

SESSIONE VII

IMPRESE: TASSAZIONE, CREDITO E OCCUPAZIONE

La proprietà estera delle imprese influenza l'occupazione? Alcune evidenze per le imprese italiane attraverso l'utilizzo di un modello panel

Alessandro Zeli, Matilde Bini, Leopoldo Nascia e Margherita Velucchi

Foreign ownership of business affected employment? Some evidences for Italian firms using a panel model

M. Bini,
Università Europea Roma

L. Nascia
Istat

M. Velucchi
Università Europea Roma

A. Zeli
Istat
zeli.istat.it

Sommario

La presenza di imprese a controllo estero in Italia è aumentata dopo l'introduzione della moneta unica. Tale presenza influenza le condizioni presenti nel mercato di riferimento delle imprese domestiche e può produrre spill-over sul tasso di crescita dell'occupazione. In questa sede si vogliono analizzare gli effetti sull'occupazione sia direttamente derivati dalle imprese a controllo estero sia dovuti alle modificazioni del quadro economico settoriale causate dalla presenza più o meno estesa delle stesse. L'analisi è svolta utilizzando un database longitudinale Istat e applicando un modello panel nelle differenze prime per il periodo 2002-2007.

Parole chiave: modelli panel, occupazione, imprese a controllo estero

Abstract

Since the introduction of Euro, the presence of foreign ownership business in Italy is steadily increasing. This presence affects the market structure and may produce spill-over effects on employment rate of growth, as well. This paper deals with the change in the Italian employment rate, depending on both the presence of international business and its effects on the Italian economic system. The analysis is carried out by disentangling the information of a wide longitudinal dataset of the Italian National Statistical Institute. In particular, a first differencing panel model is applied and preliminary results are presented using a panel of Italian firms on 2002-2007.

Key words: First differencing methods, Employment growth, Foreign ownership of firms

Introduction

After the Euro introduction there had been an increasing foreign investment presence in Italy through acquisition of Italian firms and greenfield investments (even if to a lesser extent). The economic literature suggests that a stronger presence of foreign ownership of business (fob) in some economic sectors may foster the growth and the employment in those sectors thanks to positive spillover effects that overbalanced the negative ones. Moreover, employment should increase more in sectors in which fob presence is stronger.

The aim of this paper is to understand the actual effects of increasing fob presence in Italy in terms of employment changes during the period 2002 – 2007.

Economic theory suggests that capital inflows may allocate more efficiently resources and improve growth. In particular Foreign Direct Investment (FDI) may substitute the domestic saving (if it is insufficient to finance economic growth) and to improve the industrial system efficiency by means positive spillover. In case of more industrialized countries many of these factors may not be relevant and the reasons behind an Italian firm' acquisition may be mainly related to larger market share, a new market or the firm' know-how.

The factor influencing the employment behavior in sectors with high fob may go through a "substitution" effects: the fob carried out most aggressive competition policy on domestic markets towards domestic firms, the local sub-contractors are being substituted by foreign ones (sometimes belonging to the same fob group). As a consequence, the sectors with high fob may be more efficient, they may adopt labour saving processes or they may break the value chain by delocalizing some processes to other foreign firms .

Positive spill-over may be originated by the exploitation of wider markets so the increased production may improve the firms growth, thus increasing the level of both low and high skilled employment. A positive effect suggested in literature is the introduction of innovation and new technologies in acquired firms (Bandik, Karpaty, 2007). This may essentially improve productivity but has a different effect on employment: if the introduction of new technologies allows the production of new goods and services (creating new markets) it may have positive effects on employment. If new technologies impact on the production process of existing goods and services they can improve productivity but they may decrease employment.

In this paper, we use an econometric model to distinguish the effects in employment creation between foreign-owned and domestically owned firms in line with Keller (2010) and Motohashi and Yuan(2010).

Literature overview

The literature on influence of fob on employment growth and its empirical evidence is mainly focused on developing countries (Lipsej and Sjöholm, 2010) but there are many studies that analyse the consequences of fob presence on employment growth for industrialized countries too. For instance Dachs and Peters (2010) studied European countries using panel models. They find that foreign-owned firms experience higher employment losses than domestically owned firms, thanks to higher productivity caused by the introduction of new processes and better technologies from their parent companies. These gains in productivity mean that foreign-owned firms create more jobs per unit of product to meet the employment growth rate of domestic firms. Lipsey and Sjöholm (2010) find (for Indonesia) that employment growth is relatively high in foreign-owned establishments, although foreign firms own relatively large domestic plants, which in general grow less than smaller plants.

