Relocation in Labour-Intensive Sectors from Southern Europe: a threat or a forward looking strategy?

Marisa Cesário*, Maria Teresa de Noronha Vaz*

*CIEO – Research Centre for Spatial and Organizational Dynamics, University of Algarve

Contact:

Universidade do Algarve,

Faculdade de Economia

Campus de Gambelas

8005-139 Faro

Portugal

mcesario@ualg.pt

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Abstract

Notwithstanding the present context of economic globalisation, we admit the role of territorial agglomerations for the competitiveness of regions and firms and we ask about the impact of firms' technological adjustment strategies to the territories themselves, namely in terms of regional employment and income perspectives?

In order to empirically test if technical changes are associated with the variation of employment levels and skills, a survey application to a sample of 167 SMEs from textile, clothes and leather (TCL) sectors located in Southern Europe is used.

Using statistical procedures, the importance of several predictor variables to the variation of firms' employment was evaluated. The results confirm that technical change is both skill-biased as well as positively associated with employment growth. Firms investing in new plant and equipment and firms investing in the development of new products are more likely to increase employment than the others. Also, firms hiring in these sectors, look for adequate qualifications, in particular regarding the ability to work with internet tools.

We argue that delocalisation can be transformed in a positive strategic reality if TCL firms are able to lower production costs and logistics in order to make the necessary technological investments.

Key-words: technical change; labour-intensive industries; impacts on labour and skills; globalisation; delocalisation.

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1. Introduction

The importance of the textile, clothing and leather sectors in Europe is recognizable. Predominantly an SME-based industry, with a turnover of more than 230 billion euros produced in around 273 thousand enterprises, these sectors employ more than 3 million people (Eurostat, data for 2005). Notwithstanding the political concern and support for the sector, there seems to be a lack of a new and specific regional initiatives or programs, targeting the sectors by themselves. So, their success depends essentially on how European industries will strategically adjust to the new opportunities and challenges brought by the new economic trends.

The impact of new technologies, the changes in consumer behaviour, the liberalisation process (following the WTO agreement) as well as the challenges of globalization can be considered as the most important drivers of change in European labour-intensive sectors. In a global economy, and particularly for the labour-intensive sectors, it is expected that the sourcing of low value-adding activities will increasingly go to low cost countries, with more aggressive retail strategies in the west and the emergence of new markets. This challenges companies to technology adjust to this new global market perspective.

2. Regional competitiveness in the global economy – theoretical framework

Economic globalisation is leading firms to face an increasingly openness to rival producers, whatever their original location of production. Not only firms but also industries and regions are now much more vulnerable to price and quality competition. Camagni (2002) suggests that regions compete on the basis of absolute competitive advantages, arising when a region possess superior technological, social, infrastructural or institutional assets, which are external to firms but of their benefit. The author assumes that territories compete with one another and both attractiveness and local competitiveness depend on similar common factors, which goes beyond physical conditions and refer to relational capital and the learning capacity expressed by the territory. This approach and other similar ones stress the discussion on how important is geographic proximity for the strategic positioning of firms.

In spite of the fact that some authors claim that the notion of distance is “dead”, arguing with the increasing globalisation processes as a tool for all over spread acquisition and diffusion of knowledge, other scholars assume the role of space and territory in creating competitiveness and better economic performance.

To the first group of authors belong Maskell and Malmberg (1998) and Maskell *et. al* (1999) who have used the term 'ubiquitification' as the outcome of the ongoing globalization process and meaning the process whereby former tacit knowledge gradually becomes codified. As they explain, in open markets and when knowledge of new technologies and new organisational designs become globally available, firms in low-cost areas become more competitive.

Nevertheless, the authors also recognise that no firm can build competitiveness on ubiquities alone. Most firms learn from close interaction with suppliers, customers and competitors and knowledge processes are deeply influenced by local resources, institutions, social and cultural structures (localised capabilities). Recognising that individual companies are the ones that compete in the market, Camagni (2002) remembers that most of the small and medium sized companies and respective entrepreneurs are to a large extent generated by the local context and, in order to face changing and uncertain economic conditions, their decision-making process is firmly based on socialised practices, thereby stressing the importance of geographic proximity as a mediating factor.

