

Productivity as a determinant of the hazard of exits in a panel of French Manufacturing firms

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January 2006

This paper analyses the determinant of market selection of French firms using a dataset covering 14 manufacturing industries over the period 1990-2002. In market-based economies, firms are continuously subject to market selection forces, implying that less profitable firms may exit the industry. In France, only 40% of manufacturing firms that are present in 1990 have survived until 2002, whereas 50% die within 7 years. These figures point to the fact that market selection is a fundamental feature of industry dynamics. In fact, one may argue that market selection should contribute positively to economic growth both by selecting out less efficient firms and by providing incentives for incumbents to improve their own productive performance.

In this paper we focus on productive efficiency and investigate whether productivity differences between firms are a key determinant of their relative ability to survive. We compute measures of Total Factor Productivity (TFP) for all French firms above 20 employees operating in manufacturing industries. We follow the productive performance of entering, continuing, and exiting firms over time, allowing us to address the issue of the efficiency of market selection mechanisms. We find that failing entrants cope with a significant productivity gaps with respect to incumbents. Moreover, there is evidence of a

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“shadow of death” effect meaning that TFP declines slowly but irreversibly several years before exit actually occurs.

Market selection is then modelled using duration models, where the hazard of exit is a function of firm size, age, profitability and total factor productivity. We estimate a duration model for grouped data following the approach of Prentice and Gloeckler (1978) and extend it to account for unobserved heterogeneity between firms. This model is the discrete time counterpart of the Cox’s proportional hazard model for continuous time. The duration models are run for the whole population of firms (40,000 firms), for firms new to the market (age ≤ 5) or for mature firms (age > 5).

We find that both size and profitability have a negative impact on the hazard of exit for all types of firms, both young and mature. The effect of profitability on the hazard of exit is both negative and large, suggesting that the probability of exit is very sensitive to small variations in firm profitability. We find evidence of a divergent effect of productivity on firm exit. For incumbents, productivity is negatively associated with the hazard of exit, suggesting that moves away from productive efficiency eventually translate into exit from the market. For entrants, we find no significant relationship between productivity and the hazard of exit, suggesting that market selection for young firms is not determined primarily by productive inefficiencies. Rather, inequalities to access financial resources may be important engines of young firm selection. We conclude that micro data from French manufacturing industries are consistent with the common view that markets select in favour of the most efficient firms. However, the institutions that help markets to operate may be more efficient to discriminate among mature firms than young ones.

JEL Codes: D24, L11, L60.

Keywords: entry and exit patterns, firm level data, TFP indexes, market selection