policies were sufficiently far from the desired policies. In fact, one could imagine that this gap between actual and desired policies arose from underlying changes in the environment, such as demographics. I think this is a fairly good description of current policy making. In addition, this model provides some basis for an outcome with positive social security transfers as long as the costs of change are sufficiently high.

Though this cost structure may appear ad hoc, I do not think that simply stating that certain commitments are feasible and others are not is an advance. Perhaps we would all agree that more work on the nature of the technology of social decision making is in order.

REFERENCES

Cremer, Jacques. "Cooperation in Ongoing Organizations," *Quarterly Journal of Economics* (February 1986), pp. 33–49.

Kandori, Michihiro. "Repeated Games Played by Overlapping Generations of Players," *Review of Economic Studies* (January 1992), pp. 81–92.

Kotlikoff, Laurence J., Torsten Persson; and Lars E.O. Svensson. "Social Contracts as Assets: A Possible Solution to the Time-Consistency Problem," *The American Economic Review* (September 1988), pp. 662–77.