Bandick and Karpaty (2007) focus on the effects on employments of foreign acquisition in Sweden. This study uses matching techniques and difference-in-difference estimator to verify the impact of foreign acquisition of domestic firms in terms of change in skilled labor demand. The results of this analysis show a clear skilled employment growth, maybe due to technology transfers from the acquiring foreign MNEs. Moreover, in domestic MNEs taken over by foreigners, seems that there's no employment effect.

The relationship between foreign ownership and employment may be analysed at firm, sector, and macro level. At the firm-level, employment effects are related to productivity

changes in fact (if there are technological transfers between parent and affiliate companies) an increase in productivity allows enterprises to produce the same output with less inputs (labor etc.) and at lower unit costs.

Other indirect effects may arise if the (innovative) foreign affiliate increases its output. Supplier firms (if domestic) benefit from this output increase and may raise their labor demand as well. On the other hand, domestic competitors, which cannot keep pace with the technological progress (or with the decreasing prices of semi-finished products), will lose market share or disappear and this process implies a deterioration of jobs (Dachs and Peters, 2013; Harrison *et al.*, 2008).

Foreign affiliates (innovating) firm may in principle may face an unlimited demand, demand is usually constrained at the industry level. Fob may create negative externalities when expanding production at the expense of other firms' existing products. Indeed, the overall impact of firms' innovation on employment does not depend only on the individual behavior since it is an outcome of a competitive game taking place among firms in each industry. The existence of a positive relationship between innovation and employment at the firm level may be compatible with a job loss at more aggregate level, as stated by Evangelista and Savona (2003). This study is focused on the innovation impact on services employment in Italy and it shows a negative impact for the period 1993-2002. According to the authors this is due to the Italian firms concentration in traditional sectors, where the productive increase effect prevails, causing a decrease in employment.

At sector and macro level, these indirect demand effects on existing products, known as 'business stealing', may be important and have to be analyzed in details (Aghion and Howitt, 1992). Moreover, the innovation activities in large firms are associated to organizational changes which lead to job losses.

There are evidences that multinational enterprises (MNEs) tend to have high firm-specific assets, and they operate more frequently in R&D intensive sectors and employ more highly-qualified staff than domestically owned firms (Bellak, 2004). Domestic firms taken over by foreign firms are not randomly acquired and they show a very peculiar performance. In general, the fob are larger and show higher values in productivity and wages (Bandick and Karpaty, 2007). In general, foreign-owned firms often have better firm-specific assets such as knowledge, technologies, brands or distribution networks (Markusen, 2002; Dachs *et al.* 2013).

Studies carried out on a sample of Italian firms between 1995 and 2003 (Hall *et al.*, 2008), mainly focused on interactions between innovation and employment, did not find a large employment displacement effects caused by an increase of productivity, due to an innovation introduction. According to authors, this may depend on the inability of Italian firms to transform the productivity gains of innovative sectors in employment reallocation between more innovative to less innovative sectors. A comparison among different European countries (Harrison *et al.*, 2008) shows that some displacement effects are present in Germany for which the total employment growth is lower and more innovative products production implies a share of employments growths larger with respect to other Countries (UK, France, Spain).

Methodology

From an empirical point of view, the facts mentioned in the previous section create a bias due to different characteristics of fob and domestic firms; endogeneity arises when an econometric estimation is run and results are deeply affected. Thus, some specific aspects and interactions among the economic variables have to be taken in consideration in esti-

mating a model that studies the effects of fob on the employment. In particular, some “endogenous” effects have to be studied such as: the influence of fob on productivity, the influence of fob on labor skill mix, the influence of firms’ size on fob, productivity and the employment change. In order to face these interactions it is implemented a first differencing panel model. To this aim, we use two proxies for fob presence: the firm belonging to a foreign group (fob dummy); and the fob presence measured by the ratio of fob value added on total industry value.

The different paths of occupational trend in this case may be analyzed by means of a first differencing panel model. Following this approach we create two dummies: *fob* and *qfob* that identify the foreign owners firms and the share of value added produced by fob in its own the two-digit NACE sector respectively. So *fob* and *qfob* are calculated as follows:

$$fob(x_{i,t}) = \begin{cases} 1 & \text{if } x_i \in F \\ 0 & \text{if } x_i \notin F \end{cases}$$

where F denotes the set of fob firms. And:

$$qfob(x_{i,t}) = \frac{\sum_{i:t}^m VA_{i:t}^j}{\sum_{i:t}^n VA_{i:t}^j} \text{ for } t = 1, \dots, p$$

where $\sum_{i:t}^p VA_{i:t}^j$ is the value added produced by fob in the economic sector j and $\sum_{i:t}^n VA_{i:t}^j$ is the value added produced by all firms in the sector j .