When considering innovative activities, for instance, the importance of geographic proximity promoting interaction, has been defended by authors like Gambardella and Malerba (1999), Arndt and Sternberg (2000) or Cassiman and Veugelers (2002). Inter-firm linkages, in the form of regional networks, are proven to be important prerequisites for successful innovation activities in firms. Similar approaches can also be found in Malmberg and Maskell (1997), Kirat and Lung (1999). In Vaz, Cesário and Fernandes (2006), the argument has been stressed even further up to the extent of detecting which exact factors of geographic proximity would be more responsible for innovative attitudes within the firm and why.

Indeed, the dead of geography' thesis cannot be sustained, since it wrongly assumes that the rapid diffusion of information and codified knowledge means the rapid diffusion of understating, and that is not correct (Morgan, 2004). Although organisational proximity is important, it does not substitute direct face-to-face communication. Another aspect is that some types of knowledge travel more easily than others. While analytical knowledge, which results from the application of scientific laws, has a relatively constant meaning by location, the same is not true for the synthetic or symbolic knowledge[i], whose meaning is substantially variable (Gertler, 2008).

That is why, as explained by Scott *et al.* (2001) and Scott and Storper (2003), unlike the idea that globalization means the diffusion and spreading of economic activities, this phenomena has been accompanied by the affirmation of agglomerative tendencies as sources of economic growth. According to the authors, the most remarkable agglomeration forms are the, so called, 'city-regions', that act as locomotives of national economies as sites of dense interrelated economic activities with high levels of productivity and innovative potential. This is happening in both developed countries, where metropolitan areas are growing faster than others, and in the less-developed ones, where the effects of agglomeration on productivity are strongly apparent. These results support the idea that globalization and its consequent market opening and technological progress tended to reinforce urbanization, not the contrary. Both large-scale agglomeration and regional economic specialisation are persistent and growing phenomena: firstly, the geographic proximity eases the dynamics of backward and forward inter-linkage of firms; secondly, it allows the formation of dense local labour markets around multiple workplaces and finally, it facilitates the emergence of localised relational assets promoting learning and innovation effects. The reasons for location proximity go beyond transactional efficiencies, and include various kinds of externalities, such as knowledge spillovers and dependence on human relations, rules and customs that enable firms to coordinate under conditions of uncertainty.

This is even truer when considering the specific case of small firms. Contrarily to big firms, SMEs interact intensely with the territory in which they locate, as a signal of their embeddedness. The particular tight links they develop with the external environment also reduce uncertainty risks. In general, SMEs do not only locate nearby the residence of their owners but also the geographical and sociological proximities constitute their main sources of assets and information (Julien, 1995). This fact determines the perspectives and strategic choices of the firms, because most of the market perception arises from the inputs that the territorial institutional context supplies them (Vaz, 2006). Growth determinants as competition capability, political understanding and knowledge of consumption behaviour do result from the external environment of the firm. Not surprising that the attributes of such environments become, therefore, a crucial factor for the development of different entrepreneurship profiles. As a result of different regional settings' attributes, entrepreneurs may develop different technological abilities. Those abilities may represent an important competitive advantage for European regions, not

able to win low-cost competition, but benefiting from the efficiencies of highly specialised territorial agglomerations.

3. Technical changes and employment – theoretical framework

Territorial contexts are determinant for the technological capabilities of firms, but the way firms technological respond to new and harder market conditions is not innocuous for the territory itself. Technological adjustment strategies, especially for regions highly dependent of certain sectors, may be responsible for long-term impacts on local employment and income perspectives.

The effects of technical change on employment have increasingly interested researchers. More even since unemployment is one of the greatest economic problems faced by developed countries. For the public in general, and although recognising that innovation is a major driving force behind job creation, the concerns about the future of work as the diffusion of information technology proceeds, are current.

Chennells and Van Reenen (2002) survey the data on the effects of technical change on skills, wages and employment by examining the micro-econometric evidence at industry and firm level. The results from different countries were widely variable. Overall, the authors found consistently evidence for positive effects of proxies for product innovations on the growth of employment.

