

The Value of International Outsourcing: An Empirical Study of Veneto Clothing Industry¹

Carlo Gianelle, University of Siena,
Doctoral school.
Giuseppe Tattara, University of Venice,
Dept of economics.

Abstract

This paper investigates production outsourcing of the Veneto footwear and clothing industries. It is based on a survey delivered to a group of final producers that in the 90s began to manage production on a global scale. Direct investment, subcontracting and partnership that materialize in product manufacturing abroad are considered.

The positive impact of the delocalization decision on firm's value added and gross earnings is estimated by combining direct observation with the data from the balance sheets and employment stock at the firm's level.

The study shows the importance of production management along the global value chain in order to give new competitiveness to the Veneto traditional sector. In the 80s Veneto clothing and footwear firms faced the increased competition in the international markets by outsourcing to domestic subcontractors and in the 90s transferred much of the previous outsourcing abroad, in countries with low labour costs, mainly in Eastern Europe and East Asia. This decision has been accompanied by a significant increase both in value added per capita and gross profit.

JEL: L23, F23, L67.

Production organization, Global value chains, Fragmentation, Internationalization, Clothing, Footwear, Italy.

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1 Introduction

Globalization has brought about a sharp increase in the real and financial integration in the worldwide economy. In this closely knit context, the outsourcing of some of the productive and trade activities abroad has become the focal point of the policies followed by firms in order to face competition on international markets.

The shift of manufacturers towards countries with lower labour costs was underlined by some experts at the beginning of the 1970s and especially involved countries with relatively high labour costs such as USA, Germany, Sweden, Denmark, U.K. (Adam, 1971; Finger 1976; 1977).

Over the last decades the capacity of manufacturing firms to slice the production cycle without incurring high diseconomies has given large impetus to production globalisation and has driven firms in countries with salaries lower than those in the USA and North European countries, like Italy, to find lower production costs abroad. Additionally the participation of East European countries, Russia, and China to the international consumption market has provided an additional incentive to transfer the manufacturing processes abroad by locating outposts in areas close to markets with high sales potential.

To 'measure' the degree of internationalization of a firm is not an easy task: the usual measure is the value of the direct overseas investments made to set up a new company abroad or to purchase one already in existence. Italian overseas investments are modest, and Italian businesses seem to be lagging behind compared to other industrialised countries of a similar size and degree of development. Some scholars who have acquired information from the study of interindustrial trade flow (Schiattarella, 1999; Kaminski and Ng, 2001; Corò and Volpe, 2003) and from studies on individual companies have reached the conclusion that the process of internationalisation is much wider and detailed than what appears from data regarding direct investments. A conspicuous part of firms' overseas activities is in fact based on intermediary procedures i.e. trade agreements and subcontracting, particularly important in the case of Italian SMEs (Bigarelli and Ginzburg, 2005). These forms of 'light' integration involve reduced capital flows and temporary commodity flows, as commodities are sent abroad in order to be processed and are subsequently re-imported. But intermediate commodity flows blend with the 'normal' transit of goods at Customs, they are not separately recorded, therefore they are difficult to identify. Because of this and not because 'light' integration is unimportant, international trade experts have not really taken it into consideration (Bugamelli, Cipollone e Infante, 2000).

In Italy, the little analysis available seems to point out the traditional sectors and those characterised by important economies of scale as being less present in overseas markets and holding minor investments compared with the high-tech sectors. This result contrasts with anecdotal evidence according to which the delocalization of textile, clothing and footwear sectors is highly relevant (CEPS, 2005; Gomirato, 2004; Grandinetti, 2006; Graziani, 1998; 2001) but occurs in the mild forms mentioned before. For example, within traditional sectors there has been a steady and substantial increase of the number of firms that have established trade agreements with overseas partners (Bugamelli, Cipollone e Infante, 2000). A wide study regarding Italian manufacturers with more than 10 employees, for the period 2000-2003, reveals the well know fact that the large majority of Italian firms export abroad (70% of the total) and the majority of them has kept up or started trade operations or overseas trade agreements with foreign correspondents, with a marked increase over the previous survey (Capitalia, 2005). Direct investment involves a limited number of businesses, while much more firms have set up technical collaboration agreements with overseas companies (Capitalia, 2005, tables D16bis and D30).

This paper aims at investigating the phenomenon of production outsourcing of the Veneto footwear and clothing industries. It is based on information available from a direct survey combined with individual budget data. The survey takes into account outsourcing carried out both through direct investments and subcontracting and partnership. The different processes are separate only with respect to their relevance calculated as part of the final product manufactured abroad. The decision to outsource part of the production abroad reflects in a positive variation in per capita value added and gross profits (EBITDA²). This analysis shows the importance of relocation on a global scale in order to give new competitiveness to Veneto firms in a sector which in the 80s resorted to domestic subcontracting and in the 90s found competitive strength through the delocalization of production to countries with low labour costs.

2 The International Organization of Manufacturing in Clothing and Footwear Industries

The 90s were characterised by an increase in the international fragmentation of production in various industrial sectors. This is the result of the gradual reorganisation of the production sequence, on an international basis, promoted by an ever-increasing number of businesses which

² Earnings Before Interests, Taxes, Depreciation, Amortization.

extend their production processes outside their country of origin. International segmentation allows a higher degree of specialisation within the value chain, together with an increase in trade, since many intermediate or semi-manufactured products obtained from manufacturing abroad are then re-imported to be completed or distributed by the final producers and international trade flows increase³. Over the past 15 years many European businesses have been forced to move part of their productive processes to East Europe or China whose markets are well underway. This has opened up new and interesting markets, and in addition has offered production locations at a particularly low cost⁴.

