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JOURNAL OF
ENVIRONMENTAL
ECONOMICS AND
MANAGEMENT

Journal of Environmental Economics and Management 49 (2005) 132–156

www.elsevier.com/locate/jeem

Environmental policy and the equilibrium rate of unemployment

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Received 17 April 2000; received in revised form 23 June 2003

Available online 23 August 2004

Abstract

This paper integrates environmental policy instruments with the theory of equilibrium unemployment. We investigate the question of whether a low equilibrium rate of unemployment and a high quality of the environment are complementary policy goals or must be traded off. It turns out that an interval exists for a tax on emissions where the two goals are indeed complementary. The tax stimulates the emergence of an abatement sector which provides pollution control and vacancies for the job seekers. For constrained efficiency, the policy maker operates five instruments to internalize the environmental and the search externalities. A tax on emissions, employment subsidies and recruiting allowances for the polluting industries are sufficient to implement the first-best. The optimal emission tax is an increasing function of the workers' bargaining strength. For labor markets where workers have a strong bargaining position, the optimal pollution tax may easily exceed the Pigouvian tax.

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Keywords: Environmental policy instruments; Emission tax; Equilibrium unemployment; Constrained efficiency

1. Introduction

In recent years, public opinion—which, in the past, often regarded environmental regulations as “job killers”—has gradually shifted towards supporting the hypothesis that a more stringent

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environmental policy not only promotes a country's international competitiveness but may also improve its employment situation [5,19,23,31,32,39]. Discussions in the political arena have been preoccupied with conjectures about the employment effects of environmental policy, while environmental economics has rarely addressed the issue of the impact of environmental policy instruments on equilibrium unemployment. To investigate the relationship between the policy goals of a clean environment and low unemployment, the present paper integrates standard environmental policy instruments [3,8,20] with the theory of equilibrium unemployment [13,33,34].

The economy of the model consists of two sectors: a production sector with a dirty industry and a clean industry that emits an assimilative pollutant, and an abatement sector which provides cleaning services for the polluting industries and vacancies for the job seekers.

Depending on the level of the tax rate, the emission tax causes either a trade-off or a complementarity between the two policy goals. Within the tax brackets where the goals are complementary, the tax reduces both the emissions and the equilibrium rate of unemployment. For low tax rates, on the other hand, we find a trade-off between the two policy goals. There are two reasons for this result. Firms in the polluting industries would rather pay the tax than control their emissions and workers faced with the low wages offered by the abatement sector do not find it attractive to search for cleaning jobs. Hence, an abatement sector, which could outweigh the job destruction effects of the pollution tax in the production sector, does not develop. We next show that, under conditions like those of the Pigouvian economy, the policy goals of a clean environment and a low rate of unemployment are complementary even in a command-and-control economy regulated by an emission standard.

Empirical research has not produced clear cut evidence for the disputed trade-off [1–2,4,16,19,21,27]. However, the results of Berman and Bui's [4] research into the employment effects of local "air quality regulations" in the Los Angeles area seem to confirm our analysis. They note that, despite considerable investment in "abatement capital, ... *we find no evidence that local air quality regulation substantially reduced employment*, even when allowing for induced plant exit and dissuaded plant entry". According to Berman and Bui, all new regulations and every tightening of existing regulations induce large investments in abatement technology, and the measured employment effects of air quality regulations are generally positive although they are not statistically significant. They explain the adjustment of the demand for labor they observe in all polluting industries by the complementarities between abatement capital and labor in production that dominate the negative output effects of the air quality regulations. They also estimate the job destruction and creation effects of air quality regulations and again find no significant results, although they argue that the impact of new regulations on entry and exit is likely to be negative for the regulated industry.

Although the extensive literature on the "double dividend" of an environmental tax reform focuses on the employment effects of environmental policy, there seems to be only one paper—by Bovenberg and v.d. Ploeg [10]—that describes the effects of such a reform within the framework of the theory of equilibrium unemployment. In their model, the government has a balanced budget and uses the revenue of an ad valorem tax on energy consumption to lower the firms' payroll tax. The labor market is segmented. The natural rate of unemployment is positive in the official labor market which is a search market with a matching technology similar to the one we use. In the informal neoclassical labor market, however, any job seeker instantly finds a job and

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