Money, Inflation, Fiscal and Political Issues: An OLG Approach

The Big Picture. We took the OLG model apart and considered the role of money. To keep things tractable without losing the main message, we shut down production and considered instead an endowment general equilibrium environment. The monetary economics of OLG here is a metaphor and mathematically, it is similar to the ideas of Knut Wicksell's triangle. Wicksell's fable was notion of spatial separation of traders and the lack of a single Walrasian market where trades could be supported. In the OLG parable, we may have Walrasian markets in each period but agents do not coexist temporally.

In class we showed that, in an extreme environment, in the absence of any means of saving (e.g. capital or storage), a competitive equilibrium outcome is Pareto inefficient. That is, compared to a hypothetical planner's benevolent allocation, the competitive equilibrium allocation was such that if possible, some agents could be made better off without making some others worse off. We next supposed that old agents were endowed with some $H > 0$ amount of intrinsically worthless currency. Note that no one in the model, including the issuing government, has promised to back this worthless paper by redeeming it for goods. Nevertheless, Samuelson showed that there exists a belief system in equilibrium that makes the currency have indirect value. This was an outcome where currency is backed by expectations that it has value despite no promise of convertibility.

We could also have studied what happens to the demand for money in equilibrium if there were a competing storage mechanism. We get three kinds of possible cases depending on the relative return to money (i.e. gross deflation versus the return on storage). If the relative rate of return to money is larger than one then agents hold only money as the means of intertemporal trade. Otherwise, if this is less than one, then they choose storage. The indeterminate case arises when the two assets have the same return. Then we have indeterminacy in the portfolio composition of the two assets held by agents. With the introduction of money supply growth, and therefore inflation, we next saw that, in general, the monetary equilibrium is no longer Pareto efficient. In the long run, inflation is not superneutral.

In this tutorial we do a few exercises extending on the framework that we have studied in class.

Question 1. *Seigniorage and deficit financing.* There is a continuum of young agents on $[0, N]$ each period and $N > 0$ is fixed. There is no population growth, so the size of the population of each type of agent differentiated by age is always 1. Suppose the old agents pre-existing in time $t = 0$ were issued fiat currency $H > 0$ and the young agents in every period $t \geq 1$ young agents purchase M_t^d units of currency at a price $1/P_t$ of units of the time t consumption good. At each $t \geq 1$, each old agent exchanges her holdings of currency for the time t consumption good, c_t^{t-1}. Suppose the young and the old at time $t \geq 1$ are, respectively, endowed with $y_t^t = e_y$ and $y_t^{t-1} = e_o$, and $e_y > e_o > 0$. The superscripted time indexes refer to the agents period of birth. The well-behaved per-period utility function is $U(c)$. The agent's lifetime payoff is $U(c_t^t) + \beta U(c_{t+1}^t)$, with $\beta \in (0, 1]$.

Now suppose the government levies lump-sum taxes τ_y and τ_o on each young and old agent, respectively, at each $t \geq 1$. The initial time $t = 0$ old people (there are N of them) is endowed with e_o units of consumption good and currency $M_0 > 0$. Now at each date $t \geq 1$, the (consolidated) government budget constraint in per capita consumption terms is given by

$$\frac{M_t - M_{t-1}}{P_t} = g - (\tau_y + \tau_o),$$

where g is a constant stream of government spending per capita, and, $P_t \in (0, \infty]$ is the price level. Note if $P_t = \infty$, then set the government budget constraint to

$$g - (\tau_y + \tau_o) = 0.$$

(Note that we do not admit government debt into this model. This is to simplify your analysis. Also we can interpret this as a developing country whose government has extreme difficulty borrowing through domestic and international markets.)

1. Write down the young agent's (at time $t \geq 1$) budget constraints.

2. Write down the young agent's (at time $t \geq 1$) decision problem.

3. Define a monetary equilibrium for this economy.

4. Show that the monetary equilibrium can be characterized by a difference equation in terms of the one-period gross return on money, $\Pi_t^{-1} := P_t/P_{t+1}$.

5. Consider only stationary (steady state) monetary equilibria. Suppose $U(c) = \ln(c)$. Show that there may be up to two distinct stationary (i.e., steady state) equilibria. [Note: In a stationary monetary equilibrium, we have for all $t \geq 1$, $\Pi_t = \Pi$ for some Π.] Show that one stationary equilibrium Pareto dominates the other.

For the next two parts, write short essays in NO MORE THAN TWO pages in total. In a exam setting, apart from testing your economic logic, you will also be graded for clarity in your exposition and writing.

Question 2. We have two quotes regarding long-run inflation from two Nobel laureates in Economics. Milton Friedman famously said, "Inflation is always and everywhere a monetary phenomenon". Tom Sargent was quoted to have said, "Persistent high inflation is always and everywhere a fiscal phenomenon."

Discuss what Sargent's statement meant in relation to your results derived in Assignment 3 above. (See also the attached letter by Sargent to a minister in Brazil during the period of hyperinflation there.)

Question 3. What else could today's government do to finance an increased budget deficit, if it cannot print more money to its liking? What can prevent a government from having direct control of the money supply? What implications does this alternative scenario have on future populations and future governments?

Excerpt from http://www.h-net.org/~latam/jrnl/braudel/jrnlbraudoct93.html:

LETTER TO ANOTHER BRAZILIAN FINANCE MINISTER

Thomas J. Sargent

Dear Sir:

Events in Brazil since 1986 have proved again the time-honored arithmetical principles of government finance that I summarized for one of your many predecessors in January 1986. A country's inflation rate at any moment emerges out of the sustained monetary and fiscal policies that it chooses, now and in the future. The phrase "in the future" occurs in this formula because the value of a country's currency is vitally affected by what people think its value will be tomorrow. This "in the future" caveat has frequently played the villain in formulations of half way doomed plans that wished indefinitely to postpone the unspecified painful adjustments that would have been necessary to make the plans fit together.