In these sectors the management of the value chains based on sub-contracting prevailed over direct investments because of the relatively simple processes which could be carried out abroad, low transportation costs and skills available in many of these countries regarding clothing, furnishing and footwear. Medium and small Italian manufacturers in traditional sectors are not able (from an organisational and financial point of view) to undertake complex operations such as setting up technical agreements regarding production and making investments in overseas markets and have created a dense network of links and subcontracting with overseas companies.

In the 90s the gradual elimination of trade barriers has brought about the reorganisation of the productive cycle of clothing and footwear firms on an international basis, and has fostered investments between industrialised and developing countries (Baden, 2002). As far as Europe is concerned, we should mention the ATC (Agreement on Textiles and Clothing), signed by countries in the E.U. belonging to the World Trade Organisation in 1995 which stipulated gradual total liberalisation of restricted imports, completed in January 2005 with the end of the Multifiber Agreement which had controlled the international market of textile products since 1974. In the 90s more and more European companies exploited the outward processing trade tariff regime controlled by Community legislation in 1986, 1992, 1994 and 1995 which allowed E.U. countries to export raw materials to some areas (Eastern Europe and the Mediterranean), subsequently re-importing the finished products as compensation at no cost. The interest of companies in this type of trade has gradually slackened off following the growth of the E.U. which now includes some of the countries involved while others will be joining in a few years.

³ Disintegration at the global level implies an upsurge in trade flows, as many intermediate commodities are exchanged across national borders (Feenstra, 1998).

⁴ The cost is the highest priority element according to all surveys concerning firms in the traditional sector, but the tax benefits relative to setting up companies overseas proves also very important. Regarding the latter, Stevanato (2004). See Bénassy-Quéré, Fontagné and Lahrière-Révil (2005) on how different tax legislation directs the flow of direct investments.

Most Italian clothing manufacturers relocate abroad using international subcontractors. These companies have centred their production on phase economies (Brusco, 1989), based on the fragmentation of the productive cycle in the 80s; many production phases were already delegated to Italian outworkers, often located near the final producers in a territorial network of specialized suppliers. For example cutting, dyeing, sewing, stitching and pressing in the clothing sector and stitching for the footwear sector. Setting up a workshop is relatively easy and inexpensive since the initial barriers (technology utilised and availability of skilled workers) are low, but they gradually increase as other production phases are included in the outsourcing flows. Phases at the beginning or end of the production chain sometimes require sophisticated machinery for cutting, washing, dyeing and printing⁵ and, in footwear for the production of uppers and moulded soles.

The choice made to produce in a low wages country – but keeping fixed quality standards – is function of the ability of the available workforce and of the technological level of the production procedures compatible with conditions in the country of localization. Initially the least complex phases of production are outsourced and resources concentrate on the training necessary for a few specific tasks. In most cases, international production is set up by the leading firms of the industrial countries (Gereffi, 1999): in general these are well established brands or trading companies which build up and coordinate sometimes huge international production networks that cover a large number of countries with low labour costs. However, the leading Italian clothing and footwear industries usually keep a sometimes relevant quota of direct production at home (weaving, dyeing, *flash* collections and re-orders)⁶.

A production cycle already segmented domestically is easily relocated abroad. In some cases production is exclusively focused on agreements with local manufacturers, which foresee the purchase by the Italian company of a final product made with raw materials acquired in the place of production, a *full-package relation*. This relation is used in dealing with Asia suppliers due to the fact that good quality raw materials, top quality accessories are locally available, and efficient production networks organised by local intermediaries take care of production coordination (Gereffi, 1999; 2002). In other situations suppliers process some production phases on the buyer's detailed specifications and technical features with fabric, leather and accessories supplied by the

⁵ Sometimes the bigger brands face the lack of the more sophisticated production phases by investing directly, just soon after setting up delocalization. In this way, a more and more complex semi-manufactured product can be obtained abroad until the final product is completed, with increased efficiency in the management of the value chain. See Crestanello and Tattara (2006).

⁶ Therefore the Veneto companies differentiate from the Gereffi type (2002) where the brands have delocalized almost the entire production. There are numerous examples, from Benetton to Stefanel, Diesel, Marzotto, just to mention a few. See Owen (2001) for a more complete view on this topic.

buyer that re-imports the finished product, a *semi-manufacturing relation* (Crestanello and Dalla Libera, 2003). The latter is necessary in all those situations where the countries with low labour costs have a weak industrial structure and don't possess the necessary elements to complete important parts of the productive process.

The lead firm manages the complex relations between each unit of the process, coordinates to a greater or lesser degree the people involved, and often makes the necessary controls with its own personnel (Gereffi, Humphrey, Sturgeon, 2005).

3 The Deverticalization of the Veneto Clothing Industry, Domestic Subcontracting and Relocation

The number of employees working in the textile-clothing and footwear sectors in the Veneto sharply increased in the 70s and was accompanied by the emergence of new medium-size firms. In the following decade, growth continued at a slower pace and there was a general reorganization of large businesses facing increasing economic difficulties, therefore resorting more and more to subcontracting. The Benetton strategy is an earlier example of verticalization, including retailing side by side with manufacturing, and at the same time is characterized by a strong tendency towards outsourcing from the very beginning, initially involving local subcontractors (Nardin, 1987, p. 91), while today, the vast majority of subcontractors are foreign (Tattara, 2005).

