



Endogenous contract structure and monetary policy[☆]

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Abstract

We analyze the co-determination of monetary policy and the labor contracts chosen by members of the public, who can either fix or index their nominal wages. Fixed nominal wages allow the central bank to offset productivity shocks, while the public fix nominal wages in response to the central bank offsetting shocks; so there is an equilibrium in which, realistically, nominal wages are fixed and shocks offset: a result which holds in single- as well as in multi-period games. In addition, there may be equilibria in which agents index their nominal wages, and the central bank optimally responds by stabilizing price. In contrast to conventional models, the Ramsey rule may be implemented in a finitely repeated game. The central bank does not deviate for fear that agents would change their labor contracts such that the central bank's least favored equilibrium will subsequently be played.

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1. Introduction

Conventional macroeconomic models in the spirit of [Kydland and Prescott \(1977\)](#) implicitly assume that monetary policy does not affect the structure of markets. Fixed-wage contracts give the central bank an informational advantage, allowing it to generate price surprises on the one hand, and to respond to productivity shocks on the other hand. This “advantage” may undercut the central bank’s ability to set monetary policy according to the Ramsey rule: the central bank is induced to set an inefficient discretionary policy by the public’s belief that it will exploit its scope for price surprises. Nevertheless, it is widely believed that central banks in economies where fixed-wage contracts are prevalent are less constrained by discretionary expectations than the early literature may have suggested.¹

The literature’s assumption of nominal wage contracts is realistic for developed economies. However, models which incorporate an endogenous relationship between monetary policy and contract structure are richer in two respects. First, they illustrate how monetary policy and contract structure are co-determined. Second, such models can explain given behavior patterns (*viz.* play on the equilibrium path) by the consequences of deviation (*viz.* play off the path).

We explore such an endogenous relationship by analyzing the interaction between a continuum of members of the public (‘agents’) and a central bank. Each agent is the unique insider at some firm, in the sense that the firm has sunk the requisite training cost for that agent. Each firm produces a consumption good using a single agent’s labor. The time line for a single period is as follows. Agents each address an offer of a fixed nominal wage or of an indexed wage to a chosen firm; an economy-wide productivity shock is then revealed; and the central bank sets the inflation rate after observing the shock and the distribution of decisions across agents. Profit maximizing firms then decide which offer(s) to accept, and select employment (on their labor demand curves): where each firm which employs an outsider must pay a training cost. Each agent then uses her labor income and dividends to buy the consumption good. We suppose that agents maximize a utility that depends on their labor input and on consumption, where an agent who indexes her wage must pay a fixed cost, while the central bank seeks to stabilize the consumption good price and to minimize the variability of per-agent output around some target. In short, this model generalizes [Rogoff’s \(1985\)](#) game by allowing agents to choose contract structure.

If this game is played once then each agent addresses her offer to the firm at which she is an insider; and this offer minimizes the variability of the firm’s output around a target which is common across agents. Our model therefore provides microfoundations for a conventional assumption. The nature of equilibria depends on the ratio of the indexation cost to the variance of productivity shocks. If this normalized cost is high enough then the one-period game has a unique equilibrium in which all agents fix their nominal wages and the central bank adopts the discretionary policy, which

¹The early literature includes [Barro and Gordon \(1983\)](#), whose theme has recently been explored by [Jensen \(1997\)](#), [Chang \(1998\)](#), [Chari et al. \(1998\)](#) and [Dixit \(2000\)](#).

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