An example (Van Reenen, 1997) was found in the British firm-level panel data on innovative activity. The study identified the effects of technical change on jobs and confirmed the positive association between proxies for technical change and employment.[ii] Also, similar results were obtained by Enfort, Gollac and Kramarz (1999) when studying the effects of new technologies on employment in French firms or by Blanchflower and Burgess (1999) who concluded that the introduction of new technology in UK and Australian plants was more associated to job growth rather than to job decline. Zimmermann (1991) used data for German firms in order to evaluate the relative importance of three driving forces: technological advance, declines in demand and increases in labour costs, for the employment decline in manufacturing industries. The results pointed out that the lack of demand is a dominant factor in employment decisions. Technological advances appear in second, while labour costs place third. Smonly (1998) used micro-data from West German manufacturing firms to estimate a model on the impact of innovations upon the output, capacity utilisation, employment and prices. The conclusions were that firms which implemented product innovations

increase prices, exhibit a higher utilization and grow faster. Product innovations also affect positively the grow and volatility of employment, being this volatility higher with the lower price elasticity of demand, which favours employment adjustments against price adjustments to technical change[iii]. Regarding process innovations, the results also indicate positive effects on output and employment, but not conclusive effects on prices and sales. The results point towards that both types of innovation generate positive effects on employment but do not indicate which effect is stronger. A reply was supplied by Greenan and Guellec (1997) who explained, using French data, that product innovation produces lower effects than process innovation.

Different results come out when considering organisational innovations. Osterman (2000) found that measures of new organizational practices are associated with higher layoff rates of production workers, even within firms that have been experiencing net employment gains. A confirmation on these results was obtained by Black, Lynch and Krivelyova (2004).

4. Method

4.1 Research hypothesis

The literature revision suggests that there is consistently positive association between proxies for technical change and employment. In agreement, the following research hypothesis is considered: The adoption of new technologies affects the employment at the firm-level in TCL sectors.

4.2 Sampling

Empirically, the analysis is based on a survey application[iv] to a sample of 167 small and medium sized firms from clothes, textile and leather sectors, belonging to the selected European Southern regions: North (Portugal), Valencia (Spain), Macedonia (Greece) and South Italy (Italy). A common survey was applied in each area, allowing a cross-country analysis among a set of regions whose economic dependence on labour intensive sectors, particularly sensitive to the recent enlargement to East, is a common threat. Table 1 summarise the sample distribution. Around 74% of sample firms textiles and clothes industry. A less representative proportion (26%) corresponds to footwear and leather industry.

Table 1
Sample distribution by region and sector

	Footwear and Leather Products	Textiles and clothes	Total
North, Portugal	14	52	**66**
Macedonia, Greece	14	36	**50**
South Italy	-	24	**24**
Valencia, Spain	15	12	**27**
Total	**43**	**124**	**167**

Source: Author's elaboration.

4.3 Statistical data and methodology

In order to empirically test the impact of technology-related strategies on firms' employment, the following regression is proposed:

$$\Delta EMPL_i = \alpha + \beta \Delta SAL_i + \gamma INV_{ir} + \delta \Delta NSKILL_i + \varepsilon TECH_i + \zeta ATECH_{ir} + \mu \quad \textbf{(1)}$$

Where *i* stands for the sample firm and *r* for the option of the corresponding question, when variables are subdivided in different yes/no options, each one corresponding to a binary variable itself (see table 2).

The dependent variable △**EMPL** stands for the variation in firms' employment and distinguishes among three levels: employment has decreased, remained about the same or increased, over the past three years.

Table 2
Description of database variables

Variable	Description	Variable type
	Predictor variables	
△SAL	**Variation in sales**	Ordinary
INV	**Investments**	
	a) New plant and equipment	Binary
	b) Information technology	Binary
	c) Purchase of patents and licensing	Binary
	d) Development of existing products	Binary
	e) Development of new products	Binary
△NSKILL	**Variation in the need for adequately skilled employees**	Ordinary
TECH	**Adoption of technological changes**	Binary
ATECH	**Type of Adopted Technologies**	
	a) Inventory control (e.g. PCs, software etc.)	Binary
	b) Production process technology (e.g. CAM)	Binary
	c) Product design technology (e.g. CAD)	Binary
	d) Marketing technology (e.g. internet, web sites etc)	Binary
	e) E-mail	Binary
	f) Web site/ internet	Binary
	g) Business to business electronic networks	Binary
	Dependent variable	
△EMPL	**Variation in firms' employment**	Ordinary

Source: Author's elaboration.