The situation regarding employment in the Veneto clothing sector can be defined on the basis of VWH data (Veneto Worker Histories) processed by Venice University (Figure 1) although we must keep in mind that – beside registered employment – the sector is characterised by a large number of workers 'under the table', estimated to be 1/5 of total employment⁷.

The clothing sector, studied in the four principal provinces, Verona, Vicenza, Padova and Treviso, strictly limited to garment manufacture (csc.⁸ 10801, 10803, 10805) and to knitwear (csc, 10713) had about 65.000 employees in 1980. During the following decade employment increased rapidly reaching a total of 78.000 in 1990, but the increase was concentrated in local small artisan units which doubled their employment (+ 92.7%) with 17.000 more workers. In large firms employment declined of more than 12% corresponding to a loss of 5.500 jobs. According to a national survey carried out in 1993 by Confartigianato, two thirds of clothing companies worked as subcontractors,

⁷ Referring to Italy in 1992, The European Commission estimated work "under the table" in the clothing industry to be 21% of overall employment. EC, 1996, table 2. Therefore, a widespread phenomenon.

⁸ Acronym for contributive statistic code.

thus employing more than half of the workers in the sector. The national clothing industry is characterised by big regional differences and the Veneto has a particularly dense network of subcontractors consisting of small businesses (10 workers) which work almost exclusively for the final producers that have their main company in the region (Crestanello, 1999, pp. 16 ff.). In the mid-nineties, subcontracting in clothing in Italy employed a third of all subcontracting workers in the sector in Europe (EC, 1996, table 1). The fall in employment by bigger firms has brought about a process of disintegration of the final product to such an extent that “now many large companies have delocalized all production processes keeping only planning and marketing in the main business” (Crestanello, 1999, p. 18).

In the nineties (1991-2001) the situation changed. Small artisan firms lost nearly all the workers they had acquired in the previous decade. Moreover the final producers lost a further 11.000 jobs. In 2001, people employed in this sector in our territory totalled only 49.600, 36% less than eleven years earlier. A result of the fact that most production was taking place abroad⁹.

The Veneto textile-clothing-footwear sector has been anyway progressing steadily through time, at least till the year 2000: the value of regional production, together with exports, increased considerably during the nineties even if at a lower average rate compared to the previous decade (Figure 2). Faced with the job loss which hit the sector starting from 1991, the value added in real terms continued to rise with an unchanging trend until 1997, then remaining more or less the same until 2001 and finally fell sharply in 2002, due to a general crisis in the sector¹⁰. Productivity, computed by per capita value added, notably increased (Figure 3): this was because part of production moved abroad with a drastic drop in domestic employment while the value of the product did not significantly diminish at least till 2001. In fact, in those years profits of final producers – in particular medium-size firms – showed a steady improvement¹¹.

Summing up, we can quite clearly outline three periods. The first period involved the growth of the sector with an increase in medium-sized businesses and the creation of large clothing industries (sixties-first half of the seventies). In the second period the development of subcontractors prevailed, mostly localized within the region or the district (the 80s), while in the third period

⁹ The role of the Veneto within the sphere of outsourcing in “traditional” sectors was pointed out by Schiattarella in 1999 and subsequently has been widely confirmed. The Capitalia survey shows, referring to traditional sectors, that 61% of companies based in the North-East completely delocalized production to countries with low labour costs over the past three years, compared to 46% at a national level.

¹⁰ Istat and INPS data are similar regarding the fall in employment. In the nineties in the Veneto, the decline was above the national average.

¹¹ Between 1996-2000 the value added of the final producers of Footwear and Clothing in the North-East, calculated from average-size joint stock companies, went up by 12.5%, compared to a much lower overall increase, while unemployment went down by 1.6% (Mediobanca – Unioncamere, 2003).

subcontracting shifted to abroad. This brought about a drop in employment and a notable increase in per capita value added at a regional level (90s) creating the phenomenon referred today as delocalization.

Fig. 1 – Employment in Manufacturing According to Type of Firm (Veneto, Clothing Sector)

