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Designing domestic institutions for international monetary policy cooperation: A Utopia?

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In a wide variety of international macroeconomic models monetary policy cooperation is optimal, non-cooperative policies are inefficient, but optimal policies can be attained non-cooperatively by optimal design of domestic institutions/contracts. We show that given endogenous institutional design, inefficiencies of non-cooperation cannot and will not be eliminated. We model the delegation stage explicitly and show that subgame perfect, credible contracts (chosen by governments based on individual rationality) are non-zero, but are different from optimal contracts and hence lead to inefficient equilibria. Optimal contracts require cooperation at the delegation stage, which is inconsistent with the advocated non-cooperative nature of the solution. A general solution method for credible contracts and an example from international monetary policy cooperation are considered. Our results feature delegation as an equilibrium phenomenon, explain inefficiencies of existing delegation schemes and hint to a potentially stronger role for supranational authorities in international policy coordination.

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1. Introduction

A large body of literature deals with optimal delegation of macroeconomic policy in an international context (see Persson and Tabellini, 2000 for a comprehensive review). In this framework, optimal contracts or targeting regimes over some macroeconomic variable are viewed as panacea for solving

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inherent inefficiencies of non-cooperative (and discretionary) policymaking. Notably, much of the work concerning monetary policy institutions adopts this line of reasoning. The inefficiencies that optimal delegation is supposed to 'fix' in this case are problems due to non-cooperative policymaking in the presence of policy spillovers in a multi-country world (and/or 'credibility' problems like the inflation bias). A recurrent result is that the *cooperative optimum* can be achieved in a decentralized, non-cooperative manner by delegating through optimal inflation contracts (*i.a.* Persson and Tabellini, 1995, 1996). This is done by assuming that before the actual policy game takes place, there is an 'institutional design stage', where governments choose the appropriate delegation scheme for their central banks that implements the optimum.

This paper starts from the observation that these delegation schemes are not subgame perfect, i.e. not credible: indeed, they implicitly assume cooperation (or some form of coordination) at the delegation stage, which is hard to reconcile with the alleged 'purely non-cooperative implementation of the cooperative optimum'. We develop this argument analytically by explicitly modeling the institutional design stage and studying the (credible, subgame perfect) contracts that are consistent with governments' incentives and hence occur in equilibrium. Specifically, at the delegation stage governments choose the delegation parameters in a non-cooperative manner by backward induction, taking into account the reaction functions of the central banks at the policy stage. These *credible, subgame perfect contracts* turn out to be non-zero (hence delegation is always an equilibrium) whenever there is strategic complementarity or substitutability. However, they are always different from the optimal contracts, which would instead require cooperation of governments (or some form or coordination) at the delegation stage. But then, if binding agreements were possible, one wonders why would delegation be needed in the first place.

In the international policy context, it has been long recognized that cooperative policymaking[1] is Pareto optimal when sovereign policymaking has externalities on the other countries (see e.g. Hamada, 1976). Typically, externalities take the form of conflicts over shock stabilization or over preferred levels of macroeconomic outcomes. The Pareto optimum is not enforceable for various reasons (individual incentives to deviate, suboptimality of cooperation when commitment with respect to the domestic private sector is impossible, uncertainty regarding models, loss functions, etc.) - all these issues are extensively reviewed in Canzoneri and Henderson (1991) or Ghosh and Masson (1994). Given individual incentives to deviate from the optimal cooperative policies, the literature has moved towards identifying mechanisms that sustain the collusive outcome. We focus on the 'institutional design' approach pioneered by Persson and Tabellini (1995) and extended by Jensen (2000) and Persson and Tabellini (1996, 2000). This focus is reinforced in the international context by an observation of Rogoff (1985): in the presence of domestic credibility problems as the ones reviewed above cooperation itself might even be welfare-reducing.[2] But institutional design, or delegation to an independent monetary authority, could in principle act as a solution to correct inefficiencies coming from both discretion and non-cooperative policymaking.

The state of the art in the literature on optimal monetary policy delegation in an international context can be summarized as follows. Persson and Tabellini (1995, 1996) analyze performance contracts written by the governments before the game is played, at an 'institutional design' stage and show how these contracts can be designed such that the inefficiencies related to both discretionary and non-cooperative policymaking are eliminated.[3] The optimal linear contracts hence found are state-contingent, which is a non-desirable feature as it makes them difficult to implement (for example

[1] We adopt the game-theoretical definition of cooperation as joint optimization by a group of players of their payoffs, implying a 'pregame' and the possibility of binding agreements. Coordination would by contrast mean choosing one particular equilibrium in the Nash Equilibrium set of the non-cooperative game (this might imply the presence of an external enforcing mechanism). Exchange of information is captured by the non-cooperative policymaking case.

[2] Canzoneri and Henderson (1991) interpret this insight as a particular case of a more general result: coalitions of only subsets of players are inefficient. See also Kohler (2002).

[3] Persson and Tabellini also look at non-linear discontinuous performance contracts with state-dependent parameters written directly over welfare functions that can implement the cooperative optimum. This is an application of a Folk Theorem in Delegation Games by Fershtman et al. (1991), where it is argued that in a two-player game the principals can obtain every Pareto optimal outcome as the unique subgame perfect Nash Equilibrium of the delegation game via such contracts written on target compensation form, as long as these contracts become common knowledge. However, the authors move to analyzing linear contracts, arguing that these are highly non-realistic and difficult to implement.

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