Positive and normative theories of public debt and inflation in historical perspective*

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1. Introduction

The study of public finance has progressed along two avenues. The first dates to the work of Anglo-Saxon economists at the turn of the century. They focused on the normative question of which policy should be chosen by a hypothetical 'benevolent dictator'. The second approach originated at about the same time in the work of Italian and Swedish economists. They asked the 'positive' question of how governments choose policies. The 'normative' prescriptions of this second approach concern the procedures for reaching public policy decisions, rather than the policy decision itself.

The first approach, which focused on the theory of optimal taxation, naturally fits in the development of neoclassical economics in this century. The second approach was somewhat neglected until Buchanan, Tullock and their associates developed it in the 'Public Choice' school.

Today, these two different traditions are reflected in two active areas of research in macroeconomics. The first is the literature on dynamic optimal taxation. The second is a political economy literature studying the effects of political incentives and constraints on policy formation. These two research programs have more in common than their predecessors. The both have a strong empirical motivation, and share an emphasis on individual rationality

and dynamic equilibrium analysis. However, the questions asked remain different.

The purpose of this paper is to review and contrast these two lines of research. For reasons of space, we focus exclusively on government debt and inflation, neglecting the literature on static models of taxation and other related areas in political economy.

2. Dynamic optimal taxation

The question addressed by the theory of dynamic optimal taxation is still as Ramsey had formulated it in 1927. 'A given amount of revenue is to be raised by proportional taxes on some or all uses of income; ... how should these rates be adjusted in order that the decrement in utility may be a minimum?' The recent contributions to the theory of optimal taxation ask this question in dynamic and stochastic economies, where the government can distribute the costs of taxation over time and over states of nature.

2.1. Tax smoothing over time

The first papers addressing these issues were Barro (1979) and Kydland and Prescott (1980). They apply the Ramsey model to an economy where commodities differ only by date, and obtain the well-known results that optimal tax rates are approximately constant over time. Hence, any temporary shock to expenditures or income should be met by issuing debt, while tax rates should be adjusted only in the face of permanent shocks.

A large empirical literature studies whether these prescriptions are consistent with the historical behavior of tax rates and public debt, mainly in industrial countries. The general conclusion is that yes, they are approximately consistent, particularly in the U.K. and U.S. Two general features of the data account for this conclusion. First, the largest public debt issues occur during wars, which are temporary. Second, most shocks to government spending or transfers during peaceful times are mainly permanent, and tax rates tend to vary almost one for one with expenditures over time.

2.2. Tax smoothing across states of nature

The second generation of papers on dynamic optimal taxation begins with Lucas and Stokey (1983), where debt is contingent on shocks to government spending. Permanent shocks can now be absorbed without changing tax

rates through devaluations or revaluations of the outstanding public debt. With complete markets the public debt enables the government to achieve tax smoothing both across time and over states of nature.

Judd (1989) adds capital, while King (1990) and Chari, Christiano and Kehoe (1991) add both capital and money to this model. Lucas and Stokey's point is reinforced, since now the shocks can also be absorbed through contingent capital taxes or contingent inflation. In fact, the optimal contingent policy is undetermined, since contingencies can be incorporated in many welfare equivalent ways. Irrespective of how this indeterminacy is resolved, tax rates on labor income should remain roughly constant (they should be changed only if the elasticity of labor supply is altered by the shocks). Moreover, the expected inflation rate and the expected capital tax rates should be negligible.

It is clear that these prescriptions are inconsistent with the evidence. As noted above during peaceful times tax rates have moved almost one for one with government spending, and most of this variation is not due to capital tax rates. Compared to the dynamic optimal taxation model, the government is 'buying too little insurance' against shocks to spending or tax bases. As a result, there is too much variability in labor tax rates in the data, and too little variability in inflation and capital tax rates. Moreover, the capital tax rate also tends to be too high on average. Indeed, these are the conclusions reached by King, Bohn (1990) and Chari, Christiano and Kehoe for U.S. data.