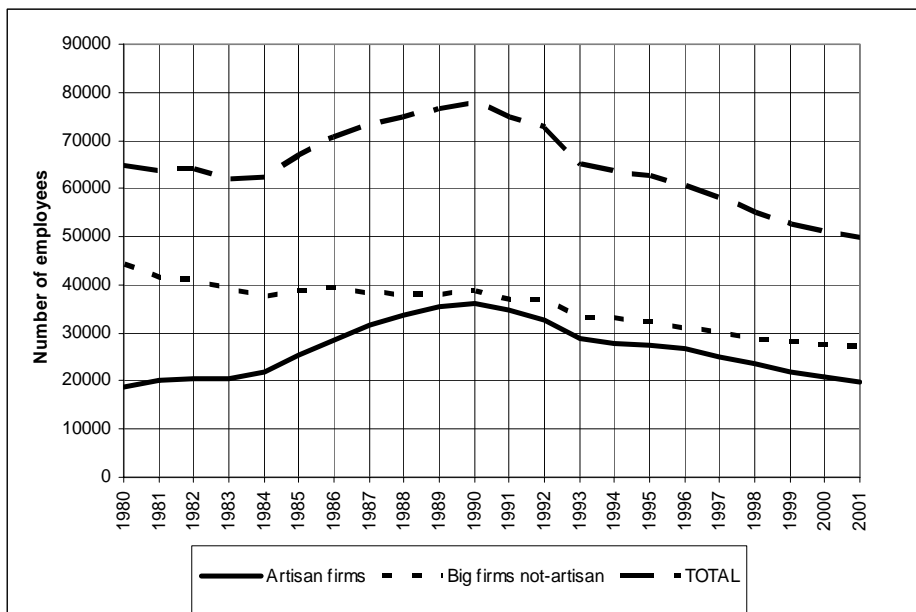


Fig. 2 – Regional Value Added at Constant Prices and Employment in Textile–Clothing–Footwear

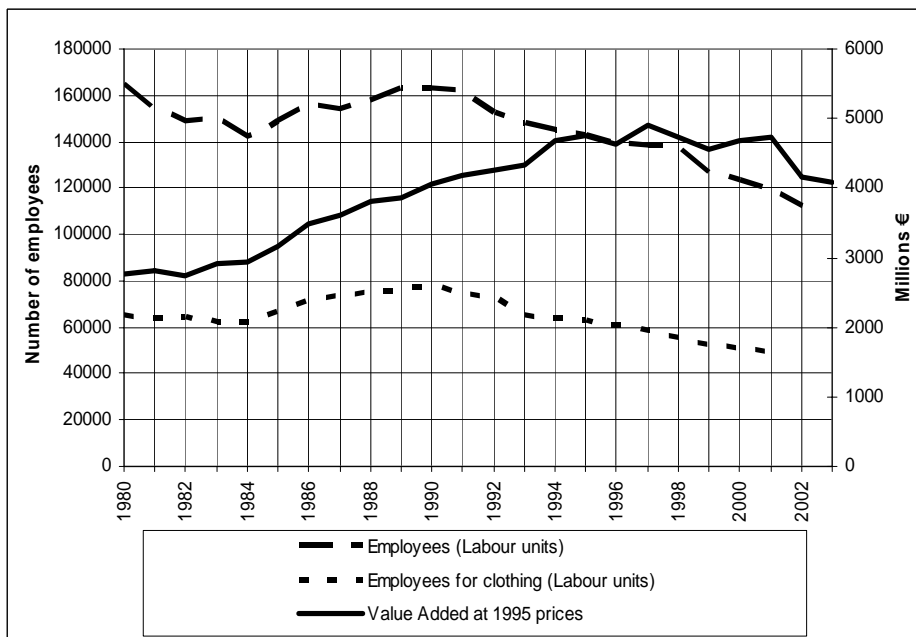
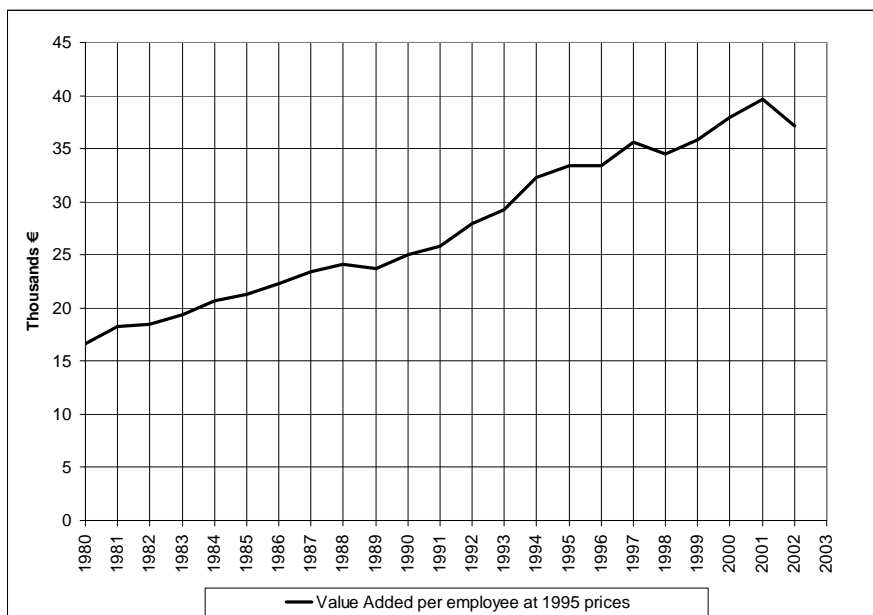


Fig. 3 – Per Capita Value Added in Textile–Clothing–Footwear



Source for Figures 1, 2, 3: VWH, db Veneto, regional account data for 1980-1995 and www.istat.it for 1996-2003

4 The Effects of Outsourcing

The significant change that occurred in firm's structure similar to what we have seen over the past decades, can be illustrated in its financial repercussions by way of a simple numeric example. The three possibilities examined are: integrated production processes, a company with national subcontracting and a company with overseas subcontracting (see also Gordon 2004). Let's refer to values which reflect the average phenomenon occurring in the Veneto clothing sector, while foreign subcontracting refers to Romania. The per capita labour cost equals 1 in the case of integrated production, drops to 0.8 with national, and to 0.23 with overseas subcontracting¹². The value of the turnover of an Italian subcontractor is divided into 50% for salaries and 50% for expenses in order to purchase intermediate materials which the subcontractor buys or receives from its customer. In the case of the Romanian subcontractor the ratio is 23% for salaries and 77% for intermediate materials (for footwear the proportion for raw materials is slightly higher, see Crestanello and Tattara, 2006). Let's assume for simplicity's sake that the final producer relocates abroad by

¹² Labour costs in the clothing sector in Romania total about 1/8 of the cost in Italy, even if this varies greatly (see note 13). In the example we use a value of about 25% adding other costs relative to outsourcing (transport, training etc.).

sending materials of the same value as those used previously in Italy. The structure of the production processes is shown in its basic terms in table 1.