Given the complexity around the assessment of technological strategies in firms, the choice of proxies of technical change is not an easy task to accomplish[v]. Dealing with small and medium sized firms from textiles, clothes and leather sectors, where innovative activities are embodied in new varieties of capital equipment and intermediate inputs, the variables selected as indicators of technological strategies intend to reflect this reality.

Firstly, it is expected that the variation in firms' employment depend on the adoption or not of new technologies as well as on the type of technologies adopted.

Variable **ATECH** distinguishes among seven different types of new technologies: more organizational oriented - inventory control (e.g. PCs, software etc.); marketing technology (e.g. internet, web sites etc); e-mail/ web site/ internet; business to business electronic networks; more product oriented - product design technology (e.g. CAD) and more production process oriented - production process technology (e.g. CAM). Seven binary variables are considered.

Variable **TECH** is similar to the previous but has a yes/no possibility standing directly for the adoption or not of new technologies by the sample firms. The firm was considered to have adopted new technologies if, at least two of the previous technologies were adopted in the past four years. This criterion was considered to be of good sense taking into account the possible combinations of answers given by the firms.

Because it is recognised that in such low-tech sectors technology-related strategies are very often difficult to assess by direct inquiring and observation (as there are not R&D departments, R&D personnel, patents registration or other type of direct measures of innovative activity), additional variables are included in the proposed regression.

Variable **INV**, for instance, is used to identify the different investments made by firms, admitting the possibility that technological progresses can be sometimes easier to identify (even for respondents) thought the direct observation of investments made. This variable differentiates among the following investments: new plant and equipment; information technology; purchase of patents and licensing; development of existing products; development of new products.

Variable $\triangle$**NSKILL** stands for the variation in firms' need for adequately skilled employees and it is included as it comprises complementary valid information on firms' technological activities. Three levels are considered: the need for adequately skilled employees has decreased, remained about the same or increased, over the past three years.

Finally, variable **△SAL** stands for the variation in firms' sales and also distinguishes among three levels: sales has decreased, remained about the same or increased, over the past three years. This variable allows identifying possible impacts on employment variation driven by market expansion.

5. Results

Given the ordinal nature of the dependents, the ordinal regression model was selected to build equation 1. This procedure allows evaluating the importance of various predictor variables in cases where the dependent variable is ordinal. Ordinal regression requires assuming that the effect of the independents is the same for each level of the dependent. Violation of this assumption can render the use of ordinal regression inappropriate since estimates may be seriously biased. The *test of parallel lines* assumption was performed in order to test this critical assumption. The null hypothesis that the parameters are the same across response categories was not rejected (p=0.553). The goodness of fit of the model was assessed both performing the *likelihood ratio test* – the null hypothesis that all predictors' coefficients are jointly equal to zero was rejected (p=0.000) as well as the *chi-square goodness of fit test* – the null hypothesis of a well-fitting model was not rejected (p= 0.099 for the Pearson chi-square and p=0.621 for the deviance chi-square).

Table 3 list the parameter estimates, the Wald statistic, its significance as well as the results for the Nagelkerke R-square. As in other types of categorical analysis, parameter estimates are presented for all but the reference level of any given factor. A positive parameter estimate means that, for that value of the independent variable, the likelihood of higher scores on the ordinal dependent variable increase. The Wald statistic is used to test the significance of individual logistic regression coefficients for each independent variable (that is, to test the null hypothesis that a particular coefficient is zero).