The model is built by considering some control variables that influence the firms’ employment growth, in particular the following short period dynamic model is estimated:

$$\Delta e = \beta_0 + \beta_1 \Delta sales + \beta_2 \Delta clul + \beta_3 \Delta vad + \beta_4 \Delta wdip + \beta_5 \Delta invt + \beta_6 \Delta qfob + \beta_7 \Delta qadd + \beta_8 \Delta qfadd + \beta_{15} \Delta fob + \Delta u_{it} \quad T=2, \dots, T \quad (1)$$

All economic variables are expressed in logarithms and they are described in the following:

<i>e</i>	log of employment
<i>lsales</i>	log of total sales
<i>lclul</i>	log of labor cost for unit of labor
<i>vad</i>	log of productivity
<i>lwdip</i>	log of wage for employees
<i>linvit</i>	log of total investment for person employed
<i>qfob</i>	share of foreign ownership of business on total value added of economic sector (2-digit NACE)
<i>qadd</i>	log of NACE 2-digit persons employed share on total employment
<i>qfadd</i>	interaction effect between <i>qadd</i> and <i>fob</i>
<i>fob</i>	dummy for foreign owned firm

The models are estimated using a panel data method; in particular we use the following model for T time periods:

$$y_{it} = \mathbf{x}_{it} \boldsymbol{\beta} + c_i + u_{it} \quad t = 1, \dots, T \quad (2)$$

Under the assumption $E(u_{it} | x_i, c_i) = 0, t = 1, 2, \dots, T$. We use the differencing transformation of (2), lagging the model (2) one period and subtracting yields:

$$\Delta y_{it} = \Delta x_{it}\beta + \Delta u_{it} \quad t = 2, \dots, T \quad (3)$$

Where $\Delta y_{it} = y_{it} - y_{it-1}$, $\Delta x_{it} = x_{it} - x_{it-1}$ and $\Delta u_{it} = u_{it} - u_{it-1}$. As with FE transformation this first differencing transformation eliminates the unobserved effect c_i .

The strictly exogeneity holds under the condition:

$$E(\Delta u_{it} | \Delta x_{i2}, \Delta x_{i3}, \dots, \Delta x_{iT}) = 0 \quad t = 2, 3, \dots, T \quad (4)$$

When the condition (4) does not hold it indicates the presence of endogenous variables so an IV method have to be implemented in order to estimate correctly the model (1).

The analysis is carried out in three steps:

- OLS regression estimation for pooled data
- Fixed Effects and Random Effects models estimation
- IV estimation

Results

In estimating the model we considered only the period from 2002 to 2007 because of data completeness¹ and a balanced panel of around 8,000 firms. When using the first difference approach, we consider also 2001 data in order to maintain the number of T=6.

Having tested the presence of serial correlation in simply OLS model estimation we move to estimate a pooled OLS model in first differences to eliminate the fixed effects. The results are presented in Table 1.

Table 1 – First differences pooled OLS estimation

Variables	Coef.	Std. Err.	
$\Delta sales$	0.2458	0.0025	***
$\Delta clul$	-0.4411	0.0041	***
Δvad	-0.0719	0.0020	***
$\Delta lwdip$	-0.0022	0.0008	***
$\Delta linvit$	-0.0009	0.0004	**
$\Delta qfob$	-0.0057	0.0029	**
$\Delta qadd$	0.0000023	0.0000002	***
$\Delta afadd$	0.0000003	0.0000001	***
Δfob	-0.0256	0.0105	**
<i>cons</i>	0.0025	0.0006	***

Adj R-squared = 0.3506

F(9, 42663) = 2560.70 Prob > F = 0.0000 $\rho_1 = -0.0527734$ (0.0052456) ***

*** significant at 1% level, ** significant at 5% level, * significant at 10% level

¹The panel, used in this paper, is a catch-up prospective database and contains 13,573 units (firms) representing the 20 persons employed and over firms population (Nardecchia *et al.*, 2010). The panel data were linked with FATS survey data (Foreing Affiliate Trade Statistics) in order to obtain information of foreign ownership of business.

Note the parameters present a high significance level with the expected signs. The effects of an increase of productivity, skills mix, investment on employment rate of growth is negative as expected. More important, the estimates yields negative parameters' values also for $\Delta qfob$ and Δfob detecting a negative effect of fob on employment change. However, the pooled OLS estimation is affected by serial correlation of residual ($\rho_1 = -0.053$) and this indicates a serious endogeneity problem. Table 2 presents the result for FE and RE model using first differencing.