Tab. 1 – Structure of the Production in an Integrated and in a Deverticalized Firm

	Integrated producer	National subcontracting		Foreign subcontracting	
		Final firm	Subcontractor	Final firm	Subcontractor
Turnover	1000	1000	500	1000	300
Cost of labour	650	300	280	300	87.5
Raw materials	200	-	200	-	200
Semi-manufactured	-	500	-	300	-
Gross profits	150	200	20	400	12.5
Unit cost of labour	1	1	0,8	1	0.25
Employees	650	300	350	300	350
Val.Add./Turnover	$800/1000=0.8$	$500/1000=0.5$	$300/500=0.6$	$700/1000=0.7$	$100/300=0.3$
Val.Add. per employee	$800/650=1.23$	$500/300=1.67$	$300/350=0.86$	$700/300=2.33$	$100/350=0.29$

The shift to more disintegrated production processes materializes in the decrease of the ratio between value added and turnover which springs from the slicing of the final production into different phases. With the shift from national subcontracting to overseas subcontracting, the per capita value added of the final producer rises from 1.67 to 2.33 while outsourcing abroad which occurs by shifting out of the borders production phases once carried out directly, causes an even higher per capita value added increase from 1.23 (integrated production) to 2.33. The gross operative earning of the final producer increases shifting from integrated production to national subcontracting and then to overseas contracting, owing to reduced labour costs. This increase shows the benefits gained by the final producer to utilise this new corporate strategy.

The example has been made in such a way that the ‘technical’ efficiency of production remains unchanged in the cases of domestic and overseas subcontracting because in the three different situations an identical turnover (1000) is obtained from the same value of raw materials (200), and the same number of workers. We are convinced that this situation is rather common because Italian companies delocalize at home entrusting machinery to former employees which is then taken abroad and used in firms, managed as usually happens in Romania, by Italian technicians and

entrepreneurs¹³. Taking this into account, we can consider the local home or overseas unit as a separate plant belonging to the final producer. The value of subcontracting is estimated by the final producer which in this way can ‘fix’ the profit of the subcontractor. In synthesis we end up with a profit of 150 in the case of integrated production, of 220 in the case of national fragmentation, and of 412 in the case of overseas fragmentation; how this profit is shared between the final producer and the subcontractors depends on the cost of transferring semi-manufactured goods, hence on the company’s targets (and on various fiscal regimes). The experience resulting from several visits to subcontractors working in Romania in the clothing sector, leads us to believe that the final producer is able to keep the subcontractors’ profit to a minimum, owing to some guarantees concerning quality and reliability¹⁴.

Relocation abroad is usually carried out by companies, which had already fragmented their production, delegating some parts to local subcontractors so that going abroad involves much fewer risks and doubts (for a theoretical example see Melitz, 2003). In this case the impact of relocation on the final producer is obtained by comparing the values in column 3 to that in column 5: the lower cost of overseas subcontractors compared to the national equivalent, increases profits.

The impact of overseas delocalization should be evident in the final firm budget data, although the shift from a numerical example to enterprise balance sheet figures cannot be direct and is not without risks. Therefore we are waiting for the delocalized processes to have a positive effect on the per capita value added for final producers – because of a reduction of unit costs in the phases moved abroad and because of a fall in the number of workers directly employed – and the gross earning increases¹⁵.

The definition of a new corporate strategy that brings about important changes regarding the value chain like those we are discussing, is often combined with a company’s repositioning at the higher levels of the chain that involves new management roles and an increase in qualified staff

¹³ In reality it is widely believed that productivity in Romania is lower than in the Veneto and this brings about an increase in employment which is, however, slight and doesn’t alter the meaning of the example (table 1). See also Crestanello and Tattara, 2006.

This measure has nothing to do with productivity calculated by relating the value of the product to the number of employees which is often mentioned in international publications. This method is not a technical estimate of efficiency but the result of how production chains are organized and therefore of the proportion between the value imputed to semi-manufactured and to finished goods in the relations within the chain. In fact, productivity measured as the ratio between value added and number of employees regarding the Romanian clothing-textile sector hardly totals 14% of the 15 EU countries’ production, according to standard purchasing power. See Ceps-WIIW (2005) table 4.

