



Innovation, employment growth, and foreign ownership of firms A European perspective



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ABSTRACT

This paper examines how foreign-owned and domestically owned firms transform innovation into employment growth. The empirical analysis, based on the model of Harrison et al. (2008) and CIS data for 16 countries, reveals important differences between the two groups: Due to general productivity increases and process innovation, foreign-owned firms experience higher job losses than domestically owned firms. At the same time, employment-creating effects of product innovation are larger for foreign-owned firms. Together with employment-stimulating effects stemming from existing products, they overcompensate the negative displacement effects resulting in net employment growth in foreign-owned firms. However, net employment growth turns out to be smaller in foreign-owned firms than in domestically owned firms.

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1. Introduction

The effects of globalisation on employment are a key issue in policy debates. Foreign-owned firms can be a source of employment growth in their host countries (Barba Navaretti, 2004; Bellak, 2004). Foreign-owned firms are affiliates owned by another company (the parent company of the affiliate) headquartered in a foreign country. Their market entrance and subsequent growth create new labour demand. Furthermore, foreign-owned firms may have access to new technologies provided by their parent company which increase their competitiveness and, as a result, also their demand for labour. In addition, knowledge and technologies might spill over to domestically owned firms and stimulate their growth as well. But the presence of foreign-owned firms may also have negative consequences for employment. Growth may be lower because foreign-owned firms may be able to exploit synergy effects within the company group. Compared to domestically

owned firms, employment in foreign-owned firms may also be more volatile (Buch and Lipponer, 2010; Scheve and Slaughter, 2004).

This paper wants to contribute to this discussion by disentangling the sources of employment growth in domestically owned and foreign-owned firms. We start from two basic assumptions discussed in more detail below. First, innovation and technology are major drivers for employment growth of firms (Bogliacino and Pianta, 2010; Harrison et al., 2008; Pianta, 2005). Second, innovation and technology are also key dimensions in which foreign-owned and domestically owned firms differ. There is ample evidence that multinational enterprises (MNEs) tend to possess superior firm-specific assets, operate more frequently in R&D-intensive sectors and employ more highly-qualified staff than domestically owned firms (Bellak, 2004; Griffith and Simpson, 2001; Markusen, 2002). Both groups also differ in their capabilities to create new products and in their ability to successfully introduce innovations to the market (Dachs et al., 2008; Frenz and Letto-Gillies, 2007; Sadowski and Sadowski-Rasters, 2006). We will hypothesise that these differences, in turn, lead to differences in employment creation and destruction from innovation between the two groups. To give two examples: Foreign-owned firms that introduce new processes by adopting superior technologies of their

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Table 1
Effects of product and process innovation on employment at the firm level.

	Employment-reducing effects (displacement effects)	Employment-creating effects (compensation effects)
Product innovation	<i>Productivity effect of product innovation:</i> New products require less (or more) labour input (–) <i>Indirect demand effect:</i> Decrease in demand of existing substitutes (–)	<i>Direct demand effect:</i> New products increase overall demand (+) <i>Indirect demand effect:</i> Increase in demand of existing complementary products (+)
Process innovation	<i>Productivity effect of process innovation:</i> Less labour input for a given output (–)	<i>Price effect:</i> Cost reduction passed on to price expands demand (+)

parent companies might achieve higher productivity gains and thus less employment growth. On the other hand they might reach higher sales and employment growth rates when introducing new products because they can learn from experiences the multinational company has made in other countries.