I prefer not to catalogue the half way plans that your government has started and then dropped. Your government has tried many tricks in vain attempts to avoid confronting the fact that inflation originates in monetary and fiscal policies. You have tried price controls, credit controls, and tight money unaccompanied by fiscal constraint. These experiments were interesting for macroeconomists (they produced results that our models had led us to expect), but they were costly for your country.

The Pure Economics are Simple

Persistent high inflation is always and everywhere a fiscal phenomenon, in which the Central Bank is a monetary accomplice. A government administering a fiat paper currency has an intertemporal budget constraint that forces its Central Bank and fiscal authorities to cooperate, sooner or later, somehow. Persistent inflation is caused by a coordinated monetary and fiscal police regime that calls for the Central Bank persistently to print currency to supply the fiscal authority with revenues via an implicit 'inflation tax.' A Central Bank cannot by itself stop an ongoing inflation against the will of a fiscal policy authority determined to run persistent budget deficits. Indeed, a Central Bank determined to 'go it alone' and to fight inflation with tight money in the face of persistent deficits can achieve only temporary gains in the battle against inflation, and at the cost of making inflation worse in the future. This outcome results because, in the face of a persistent fiscal deficit, a Central Bank can achieve go-it-alone tight money only by forcing the fiscal authority to issue increasing amounts of interest bearing debt: without a fiscal adjustment down the road, the monetary authority will eventually be forced to generate more inflation down the road in order to raise the inflation tax. This arithmetic is unpleasant, but it is also true.

Credibility

Your economic advisors have told you what would be required to arrest inflation in Brazil: a credible switch to a sustained fiscal regime that, by administering a government budget balanced in the present value sense, would permanently relieve the monetary authority of any temptation to print too much Brazilian currency. A credible policy is a course of announced future government policy actions that the public can rely on the government actually to execute.

How is the public to go about deciphering a credible policy? Government policies emerge from political and administrative processes, and are implemented by many public servants and statesmen. A credible public policy has the property that it is in the self interest of each responsible public servant to implement his part of the plan: this is what makes it believable by the public, and 'sustainable' as an ongoing public policy.

Credibility is not something that a small number of people, even Presidents and Ministers, can manipulate. In a democracy, a fiscal policy credible for supporting a stable currency must be arranged so that 'the votes are there' for levying enough explicit taxes to cover whatever expenditures have been voted. Our 'in the future' caveat is all about this reading of the political process.

This description is about as far as your economic advisors can take you. We economists can explain the arithmetic of the government budget constraint (according to which curing inflation is an easy problem, as economic problems go); and we can tell you how important the acquisition of credibility is, and how limited in a democracy your role is in lending credibility to government policy.

Your country has a technically competent Central Bank, and has had some knowledgeable Finance Ministers. Those two things help, but neither the Finance Minister nor the Central Bank can 'deliver the votes' at the times and on the measures that will be required to stabilize your currency.

A Delicate Institutional Issue

Is good credible public policy easier to attain under democratic or authoritarian form of government? Bismarck took the authoritarian side of this issue. Bismarck claimed to dislike the British because an election could overturn an understanding he had reached with one Prime Minister. He preferred dealing with an autocrat who could be counted on to have the authority to follow through with his commitments.

The distinguished French Finance Minister Jacques Necker in 1784 took the other side of the argument. Necker pointed out that the same authority that made it easy for the King of France (an 'absolute monarch') to default on government debt made it difficult for the Finance Minister to place the government's debt in the market. Necker pointed out the King's vast power to default implied that one could "... sustain public trust only by giving reassurances on the sovereign's intentions, and by proving that no motive can incite him to fail his obligations". As one of the last Finance Ministers before the Revolution, Necker had good reason to worry about the credibility of the King's government. Necker was one of a large number of statesmen who at the end of the Ancien Regime sought to make it easier for the French government to acquire credibility for good public policies by separating and decentralizing government authority very much along the lines embraced by the British in the Glorious Revolution of 1688.

There is ample historical evidence on Necker's side of this argument, some of it brilliantly summarized in a recent scholarly paper by Nobel prize winner Douglas North and Stanford's Barry Weingast. North and Weingast document how the institutional changes implemented during Britain's Glorious Revolution – changes that included the founding of the Bank of England, the establishment of Parliamentary primacy in matters of borrowing and raising taxes to service government debt – coincided with the British government's acquiring the easy access to domestic and world capital markets that set the stage for an astounding period of political and economic preeminence.

Advice

Despite your limited influence in forming a credible anti-inflation plan, you can help. First, because a plan can be credible only if it is feasible, if you do compose a plan it should fit together and transparently respect the intertemporal budget constraint.

Second, it will probably help if you endorse measures like privatization schemes that promise to alter the constellation of private interests away from favoring government deficits. The public institutions that you help design and administer will affect the credibility of your anti-inflationary intentions. Countries as diverse as contemporary New Zealand and Revolutionary France have

consciously designed institutions to alter subsequent political outcomes. In this vein, you can push for arranging your social security and social insurance institutions to be 'fully funded' and less of an open ended 'put' on general revenues.

Finally, you can beware of economists bearing magical schemes for painless solutions of monetary problems that sidestep the arithmetic of your budget constraint, and that ignore how a credible public policy must emerge from Brazil's own political process.