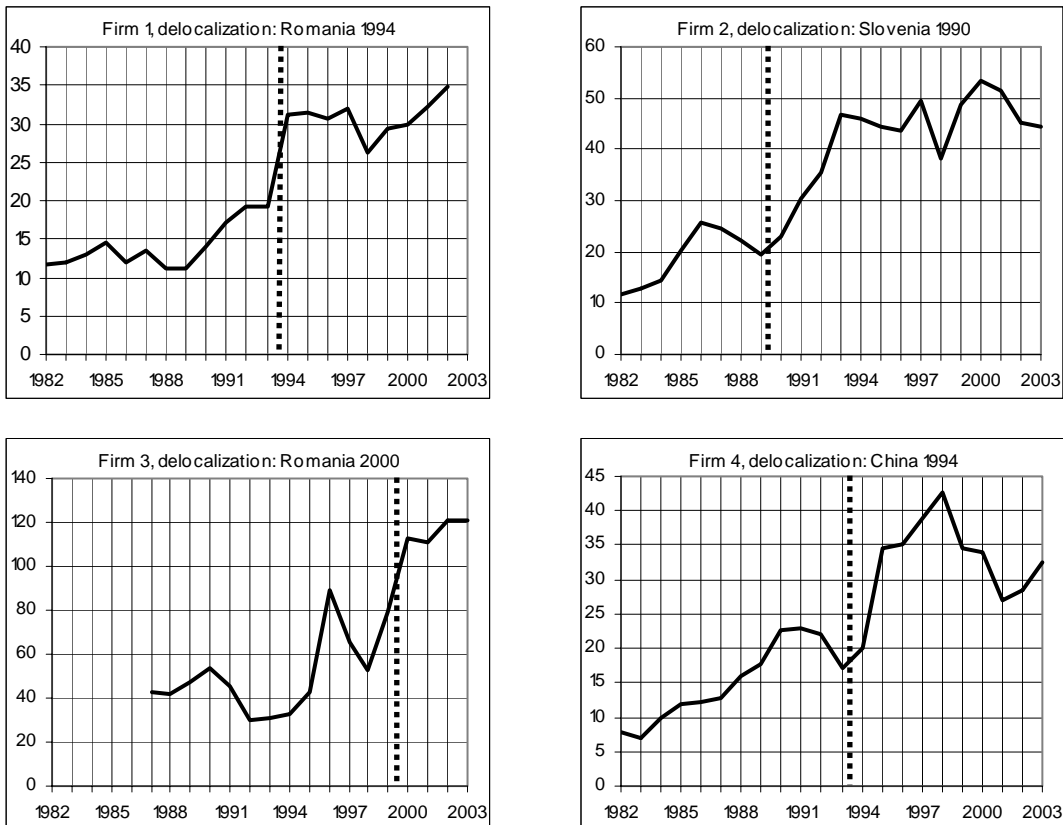
¹⁴ The companies have strict control over their subcontractors in Romania and the sub-contractor functions as a delocalized sector of the client’s factory. In the case of delocalization towards Asia, package relations are prevalent and the subcontractor acquires raw materials and accessories and produces the final product, accepting the risks involved.

¹⁵ EBITDA calculates the gross profitability, depreciation included.

responsible for the management of this more complex strategy. All this can complicate the overall analysis and introduce new variables which we are only partially able to account for.

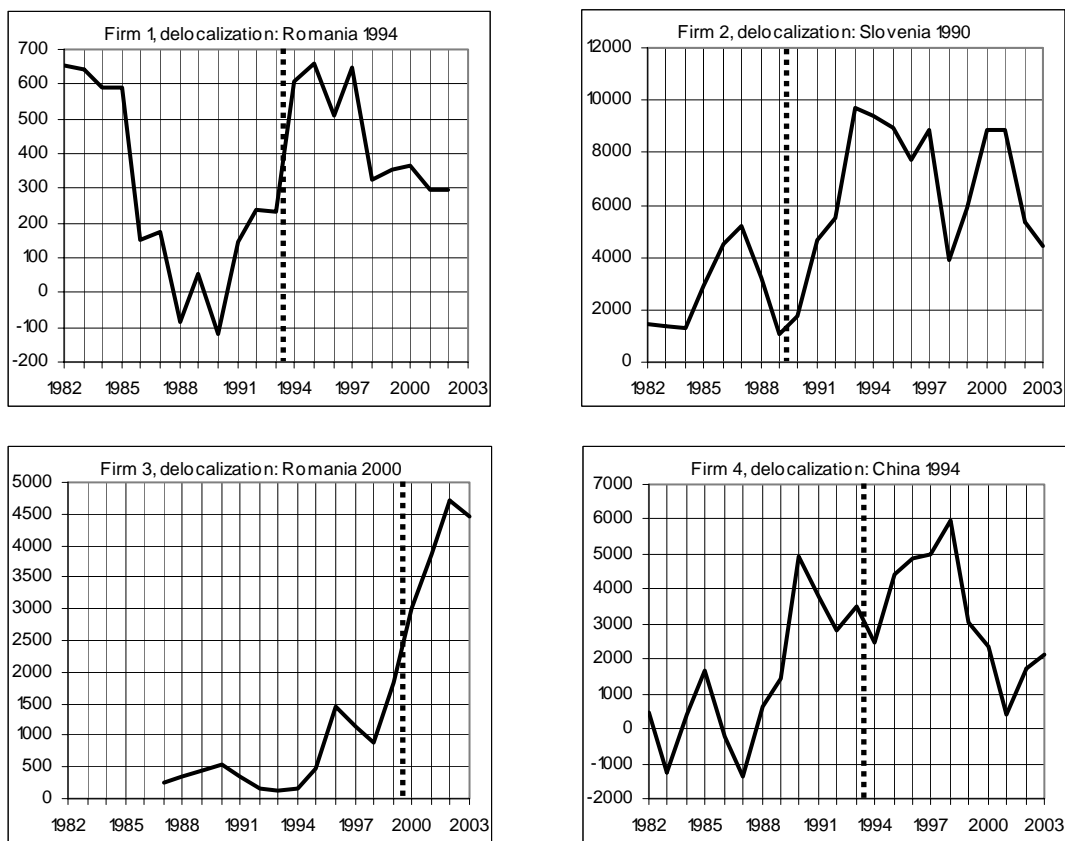
Fig. 3 and 4 graphically represent the trend over time of per capita value added and EBITDA of four Italian companies with reference to the main relocation event (dotted line).