2.3. Incentive constraints

A natural explanation for such striking deviations from optimality is lack of credibility. Suppose that the government cannot commit in advance to an optimal contingent monetary policy (or capital tax policy). Then, the equilibrium policy entails too much inflation (or capital taxation), since the government neglects the distortionary effects of a high expected inflation or capital tax rate. Obstfeld (1990) shows that this bias towards high inflation is greater the larger is the stock of public debt outstanding. As a result, it is optimal for the government to bring down the stock of debt over time. Lack of credibility leads directly to an inflation bias, and indirectly to a bias against public debt. Calvo and Guidotti (1990) extend these insights to a stochastic economy in which the government can only issue either real or nominal debt. They show that, if the government cannot commit to an optimal state contingent inflation rate, it is also more reluctant to do tax smoothing by issuing debt, thus making both the labor tax rate and the inflation rate more variable.

Thus, lack of commitment can explain: (a) why there is more expected inflation or capital taxation than according to the optimal taxation model;

and (b) why a government may be reluctant to pursue tax smoothing over time. It cannot explain, however, why governments achieve so little tax smoothing across states of nature. Moreover, contrary to what is predicted by the theory, there is no evidence that countries with high inflation have a bias against public debt – rather, as we argue below, the contrary seems to be true.

Following the insights of Grossman and Van Huyck (1987), we conjecture that to explain why governments buy so little insurance, one needs another type of incentive constraint: moral hazard. Suppose that some exogenous shocks to government spending are publicly observable, while others are not distinguishable from the endogenous component of public spending.[1] Clearly, only the observable shocks can be insured against, since the government would always claim that an unfavorable shock occurred so as to collect non-distorting revenue. As a result, in equilibrium any non-observable shock would have to be absorbed by changing distortionary taxes.

In summary, this discussion of the basic optimal taxation problem has brought us closer to the Italian–Swedish tradition in public finance, in two respects. First, we have asked what incentive constraints can account for the observed sub-optimal fiscal policies. Second, in answering we have been led to think about both sides of the budget, taxes and spending, as jointly determined. To make further progress on this second issue, however, one should acknowledge that in the postwar period most changes in government spending took the form of transfers. Hence, we need to move towards the Italian–Swedish tradition in a third respect, by allowing for heterogeneity across individuals. This opens the door to redistributive policies and, more generally, to politics.

3. Political theories of debt and inflation

3.1. The Italian–Swedish tradition

At the core of this second tradition are a number of questions neglected by the theory of optimal taxation. How is the size and the allocation of expenditures determined? How is the tax burden shared among individuals who own different factors of production or have different incomes? How are disagreements over these issues resolved, and how should they be resolved? Perhaps because of the intrinsic difficulty of these questions, the contributions of the Swedish and Italian economists who were writing at the turn of the century remained largely methodological, rather than substantive and empirical. It is Buchanan who discovers this research, and turns it into a workable and exciting research program. But many insights of the Public Choice school are due to these early Italian and Swedish economists. Some

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[1] By endogenous here we mean determined simultaneously with the taxing decisions.

examples are Wicksell's rejection of the idea of a 'benevolent dictator', Montemartini's analysis of the supply of public goods along similar lines to the recent literature on rent seeking, or Puviani's idea that the 'fiscal illusion' of voters governs the evolution of tax structures.

In the remainder of this section we summarize some recent papers on government debt and inflation that are clearly inspired by the Italian–Swedish tradition.[2]

3.2. Political instability, debt and seigniorage

The starting point is once again the seminal contribution of Lucas and Stokey (1983). They point out that government debt affects the credibility of future tax policies. By choosing an appropriate maturity structure, the optimal tax policy can be made time consistent (i.e., credible). Following this insight, Alesina and Tabellini (1990), Persson and Svensson (1989) and Tabellini and Alesina (1990) show that public debt can be used strategically to influence the policies of future governments with different preferences. Persson and Svensson argue that a 'right wing' (i.e., averse to public spending) government finds it optimal to issue debt so as to force its 'left wing' successors to curtail public spending. Alesina and Tabellini show that, if alternating governments have different preferences over the composition of public spending, they issue debt, the more so the greater is the disagreement over how to spend and the more unstable is the political system.