Table 2 – First differences FE and RE estimations

Variables	FE			RE		
	Coef.	Std. Err.		Coef.	Std. Err.	
$\Delta sales$	0.2108	0.0027	***	0.2458	0.0025	***
$\Delta lclul$	-0.4460	0.0042	***	-0.4411	0.0041	***
Δvad	-0.0667	0.0020	***	-0.0719	0.0020	***
$\Delta lwdip$	-0.0022	0.0008	***	-0.0022	0.0008	***
$\Delta linvit$	-0.0009	0.0004	**	-0.0009	0.0004	**
$\Delta qfob$	-0.0094	0.0033	***	-0.0057	0.0029	**
$\Delta qadd$	0.0000026	0.0000003	***	0.0000023	0.0000002	***
$\Delta qfadd$	0.0000003	0.0000001	**	0.0000003	0.0000001	***
Δfob	-0.0190	0.0114	*	-0.0256	0.0105	**
<i>cons</i>	0.0028	0.0007	***	0.0025	0.0006	***
R ² : within	0.3554					
between	0.3502					
overall	0.3483					
F test that all u _i =0	F(7572, 35091) = 1.05			Prob > F = 0.0030		
Hausman test: chi2(7) = 1263.75						
Prob>chi2 = 0.0000						

*** significant at 1% level, ** significant at 5% level, * significant at 10% level

The panel models confirm substantially the results of OLS estimates. The Hausman test reject the null, so we can correctly use FE model, given the presence of fixed effects and having excluded the presence of firm' specific effects on the employment rate of growth. Since we detected serious endogeneity problems and our previous results are biased, We decided to estimate the model with IV method . Results are reported in Table 3.

Table 3 – IV estimations

	IV (2SLS) estimation			Fixed Effects estimation		
	Coef.	Std. Err.		Coef.	Std. Err.	
$\Delta sales$	0.3533	0.0404	***	0.3263	0.0464	***
$\Delta lclul$	-0.2060	0.0918	**	-0.1901	0.1068	*
Δvad	-0.4687	0.1511	***	-0.4935	0.1738	***
$\Delta qfob$	-0.0109	0.0042	***	-0.0161	0.0052	***
$\Delta qadd$	0.0000017	0.0000003	***	0.0000018	0.0000005	***
$\Delta qfadd$	0.0000004	0.0000002	**	0.0000003	0.0000002	*
Δfob	-0.0427	0.0158	***	-0.0306	0.0175	*
<i>cons</i>	0.0084	0.0028	***			

Underidentification test	14	10.783
Chi-sq(2) P-val	0.0009	0.0046
Weak identification test (Cragg-Donald Wald F statistic):	7	5.391
Stock-Yogo weak ID test critical values:		
10% maximal IV size	19.93	19.93
15% maximal IV size	11.59	11.59
20% maximal IV size	8.75	8.75
25% maximal IV size	7.25	7.25
Sargan statistic	0.005	0.066
Chi-sq(1) P-val	0.9431	0.7974

Regressions include year dummies

Tests confirm the correct identification of the IV model, Δvad was instrumented by $\Delta wdip$ and $\Delta invt$. The skill mix and investment have a large influence on productivity so they were chosen to instrument Δvad . The results are coherent with the previous, with only a weaker significance for $\Delta clul$ and Δfob coefficient.

Our results are in line with Mencinger (2003) that directly estimated the effects on employment of firms acquisition by foreign group in 8 Eastern Europe Countries. The foreign acquisitions of local firms may contribute to country growth if the total country's saving is too low to support investment, or they may generate investment if the domestic firms present a very low level and they can improve productivity by means of introduction of new technology and/or products. Mencinger (2003) did not find evidence of positive impact on employment and on human capital formation.

Final remarks

In recent years the presence of foreign ownership business in Italy is steadily increasing, affecting the market structure and producing spill-over effects on employment rate of growth. This paper deals with the change in the Italian employment rate, depending on both the presence of international business and its effects on the Italian economic system. The analysis is carried out by exploiting the information of a wide longitudinal dataset of the Italian National Statistical Institute. In particular, a first differencing panel model is applied and preliminary results are presented using a panel of Italian firms on 2002-2007. The results confirm the recent literature on the relationship between employment and foreign ownership of business. Many factors influence the employment rate of growth in presence of firms belonging to a foreign group: innovation, access to wider markets, etc. Our analysis show a prevalence of negative effects that overcame the positive ones.

In particular, there is a negative effect of fob on employment rate of growth, on the cost of labour for unit of product ($clul$) and on productivity. Productivity, in turn, depends on firm's skill mix and on average investment. We notice a negative effect of $qfob$ (penetration of fob in a specific industry) and to a lesser extent of fob on employment. The negative $qfob$ effects implies a negative spillover of fob on the employment rate of growth.

Our results are still preliminary but they suggested to investigate more on the complex relationships involving employment and fob , especially including in the models innovation role, international diversification or trade openness.

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