ABSTRACT. High rates of firm births and deaths are a pervasive phenomenon across industries and territories. Most studies have related the great turbulence at the fringe of practically all manufacturing industries to positive effects on the long-run performance of industries. According to these views business turbulence, although it has a relatively small incidence on net entry, leads to allocative improvement and stimulates innovation. The existing set of empirical studies does not reach clear conclusions, however, and many questions are still open. Our contribution analyses the relationship between business dynamics in manufacturing and the growth of total factor productivity in industries and regions. After a review of current literature on entry and exit it is argued that most models are tailored to suit the processes observed in industries and regions that are near the technological frontier, and we propose an approach that could be more representative of middle range economies such as Spain. According to this approach new firms are seen more as users of innovations than producers of innovations. We adopt a model based on a vintage capital framework in which new entrants embody the edge technologies available and exiting businesses are supposed to represent the most marginal obsolete plants. Both industries and regions are represented by a Hall’s type production function which controls for imperfect competition and economies of scale. The results show that both entry and exit rates contribute positively to the growth of total factor productivity in industries and in regions.

KEY WORDS: entry and exit, manufacturing, total factor productivity

Introduction

One of the most striking phenomena in the evolution of economic activity is the high rate of turbulence observed in the business structure of nearly all industries. Every year a relatively high number of firms enter each sector, and an equally numerous group exits, so the net entry — frequently negative in manufacturing — is a small fraction of the total number of firms and an even smaller fraction of the market share, since the size of the incoming firms is well below the average of the industry. Likewise, it can be seen that most of the exiting firms have operated in the market for a very short time. That is to say, most of the incoming firms do not manage to consolidate themselves and they decide to cease their activity. Together with general turbulence and volatility, important variations in birth and death rates can simultaneously be seen on a time scale, in space and between sectors.

Such behavior raises a number of questions that we might group as follows: (i) what are the factors that determine the incentives for agents to enter an activity?; (ii) what effect does this observed turbulence have on market structure, its evolution and its efficiency?; and finally (iii), what implications do the birth and death of firms have on social welfare?. On the first two groups of questions there is already a body of literature of some importance, although the effects on welfare have been studied to a lesser degree, probably due to the significant limitations imposed by the insufficient availability of appropriate data. This study attempts to provide evidence about the effect of the entry and exit of manufacturing firms on the productivity of industries and regions. It is assumed that a significant share of incoming
businesses use the edge technology available in their equipment and so contribute to increase total factor productivity. Firstly, the prevalent models of entry and industrial dynamics in current literature are reviewed to conclude that they lack sufficient universality to be applied to economies that occupy secondary positions in innovative capacity.

This paper is divided into five sections and an appendix. The first section deals with the determinants of entry and exit of firms and its relationship to efficiency. The second section contains a descriptive analysis of the entry and exit processes by industries and regions in Spain. The third section presents the econometric model employed in the regression analysis, whose results are discussed at the forth section of this paper. The econometric estimations are carried out at two levels: industries and regions. The fifth section contains the conclusions of the analysis. Finally, the appendix presents some additional descriptive data.

1. Entry models and efficiency

1.1. Static and dynamic approaches

Conventionally, we may distinguish two main lines of analysis in entry models, the first follows a traditional static approach, and the second is a dynamic approach in which innovation and technological progress determine the evolution of market structures.

1.1.2. Traditional view

According to the static view, entry is the mechanism by which competition erodes the market power of incumbents and the level of profits of the industry reach their long-run equilibrium. If the industry is perfectly competitive, entry eliminates all positive profits the incumbents could have achieved. If the industry is imperfectly competitive the level of long-run profits will depend on the height of the barriers to entry, which measures the intensity of competition in the market. The standard model is (Orr, 1974 and Geroski, 1991a):

\[ \text{ENT}_{it} = \gamma(\pi_{it} - b_i) + \mu_{it} \]

where \( \text{ENT}_{it} \) denotes the rate of entry into industry \( i \) in period \( t \), \( \pi_{it} \) is the post-entry expected profit, \( b_i \) is the profit rate which can be sustained in the long run without attracting entry, it measures the height of the barriers to entry, \( \mu_{it} \) is a random term and \( \gamma \) is a parameter which measures the speed of response of the incoming firms to the gap existing between expected short-run profits and profits sustainable in the long-run.

The static approach assumes that entry increases market competition and ultimately leads to efficiency improvements. Geroski (1989) found that entry of new firms and the selection process among them induce movements to, and shifts of, the production frontier. This was done by estimating a function of the usual type

\[ y = \alpha l + \beta k + \theta, \]

where output growth depends on the rates of growth of labour \( l \) and capital \( k \), and on \( \theta \). The intensity of competition in the market is captured in \( \theta \), which in turn depends on three explanatory variables: domestic entry rate, number of innovations, and the rate of import penetration. According to Geroski’s estimate, entry would account for 30% of the growth in total factor productivity. Baldwin and Gorecki (1991a) reached very similar results with a sample of 167 four-digit Canadian manufacturing industries.

Evidence of productivity improvements associated to firm turnover does not imply automatically, nevertheless, that entry is induced exclusively by a situation of above-normal profits in the industry. Common experience tell us that entry occurs even in situations of zero-profits, and several studies (Acs and Audretsch, 1990) have found that entry is not substantially deterred in industries with large scale economies. Baldwin (1995) argues that there are at least two reasons to expect a positive entry rate in industries where profits have reached its long-term level. First, if firms are heterogeneous with respect to their cost function, low cost entrants may expect to displace less efficient incumbents. Secondly, entrants may expect to gain market share with a “superior” product, in terms of quality or novelty. Both situations are better dealt with using dynamic models of market structure than the traditional static approach.

1.1.2. Dynamic approach

Dynamic approaches associate the processes of entry and exit of establishments with processes of innovation and change in industry (Audretsch,