Fig. 4 – Trend of Value Added per Employee in Four Companies (Thousands of € Current Prices)



Source for Figures 4, 5: Company Balance Sheets, Veneto Chamber of Commerce

Fig. 5 – Trend of EBITDA in Four Companies (Thousands of € Current Prices)



5 The Estimates

In order to verify if the delocalized processes have had a positive effect on the per capita value added in the head company, and if the effect turns out to be higher according to the quota of the products which a company produces abroad (out of the overall total) we have estimated a linear regression model using panel data referring to the group of firms studied.

The analysis has been carried out on a self-selected group of 48 joint stock companies based in the Veneto involved in the clothing and footwear sector (on December 31st 2003). They are mainly medium-size firms, employing overall 5.700 workers, which have delocalized some important production phases abroad. The model estimate is built on budget data from the Veneto Provincial Chamber of Commerce collection; employment data from the VWH database; data on outsourcing from a questionnaire delivered to each company and supplemented by several telephone interviews. Keeping in mind that overseas production is a phenomenon which started in the mid-eighties, we

extended the data collection from 1982 to 2003. Some companies included in the analysis began their activity after 1982 and therefore the panel is unbalanced.

Information on outsourcing regarding each company was acquired from a direct survey carried out at the beginning of 2004 and refers to the previous year (Gianelle, 2005). For each delocalization (direct investments, subcontracting, etc.) the starting year, the country involved and the type and intensity of the relation¹⁶ are known: the latter is computed as the ratio of goods produced abroad to those made at home, and is taken into account if it is larger than 10% of the overall production. Outsourcing is limited to one episode for each company, the most significant in terms of number of delocalized commodities¹⁷.

The companies making up the panel vary in size, type of market involved, export trends, type of production phases carried out domestically and individual background. Diversity can be considered as represented by a group of omitted structural variables, specific for every company and constant over time and the effect of diversity is taken into account by estimating a fixed-effect regression (Hsiao, 2003).

The dependent variable of the model is alternately the per capita value added and the gross earning before taxation (EBITDA) both expressed in logarithms¹⁸. The former is defined as the ratio between the operative value added¹⁹, expressed in current terms, and the average company employees; the latter is provided by the difference between the operative value added and labour costs in current terms.

The impact of outsourcing abroad can be estimated by means of a dummy which splits the time period referred to each company into two sub-periods: before and after the event. Delocalization occurs, for various companies, in different years within the time span studied and this allows the

¹⁶ Outsourcing can involve direct investments, subcontracting etc, but here we make no distinction. Each example of delocalization defined by its 1st year and the country involved can also be characterized by a range of manufacturing links with different companies situated in the same country. This aspect is not relevant as far as our analysis is concerned because all the companies in the same country have similar costs. Therefore we consider relations with each foreign country (for example Romania, Tunisia and China) as a single occurrence.

¹⁷ Some companies have several delocalized activities in various countries, set up in different years, involving various productive volumes. In this survey we take into consideration the main delocalization event.

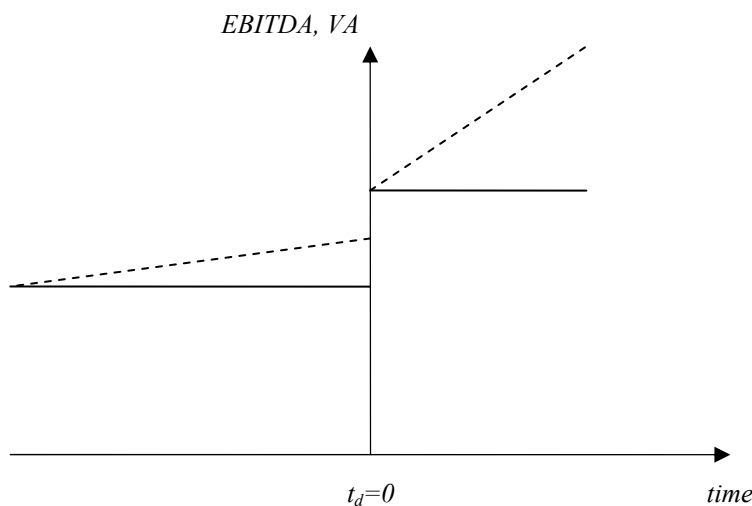
¹⁸ When a firm shows some negative values for the EBITDA, the series is shifted upwards by a constant equal to the minimum EBITDA of that firm plus the Neper number. This procedure allows to obtain all positive values of EBITDA and hence to calculate the logarithms (with 1 as minimum value) on the whole series. Since the logarithms express a percentage variation, to increase all the values of a series by a constant reduces the variation: the base line rises, while the variation remains the same in absolute terms. The alternative option is to exclude the negative values of EBITDA from the estimates because they cannot be transformed into logarithms, but this would in any case bring to an underestimation of the variation of the dependent variable. Since in both cases the variation of EBITDA turns out to be downward bias, it seems to us more sensible to use all the available data, rather than to exclude the negative ones, underlining that we obtain conservative estimates.

