Market Potential and the Firm-Exit Productivity nexus

Sabine D'Costa (University of Westminster) and Adelheid Holl (Spanish National Research Council)

Extended abstract:

Productivity is a critical determinant of firm survival and exit as theory suggests that in an efficient outcome the least productive firms exit the market (Hopenhayn, 1992; Jovanovic, 1982; Schumpeter, 1939). Empirical evidence in support of this theoretical prediction includes Aga and Francis (2017), Frazer (2005), Soderbom *et al.* (2006) for developing countries and Fariñas and Ruano (2005) for Spain. In parallel, the urban economics literature has shown that firms in denser locations are more productive than in less dense areas (Combes *et al.,* 2012; Ciccone and Hall, 1996; Rosenthal and Strange, 2003; Sveikaukas, 1975). Most of this literature focuses on cities of different sizes or densities, with a smaller literature exploring rural-urban differences (Rizov and Walsh, 2010; Webber *et al.,* 2008). Finally, the literature has also shown that the local environment affects the probability of firm survival. Basile *et al.* (2017) find that various agglomeration economies are associated with greater firm survival among Italian start-ups. The role of industrial diversity, in particular related variety, is also demonstrated in Boschma (2005) and Frenken *et al.* (2007). Artz *et al.* (2020) explore churning in the retail sector in the US and show that both entry and exit rates are higher in metropolitan areas than in rural areas. Chen *et al.* (2020) find that firm entry and exit are both higher in larger labour markets, using US aggregate data.

However, evidence at a granular-geographic level is still lacking and little attention has been given to the role of market access in the productivity-exit nexus. Yet, there can be important geographical heterogeneity in productivity and exit rates: we therefore investigate the possibility that the relationship between firm exit and productivity (in particular distance to the productivity frontier) can be mitigated or moderated by firms' local environment. This can give insights into what types of locations are more likely to experience stronger productivity growth through firm exit and reallocation of production. For example, if high market access locations present stronger "creative destruction" than other locations, in a period of recession reallocation would increase their productivity lead. This is particularly useful to know in the context of the recession brought about by the recent Covid-19 pandemic, as it can guide policies aimed at altering the firm exit rate.

This paper contributes to the existing literature in the following main ways.

First, we depart from the existing literature that uses aggregated regional-level data. Instead, we use a large, geocoded firm-level panel dataset from the SABI database to study the determinants of firm exit at a detailed geographical level in mainland Spain between 2011 and 2022. Relating firm-level productivity to more aggregated spatial data would hide important heretogeneity. We exploit the exact location of firms and their market potential as well as determinants of exit at a fine geographic level. This contributes to a better understanding of why some localities grow more than others. When firms exit the market there might be welfare losses due to worker displacement, increased unemployment and decreased economic density, leading to a worsening of geographical disparities in productivity and welfare indicators, which are already very pronounced in Spain. Our detailed findings help to shape targeted policies and the allocation of resources to reduce economic disparities between areas. Second, we do not restrict our analysis to urban areas: our dataset of firms is representative of suburban areas and rural areas, which have been largely overlooked in the empirical literature on productivity and firm survival. We also include services, whilst most of the literature on firm productivity and exit has relied on manufacturing surveys.

Our empirical strategy involves two steps. In a first stage, we use a panel of 2.7 million observations covering 600,000 Spanish firms to calculate firm level productivity - measured as Total Factor Productivity (TFP) – based on the Levinsohn-Petrin (2003) method and the Ackerberg-Caves-Frazer correction. We are able to document productivity paths of surviving and dying firms, by quartile of market access. In a second stage, we estimate how the characteristics of firms' local environments affect the productivity-firm exit relationship. Because the most productive firms are concentrated in the urban areas, and price indices and productivity paths vary widely by industry during the 2020-2022 period, we use a measure of the distance to the firm's 2-digit industry productivity frontier rather than its actual productivity level. We estimate the probability of exit using a complementary log-log (cloglog) model, following Bandick and Görg (2010) and Guariglia *et al.* (2016) among others. We check the robustness of our results using linear probability models.

Our descriptive findings show important differences in firm-level productivity and exit rates between high and low-market access firms. As expected, firms in high market access locations have a smaller distance to the productivity frontier. All firms' distance to the frontier increases greatly during the pandemic, though more for exiting firms. Our econometric results so far show that firms that are closer to the productivity frontier are more likely to survive, while firms in locations with greater access to markets are less likely to survive. The protective effect of productivity is also diminished for firms that are in locations with greater market access, particularly in services industries. This does not change during the pandemic. However, the

overall probability of firms exiting is higher during the Covid pandemic, though this varies by sector. In the Covid period, the protective effect of being near the productivity frontier is also diminished.

Short abstract:

In periods of economic turmoil, the rate of firm exit (death) is accelerated, with important social implications such as job loss and an uneven impact across space. Though the most productive firms are normally more likely to survive, there is mixed evidence whether this is true during periods of economic crisis. Moreover, although firms in dense urban environments tend to be more productive, we know little about the geographical dimension of the productivity-exit relationship. This project conducts econometric research at the firm and micro-geographic level to study what affects firm exit in Spain between 2011 and 2022. We analyse whether being located in an area with strong access to markets reinforces the positive productivity-survival relationship. We also assess whether high market access areas provided firms with better environments to remain productive and survive, or on the contrary if their very competitive environments might have accelerated the death of firms during the Covid-19 pandemic. Finally, we expect to establish what types of locations are more likely to experience stronger productivity growth through firm exit and reallocation of production during a crisis.
Our results so far show that firms that are closer to the productivity frontier are more likely to survive, while firms in locations with greater access to markets are less likely to survive. The protective effect of productivity is also diminished for firms that are in locations with greater market access, particularly in services industries. This does not change during the pandemic. However, the overall probability of firms exiting is higher during the Covid pandemic, though this varies by sector. In the Covid period, the protective effect of being near the productivity frontier is also diminished.