In testing H_1, that the adoption of new technologies affects the employment at the firm-level in TCL sectors, the null hypothesis ($H_0 : \varepsilon_i = 0$) was not rejected (p=0.101), meaning that the variable TECH is not statistically significant. This first result confirms the difficulty in the selection of indicators of technical change. The uncertainty associated with the question: "*Did the firm adopted new technologies in the past three years?"* may well explain this outcome. From the 167 inquired firms, 79% gave a positive answer to this question. That is why the model proposed included the investments actually made by firms, in order to avoid ambiguity. The null hypothesis ($H_0 : \gamma_i = 0$) was rejected, confirming the importance of the investment in new plant

and equipment (p=0.000) and in the development of new products (p=0.017). The coefficient parameters associated with these variables indicate that firms investing in new plant and equipment, and firms investing in the development of new products are more likely to be increasing employment than the others. Also, the null hypothesis $H_0 : \delta_i = 0$ was rejected (p=0.000 and p=0.004 for the first and second levels of the variable), with the coefficient parameters associated with the variable △NSKILL indicating that firms that increase the demand for more skilled employees are more likely to increase employment. Finally, the variation in firms' sales (△SAL) was not a significant predictor in explaining the variation in firms' employment (p=0.920 and p=0.477 for the first and second levels of the variable).

Table 3
Results from Ordinal Regression estimation: dependent △EMPL

Predictors	Estimate	S.E.	Wald $\chi 2$	p-value
INVa=0	**-0,923**	0,259	12,687	**0,000**
INVb=0	-0,220	0,279	0,625	0,429
INVc=0	0,188	0,348	0,294	0,588
INVd=0	-0,177	0,265	0,444	0,505
INVe=0	**-0,623**	0,261	5,706	**0,017**
ATECHa=0	0,292	0,305	0,922	0,337
ATECHb=0	0,379	0,289	1,712	0,191
ATECHc=0	0,241	0,284	0,722	0,395
ATECHd=0	0,265	0,305	0,755	0,385
ATECHe=0	-0,045	0,296	0,023	0,879
ATECHf=0	**-0,579**	0,302	3,662	**0,056**
ATECHg=0	0,263	0,452	0,340	0,560
TECH=0	-0,663	0,404	2,689	0,101
NSKILL=1	**-1,786**	0,367	23,743	**0,000**
NSKILL=2	**-0,773**	0,268	8,299	**0,004**
SALES=1	-0,025	0,247	0,010	0,920
SALES=2	0,239	0,336	0,506	0,477

Nagelkerke R^2=0.437

6. Final remarks

In the present research close attention was given to four Southern European regions, characterised by their specialisation on labour-intensive industries. The new industrial model increases competition, as a result of the liberalisation process, and imposes

outsourcing, in search of lower production costs. A resulting rising job loss is inevitable as the direct result of firm's disinvestment, bankruptcy and delocalisation, in regions whose economic tissues are not able to provide employment alternatives. But is such pathway unavoidable?

We argue that new dynamic competitive advantages emanate not from low-cost and low-wage production, but from the technological capacity of firms to produce high-value-added goods (in terms of quality, creativity, design and fashion). Their economic performance depends on their technological capabilities, and those depend on local learning processes. We believe that regional agglomerations of capital, labour and improved facilities are important drivers for these processes, allowing TCL firms to benefit from transactional efficiencies. In the end, the adjustment capacity of local agents to new production technologies is what determines whether regions or firms are producers of high value-added sophisticated goods and services or merely low-cost subcontractors.

Technological investments allow raising quality and creativity patterns that are necessary for the industry survival given the present economic restraints. We detected that the investments in new plants and equipments as well as the investments in the development of new products are more related with employment increase than with employment decline. Such technological adjustments are preceded with the necessary upgrading of employment qualifications. These results corroborate the idea that the future of TCL sectors in Southern Europe requires higher quality standards, only possible trough technological advances and the correspondent employment qualification.

But not all firms have the capacity to carry out such investments. Difficulties in the access to credit and the uncertain of future benefits are factors that inhibited the adoption of new technologies. Technological and competitive adjustments are, therefore, made in a defensive way: firms respond to changes in sales by adapting production capacity to market demand, rather than reacting by upgrading their added value on the basis of their technological capabilities. The tendency has been the employment decline in these industries. Only successful firms are able to develop the proper investments and create employment. In theses cases, people employed are more flexible and with higher language and technological skills, hence able to work in the several complementary areas of the textiles and fashion chain, such as design, marketing, management or sales.