Issuing debt is not the only way to constrain the spending policies of future governments. Another is to maintain an inefficient tax system (i.e., one with higher collection costs). Cukierman, Edwards and Tabellini (1989) predict that for this reason more unstable and polarized political systems tend to postpone tax reforms and hence rely on seigniorage and other distorting but easy to administer taxes (e.g., trade taxes). Other recent papers (by Glazer, Aghion and Bolton and Milesi–Ferretti) study related strategic aspects of debt and public investment that arise when different policymakers alternate over time.

A feature of all these papers is that, although the current and future decision makers may differ, at any moment in time a single decision maker is in charge of policy. A second line of research instead postulates that policy is de facto decentralized among different decision makers, such as different cabinet ministers or different levels of government, who are in charge of different aspects of policy at the same point in time. Disagreement among these different decision makers may result in the postponement of unpopular decisions. This idea has been applied to the coordination of monetary and

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[2]These papers are a revival of the Italian–Swedish tradition not only from the point of view of the history of ideas, but also literally. Many contributors to this small but rapidly growing line of research are Italians and Swedes!

fiscal policies by Sargent and Wallace (1981), to the choice of a stabilization program by Alesina and Drazen (1991), to the inflation tax by Aizenman (1989), and to budget deficits in a federation by Sanguinetti (1990). A general result of these papers is that fragmentation of power and lack of unified control leads to myopic policies, such as borrowing or delaying a tax reform.

Thus, a general result of the existing research in political economy is that political incentive constraints create a bias towards both high debt and high inflation. However, the nature of the political incentive constraints is very different according to these two groups of papers. In the first line of research emphasizing unified governments alternating over time, debt and inflation are caused by political instability (that is, by frequent turnover of governments with different preferences). In the second group of papers on decentralized government, on the other hand, a myopic policy does not reflect a deliberate choice, but rather the inability to take a collective decision. The incentive constraint here is caused by fragmentation of power among different decision makers.

3.3. Some evidence

The empirical literature motivated by the theory of dynamic optimal taxation mainly investigated time series data. According to that approach, the only difference among countries is the history of their economic shocks. The political theories reviewed above add another dimension over which countries can differ: their political institutions. Thus, these new theories mainly have predictions for cross-country data. This is an advantage, as debt and inflation vary greatly across countries.

The first kind of evidence concerns the industrial countries in the postwar period. Roubini and Sachs (1989) and Grilli, Masciandaro and Tabellini (1991) find that the high public debt countries are almost exclusively parliamentary democracies with a highly proportional electoral system, and conversely almost all countries with such a political constitution have very high public debt. As a consequence of their constitution, all the high debt countries have very unstable governments, generally formed by a coalition of parties. Finally, while there is no time series evidence linking debt and inflation within each country, all the countries that collect large amounts of seigniorage also have high and explosive public debts.

Similar evidence comes from the developing countries. Measures of government instability are positively related to a number of myopic government policies, such as: the accumulation of external debts [Özler and Tabellini (1991)], fiscal deficits [Roubini (1990)], alternative indicators of inefficiency of the tax system such as seigniorage and trade taxes [Cukierman, Edwards and Tabellini (1989) and Edwards and Tabellini (1990)], and low growth [Alesina et al. (1991)].

All the available evidence thus points to the same conclusion: countries with shorter lived governments tend to accumulate more public debt and rely on more inefficient forms of taxation. This conclusion is clearly consistent with the predictions of the political theories surveyed above.

However, this evidence also raises some new empirical issues. First, these findings do not discriminate between the two types of political incentive constraints emphasized above. Short-lived governments could be an indicator of political instability, but they could also proxy for a fragmented political system. The fault here does not lie with theory, but with the available data that do not provide detailed information on what constitutes a government change. In particular, the available sources do not distinguish between successions of different governments with the same parties in office from real changes of leadership. Moreover, detailed information on the political system is readily available only for the industrial countries. Edwards and Tabellini (1990) and Grilli, Masciandaro and Tabellini (1991) construct a new data set that overcomes some of these difficulties, but their empirical results are inconclusive and more remains to be done to increase the coverage of the data set.