We investigate the linkage between employment growth and innovation in foreign-owned and domestically owned firms. The paper differs in three important points from other contributions: First, we employ an econometric model that examines the effects of process innovation and output growth from product innovation on employment at the firm level. This approach allows us to disentangle some of the employment effects at work and to relate differences in employment creation between foreign-owned and domestically owned firms to differences in innovation behaviour. This is in contrast to most studies in this area which focus on indirect employment effects in domestic firms due to spillovers that arise from the presence of foreign-owned firms (Keller, 2010; Marin and Sasidharanb, 2010; Motohashi and Yuan, 2010). Second, unlike other studies, we do not focus on one country but scrutinise employment effects at the firm level using a large data set containing observations from 16 European countries. Finally, we provide a separate analysis for the service sector. The service sector is a major source of employment growth in industrialised countries (O'Mahony and Timmer, 2009). Studies that investigate innovation as well as multinational activities, however, often neglect service industries.²

The paper is organised as follows: Section 2 discusses theoretical linkages between innovation and employment in foreign-owned and domestically owned firms from which we draw our hypotheses presented in Section 3. Section 4 describes the data set. We start our empirical analysis with descriptive statistics on employment growth and innovation for both groups of firms in Section 5. Section 6 explores the econometric set-up of this study and Section 7 presents and discusses the results. Section 8 draws conclusions from the analysis.

2. Background

Our research draws on two strands of literature: The first strand investigates employment impacts of innovation, and the second one deals with differences between foreign-owned and domestically owned firms in general and in innovation in particular.

2.1. Innovation, job creation and job destruction

Innovation and employment are related through various channels, and different forms of innovation may have different effects on employment growth (Garcia et al., 2002; Hall et al., 2008; Harrison

et al., 2008; Pianta, 2005). A basic distinction is between product and process innovation. Both kinds of innovation can be associated with labour-saving effects which reduce employment (called displacement effects) and employment-stimulating effects (called compensation effects) (see Table 1).

The link between innovation and employment can be analysed at different levels: firm, sector, and macro level. This paper takes a firm-level perspective, representing one of the main instances where the according mechanisms are more or less explicitly supposed to work (Harrison et al., 2008). At the firm-level, employment effects of *process innovation* are closely related to productivity changes. The introduction of new production processes most often leads to an increase in productivity since process innovation allows firms to produce the same amount of output with less labour input and, *ceteris paribus*, lower unit costs. The extent of this negative displacement effect, also called *productivity effect*, depends on the current production technology and, thus, the rate of substitution between input factors as well as on the direction of the technological change.

At the same time, the reduction in unit costs allows the innovative firm to lower its product price. In a dynamic perspective, lower prices can lead to a higher demand for the product, thus increasing output. The magnitude of this positive compensation effect, also called *price effect*, depends on the price reduction, the price elasticity of demand, the degree of competition as well as on the behaviour and relative strength of different agents such as managers and unions within the firm (Garcia et al., 2002).

Product innovation spurs employment growth mainly via demand. When a new product has successfully been introduced to the market, it creates new demand for the output of the innovating firm. This *direct demand effect* can either be the result of an overall market expansion, or it may come at the expense of the firm's competitors. The size of the compensation effect resulting from demand increases depends on the existence of substitutes and the reactions of competitors (see Garcia et al., 2002).

In addition to the direct demand effect, various indirect employment effects from product innovation may occur at the firm level as well. First, *indirect demand effects* on the innovative firm's *existing products* have to be taken into account. If the new product (partially or totally) replaces the old one, labour demand for the production of the old product will decrease, and the overall effect is ambiguous for the innovating firm. However, in the case of complementary demand relationships, the new product will cause demand for existing products to rise as well, and employment will increase further. Second, the same amount of output of the new product may be produced at higher or lower productivity levels compared to the old product. That is, the new product may imply a change in production methods and input mix, which could either reduce or increase labour input (Harrison et al., 2008). This *productivity effect of product innovation* thus could also lead to an employment reduction, even if product innovation is not associated with simultaneous process innovation. The extent and direction of this effect has to be determined empirically.

On a sector or macro level, additional employment effects of innovations exist. Process innovations, for instance, may impact employment in upstream firms. It is directly stimulated if the

² An early study which investigates the employment effects of innovation in services is Evangelista and Savona (2003). They find different effects between various sectors, firm size classes and skill levels of the employees. Recent studies that include service industries are Harrison et al. (2008), Hall et al. (2008) and Peters (2008). All these papers study the employment effect of innovation activities for service firms in general without distinguishing between ownership of firms.

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