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Employment changes, the structure of adjustment costs, and plant size

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Abstract

In this paper, we analyze the pattern of employment adjustment using a rich panel of Norwegian plants. The data suggest that the frequency of episodes of zero net employment changes is inversely related to plant size. We develop and estimate a simple "q" model of labor demand, allowing for the presence of fixed, linear and quadratic components of adjustment costs. The econometric evidence supports the existence of purely fixed components, unrelated to plant size. As a result, the range of inaction is wider for smaller plants. The quadratic component of costs is also always important. In most specifications fixed costs are higher for employment contractions. The quadratic component is higher during employment contractions compared to expansions for small plants, while this is not true for larger plants.

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1. Introduction

In the last few years there has been a heightened awareness of the shortcomings of traditional models of factor demand based on convex and symmetric adjustment costs and

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of the need to consider more general adjustment cost functions (see Hamermesh and Pfann, 1996 for a critical review). The increased availability of firm and plant level panel data has made it easier to provide empirical evidence on these issues and has lead to a blossoming of empirical studies, particularly on investment.[1] Recent contributions on labor demand are scarcer, although by no means absent.[2]

In this paper we intend to advance our understanding of the structure of employment adjustment costs, using a rich data set on Norwegian plants. In order to do that, we specify a simple optimizing model of labor demand that allows for a general structure of adjustment costs. In the basic specification, such costs are a function of net employment changes and include fixed, linear and quadratic components. The model is in the spirit of Abel and Eberly (1994) and can be thought of as a q model for employment. Like other models of this type, it generates a region in which labor demand does not respond to changes in fundamentals, because the gains from increasing or decreasing employment by one unit are not large enough to compensate the incurring of adjustment costs. By including a truly fixed component in adjustment costs, we allow for the possibility that the range of the value of fundamentals for which there are no employment changes may be wider for smaller plants (firms). Moreover, the response to fundamentals may differ for net employment increases versus decreases, reflecting asymmetries in adjustment costs.

The structure of the paper is as follows. In Section 2, we start by describing in details the Norwegian institutions regulating the adjustment of the labor factor. In Section 3, we present some descriptive evidence on employment adjustment patterns for plants in the machinery and metal product sector over the period 1986–1995. Section 4 contains a theoretical model that is potentially consistent with the descriptive statistics and that will underpin our econometric estimation. In Section 5, we present econometric estimates of various versions of the model. Section 6 concludes the paper.

2. Adjustment costs and institutional background

The costs of changing employment are of course affected by the institutional setting and legislation introduced to protect workers against unfair dismissal. Both the rules regarding individual and collective dismissals, and the flexibility of plants with respect to temporary hiring and the use of subcontractors, are important in explaining the costs of adjustment for plants. Most of the labor market rules and regulations affect the cost of gross employment changes, particularly gross firing. There are few regulations or contractual arrangements that make it difficult to expand employment, although the presence of firing costs alone may affect employment negatively. In this paper, as a first step and consistently with many contributions in this field, we will focus on the costs associated with net employment changes. These costs may take the form of monetary expenditures or output losses associated with the internal restructuring that occurs when a firm expands or contracts the workforce. Our choice to focus on net adjustment costs is partly determined by data availability. While, it is possible in principle to obtain measures of gross hiring,

[1] Among the most recent papers that analyze the importance of non-convexities and irreversibility in generating non-smooth investment patterns see Doms and Dunne (1998), Goolsbee and Gross (1997), Barnett and Sakellaris (1998), Abel and Eberly (1994), Cooper et al. (1999), Nilsen and Schiantarelli (2003), Letterie and Pfann (2006).

[2] See, the seminal contributions by Hamermesh (1989, 1992, 1995) and Pfann and Verspagen (1989), and the more recent ones by Bentolila and Saint-Paul (1994), Rota (2004), Abowd and Kramarz (2003), Campbell and Fisher (2000, 2004), Goux et al. (2001).