Second, the problem of joint endogeneity between economic outcomes and political outcomes needs to be tackled directly. Political instability may cause economic inefficiencies, but on the other hand poor economic conditions increase the likelihood of government collapses. Londregan and Poole (1990) and Alesina et al. (1991) estimate two equation models in which economic growth and the probability of political change are jointly endogenous. This approach appears very promising for applications to public finance.

References

Aizenman, J., 1989, Competitive externalities and the optimal seigniorage, Mimeo. (University of Chicago, Chicago, IL).

Alesina, A. and A. Drazen, 1991, Why are stabilizations delayed?, American Economic Review, forthcoming.

Alesina, A., S. Ozler, N. Roubini and P. Swagel, 1991, Political instability and economic growth, Unpublished.

Alesina, A. and G. Tabellini, 1990, A positive theory of fiscal deficit and government debt, Review of Economic Studies 57, July, 403–414.

Barro, R., 1979, On the determination of public debt, Journal of Political Economy 87, Oct., 940–971.

Bohn, H., 1989, Tax smoothing with financial instruments, American Economic Review 80, Dec., 1217–1230.

Calvo, G. and P. Guidotti, 1990, Level and variability of the optimal inflation tax, Mimeo. (International Monetary Fund, Washington, DC).

Chari, V., L. Christiano and P. Kehoe, 1991, Optimal fiscal and monetary policy: Some recent results, Mimeo. (Federal Reserve Bank of Minneapolis, Minneapolis, MN).

Cukierman, A., S. Edwards and G. Tabellini, 1989, Seigniorage and political instability, American Economic Review, forthcoming.

Edwards, S. and G. Tabellini, 1990, Political instability, political weakness and inflation: An empirical analysis, NBER Working paper no. 3721.

Grilli, V., D. Masciandaro and G. Tabellini, 1991, Political and monetary institutions and public financial policies in the industrial countries, Economic Policy 13, Fall, forthcoming.

Grossman, H. and J. van Huyck, 1987, Nominally denominated sovereign debt, risk shifting and reputation, NBER Working paper no. 2259.

Judd, K., 1989, Optimal taxation in dynamic stochastic economies: Theory and evidence, Hoover Institution working paper.

King, R., 1990, Observable implications of dynamically optimal taxation, Mimeo. (University of Rochester, Rochester, NY).

Kydland, F. and E. Prescott, 1980, A competitive theory of fluctuations and the feasibility of desirability of stabilization policy, in: S. Fischer, ed., Rational expectations and economic policy (The University of Chicago Press, Chicago, IL).

Londregan, J. and K. Poole, 1990, Poverty, the coup trap, and the seizure of executive power, World Politics 42, Jan., 151–183.

Lucas, R. and N. Stokey, 1983, Optimal fiscal and monetary policies in an economy without capital, Journal of Monetary Economics 12, 55–93.

Obstfeld, M., 1990, Dynamic seigniorage theory: An exploration, Mimeo. (University of California at Berkeley, CA).

Özler, S. and G. Tabellini, 1991, External debt and political instability, Mimeo. (Innocenzo Gasparini Institute for Economic Research).

Persson, T. and Svensson, L., 1989, Why would a stubborn conservative run a deficit?, Quarterly Journal of Economics.

Ramsey, F., 1927, A contribution to the theory of taxation, Economic Journal, Mar., 47–61.

Roubini, N., 1990, The interaction between macroeconomic performance and political structures and institutions: The political economy of growth and development, Unpublished.

Roubini, N. and J. Sachs, 1989, Government spending and budget deficits in the industrialized countries, Economic Policy 8, Spring.

Sanguinetti, P., 1990, Fiscal deficits and federal government, Mimeo. (UCLA).

Sargent, T. and N. Wallace, 1981, Some unpleasant monetarist arithmetic, Federal Reserve Bank of Minneapolis Quarterly Review, Jan., 1–17.

Tabellini, G. and A. Alesina, 1990, Voting on the budget deficit, American Economic Review, Mar., 17–32.