But what is being done by successful firms? Table 4 summarises the most important networking strategies being developed by successful companies across Europe. All of them implicate relocation and further job loss in manufacturing production. But we remark that relocation can be transformed in a positive strategic reality if firms are able to lower production costs and logistics in order to make the necessary technological investments. Networking strategies reveal to be mandatory so costs can be reduced and investments in innovation, creativity and fashion can be made.

One can expect further job decline in manufacturing productive units, but more qualified jobs in complementary areas, such as design, marketing, retail and management.

Table 4
Networking strategies implemented in successful companies across Europe

1. **Brand and design strategies:** competitiveness is drawn from a strong market identity and firms are positioned in the high or medium-high price ranges. As delocalisation is urged by the need to increase margins, marketing and retailing are key aspects for these industries.
- Localisation of value added (headquarters and design offices): High cost EU
- Localisation of production: Euromed + Asia + Medium cost EU (Hungary, Poland, Lithuania, Bulgaria, Romania - highly qualified multi-skilled operators with better price segment)

2. **Partner strategies:** firms position themselves as the industrial partner of their clients, selling components or finished products to be offered to the consumer, under their clients' label.
- Localisation of value added (clients and partners' headquarters): High cost EU
- Localisation of production: Euromed + Asia + Medium cost EU (Hungary, Poland, Lithuania, Bulgaria, Romania - highly qualified multi-skilled operators with better price segment)

3. **Industry-retail strategies:** gradual integration of retailing activities as the delocalisation of production increases.
- Localisation of value added (headquarters, local retail structure and part of production): EU and Euromed
- Localisation of production: Medium cost EU (for quality inputs) + Low cost areas close to the final market (proximity is important: short time responses, ease of communication, cultural proximity)

4. **Subcontracting strategies:** Business to business with customers, who have their own brands and stores. These strategies rely on flexibility, high level of specialisation, quick response and cost control so delocalisation is highly pressured due to the direct need for lower costs and local shortages in labour and capacity.
- Localisation of production: Medium cost EU + Euromed (flexibility + cost advantage)

Source: EC (2007)

The role of public agents in this context is identified in the support to initiatives allowing to enhance the overall competitiveness level of these industries through the maximisation of their added value. For example:

- ✓ To support carefully selected investments able to enhance design capabilities, to build own brands and to improve management and marketing competences.
- ✓ To promote the development of network relationships with equipment and material suppliers - the identification of the forthcoming needs in terms of

labour force qualifications to work with new equipment and/or materials, may allow to prepare in due time specific workforce training programs in the firms. These training programs should be, therefore, supported preferentially to other random initiatives.

- ✓ To financially support the enhancement of consumer value of manufactured European production through ethical components or environmental and health issues combined with the "made in" labelling notion.
- ✓ To facilitate a better integration of fashion/design in the industrial value chains - special attention from educational systems is required in order to reduce the fragmentation of skills between fashion/design and technical/managerial so a young designer may become a successful entrepreneur.

The harder market conditions have brought a tremendous change in vision which may constitute a strong competitive advantage if more market oriented attitudes and less confrontational relationships in the value-chain are developed.

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[i] By synthetic knowledge the author mean the application or combination of existing knowledge, mainly through interactive learning with customers and suppliers; symbolic knowledge means creating meaning trough highly context-specific learning-by-doing processes.

ii Other important results were: a) the greater is the sensitivity of consumers to price changes the more likely it is that an innovation will raise employment; b) the easier it is to substitute capital for labour the more likely it is there will be positive employment effects from technical change and c) if the firm has some degree of market power not all of the reduction in cost will be passed on in the form of lower prices.

iii Similar relations were found in Van Reennen's (1997) model.

iv The results for the Greek, Italian and Spanish firms were gently yielded by the project coordinator of the European project RASTEI – Regional Adjustment Strategies to Technological Change in the Context of European Integration for the present research. The same questionnaire was later applied to Portuguese firms.

[v] When analysing the impacts of technical change on employment a wide diversity of variables can be found: technical changes in general: Blanchflower and Burgess (1999), Zimmerman (1991), Van Reenen (1991); product or process innovations: Greenen and Guellec (1997), Smonly (1998); organisational innovations: Osterman (2000), Black *et al.* (2004); computer use: Enfort *et al.* (1991) ; R&D intensity: Brouwer *et al.* (1993), Klette and Førre (1998).