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Union objectives and indexation externalities in a monopolistically competitive economy☆

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ABSTRACT

This paper extends the literature on indexation externalities by analyzing equilibrium and efficient indexation in a unionized economy characterized by a monopolistically competitive goods market. The assumption that union objectives relate to both employment and the real wage implies that union indexation decisions are associated with a negative externality and, as a consequence, the equilibrium degree of indexation is inefficiently high. This feature is characteristic of both passive and activist policy environments.

1. Introduction

Following Gray (1976) and Fischer's (1977) contributions, an extensive and continuing body of literature on the macroeconomic consequences of wage indexation has developed. A variety of themes have been explored, including: in an open economy setting, the relationship between optimal exchange rate policy and the degree of wage indexation (see, for example, Aizenman and Frenkel, 1985; De Bruyne, 1997); the consequences of wage indexation for the inflationary bias which may result in the context of discretionary monetary policy (Devereux, 1987; Crosby, 1995, for example); and the implications of alternative information structures for the degree of wage indexation adopted (VanHoose and Waller, 1991; Fukuda, 1993). One particular issue, originally identified by Ball (1988), which has emerged from this research is the question of whether the indexation decisions of individual wage setters will be optimal from a collective viewpoint.

Ball's analysis is set in the context of a monopolistically competitive economy in which each individual (atomistic) firm and its workers agree a contract specifying the extent to which the nominal wage is indexed to the price level. The focus of the analysis is then on whether these individual choices give rise to an aggregate degree of indexation which is efficient from the perspective of the economy as a whole. Ball demonstrates that, providing indexation is costless, then this is, indeed, the case. If, however, indexation is costly, leading some firms not to index, the indexation decisions of those firms which choose to index impose externalities on the remainder. In fact, both positive and negative externalities are present, the net direction of which depends on the relative values of key parameters: as a consequence, indexation costs can lead the equilibrium degree of indexation to be either suboptimally low or inefficiently high.

An alternative source of inefficiency is identified by Waller and VanHoose (1992), who adapt Ball's approach to consider indexation decisions in the context of an economy characterized by an inflationary bias, reflecting the discretionary policy environment assumed. In this setting, wage indexation gives rise to a positive externality, since, by steepening the short-run aggregate supply curve, it reduces the marginal benefit to policymakers of a given inflation surprise and thus acts to moderate the inflationary bias. However, because wage setters are atomistic and view the impact of their choice on the

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inflation rate as negligible, this beneficial effect of indexation is disregarded. As a consequence, the equilibrium degree of indexation lies below the socially efficient level.[1]

While Ball's and Waller and VanHoose's studies assume that nominal wage contracting is common to all firms, Duca and VanHoose (1998) consider a two-sector economy in which, while an exogenously-given fraction of firms contract, the remainder allow wages to be market-determined.[2] In this context, the indexation decisions of contracting firms, by influencing the responsiveness of the price level to aggregate shocks, have implications for the behaviour of non-contracting firms. The negative externality which arises as a consequence leads the equilibrium degree of indexation to exceed the value which is optimal from the collective viewpoint of contracting firms. However, as Duca and VanHoose demonstrate, this equilibrium degree of indexation is sensitive to the extent of goods market competition, with an increase in competition reducing the gap between the equilibrium and efficient indexation levels. This particular implication of the model is tested empirically and found to be consistent with US data.

The present paper is intended as a further contribution to the analysis of indexation externalities and the efficiency of individual agents' indexation decisions. The starting point of our analysis is an observation made by Ball regarding the specification of the objective function of wage setters. Both Ball and Duca and VanHoose assume the loss function of wage setters to consist solely of a quadratic term in deviations of employment from its market-clearing level.[3] However, in his concluding remarks Ball notes that such a loss function, comprised only of a term in employment, is implicitly motivated by the assumption that wage setters are risk neutral, and suggests that the results he reports might change were his model to feature instead "risk-averse agents [who] care about the variance of real wages as well as the variance of employment" (Ball, 1988, p. 310). The current work investigates this proposed extension, adopting to this end the monopoly union approach to modelling wage determination, which assumes that the remuneration terms of the employment contract are chosen by unions whose concerns relate to both employment and the real wage.

The resulting incorporation of a real wage term into wage setters' objective functions provides a specification which is employed extensively in the literature concerned with the macroeconomic implications of union wage setting.[4] Within this literature, the inclusion of stochastic shocks within a model makes it appropriate to formulate each union's objective function as featuring a quadratic term in the deviation of the real wage from its desired value (in addition to an analogous quadratic term in employment), a specification which straightforwardly captures the possibility that those responsible for setting wages may exhibit an aversion to real wage variability.

As will be seen below, when this key idea is combined with the assumption of a monopolistically competitive goods market, it is found that union indexation decisions are associated with a macroeconomic externality, even in the absence of indexation costs, factors which give rise to a mean inflationary bias, or a sector in which wages are market-determined. The consequence is that the equilibrium degree of wage indexation is inefficiently high, both when judged from the collective viewpoint of unions and when evaluated in terms of a standard social loss function containing both employment and prices/inflation as arguments. We further demonstrate that the equilibrium degree of indexation is declining in the degree of goods market competition, as measured by the own-price elasticity of product demand. Thus our findings provide a theoretical explanation, complementary to that provided by Duca and VanHoose, for the empirical relationship which they find between the extent of goods market competition and the aggregate degree of wage indexation.

The remainder of the paper is organized as follows: Section 2 outlines the key relationships of the model; Sections 3 and 4 analyze the efficiency of equilibrium indexation under passive and activist monetary policy, respectively; and finally, Section 5 provides a summary of our findings.

2. The model

Our framework models an economy in which output is supplied by a continuum of monopolistic firms, uniformly distributed over the unit interval, with each firm producing a single differentiated good. In the labour market, households are organized into infinitely many atomistic unions: an individual union represents all households who supply labour to a particular firm, and exercises monopoly power over wage setting within that firm. In assuming each union to be small in relation to the economy as a whole, the analysis abstracts from strategic union behaviour. However, in an Appendix,[5] it is shown that the case of non-atomistic unions gives rise to similar results to those derived in what follows.

Firms share an identical production technology, described by

$$y_i = \alpha l_i + \theta \qquad 0 < \alpha < 1 \tag{1}$$

[1] Waller and VanHoose qualify this conclusion by noting that, insofar as higher wage indexation reduces the cost to society of any given inflation rate, it may also give rise to a negative inflation externality: as Fischer and Summers (1989) argue, a reduced marginal cost of inflation will, in the context of discretionary monetary policy, tend to increase the equilibrium inflation rate.

[2] This paper builds on earlier work by Duca (1987) and Duca and VanHoose (1991).

[3] Note that Waller and VanHoose (1992) depart from this specification by also incorporating a term relating to the trend inflation rate into the objective function. However, this additional term has no effect on atomistic agents' indexation decisions.

[4] An explicit microeconomic justification for this is provided in Oswald (1985).

[5] Available from the authors on request. Strategic wage setting behaviour plays a central role in a number of recent analyses of the relationship between labour market structure and optimal monetary policy design: see, for example, Cukierman and Lippi (1999), Lawler (2000), Soskice and Iversen (2000), Holden (2005) and Coricelli et al. (2006).