¹⁹ The operative value added is defined as being the difference between sales proceeds net of the variations of the stock, and the cost of materials, semi-manufactured goods and services.

impact of the variable to be identified. The estimation equation also includes a linear trend, which shows the average company growth throughout the whole period. The delocalization dummy, which estimates the average effect of relocation, can interact with the trend, resulting in a delocalization variable that captures the growth effect of relocation. The impact of outsourcing is therefore estimated, on average, by the coefficient of these two delocalization dummies, henceforth ‘average effect’ and ‘growth effect’.

In fig. 6 the horizontal axes measures the distance in years in relation to the year of delocalization t_d that is labelled 0. The drift of the continuous function represents the average impact effect, while the difference in the dotted line slope represents the growth effect.

Fig. 6 – The Impact of Relocation at Time $t_d=0$



$t_{d(i)}$ is the year of relocation for firm i , then the constant delocalization dummy (average effect) is defined as:

$$Dc_{it} = \begin{cases} 0 & \text{for } t < t_{d(i)} \\ 1 & \text{for } t \geq t_{d(i)} \end{cases}$$

The trend delocalization dummy (growth effect), which is assumed to be linear, is defined by making the variable trend (T) interact with the preceding dummy, obtaining the variable TDc_{it} . Hence the regression estimated with reference to per capita value added is

$$\log VA_{it} = \beta_0 + \beta_1 T_{it} + \beta_2 Dc_{it} + \beta_3 TDc_{it} + \beta_4 Ord_{it} + \gamma_t + u_i + \varepsilon_{it} \quad (1)$$

The effects of relocation are calculated by introducing some controls into the model in order to take into account cyclical factors, demand, price and technological progress, provided they involve all firms to the same extent in the same years. With the aim of taking into account cyclical trends²⁰ we have included among the independent variables an index of sector orders at the international level, calculated by Istat on a monthly basis²¹, Ord . The year variables γ_t are year dummies, that is variables which include events involving all the companies in the same way in a specific year and therefore show the influence of sector specific shocks (inflation, average growth in the sector, ...) on the dependent variable. The year dummies do not prevent the identification of the delocalization dummy because the events occur in different years.

Some caution is necessary: available data don't allow to take into account firm's specific effects, like those deriving from a change in the type of product or market trends, neither the evolution of productive organization and changes in relations to other companies in the production sequence; as these elements are possibly correlated with outsourcing, the result can be blurred.

A visual presentation of the outsourcing impact is obtained by reproducing fig. 6 through our data. A regression of the two variables $\log VA$ and $\log EBITDA$ on control variables (year dummies, firm dummies, orders) is estimated in order to get rid of them. In fig. 7 the vertical axes represents the yearly average residues of the regression in relation to time, in order to represent the net effects of relocation clear of yearly, company, sector specific shocks. Time is centred on the delocalization event and fig. 7 is immediately comparable with previous fig. 6.

²⁰ See Heckman (1985) who suggests checking for the economic cycle.

²¹ The sales confidence index is sector specific. The sectors and corresponding indexes are based on the three digits Ateco 2002 classification (DB177, DB182 and DC193).

Fig. 7 – Residuals of the Regression of $\log VA$ (left) and $\log EBITDA$ (right) over Controls

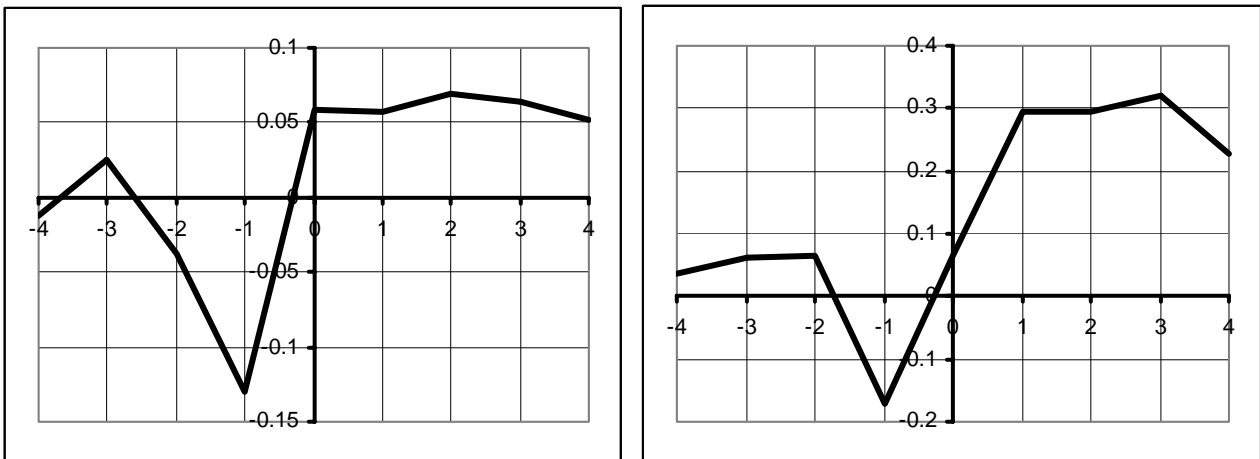
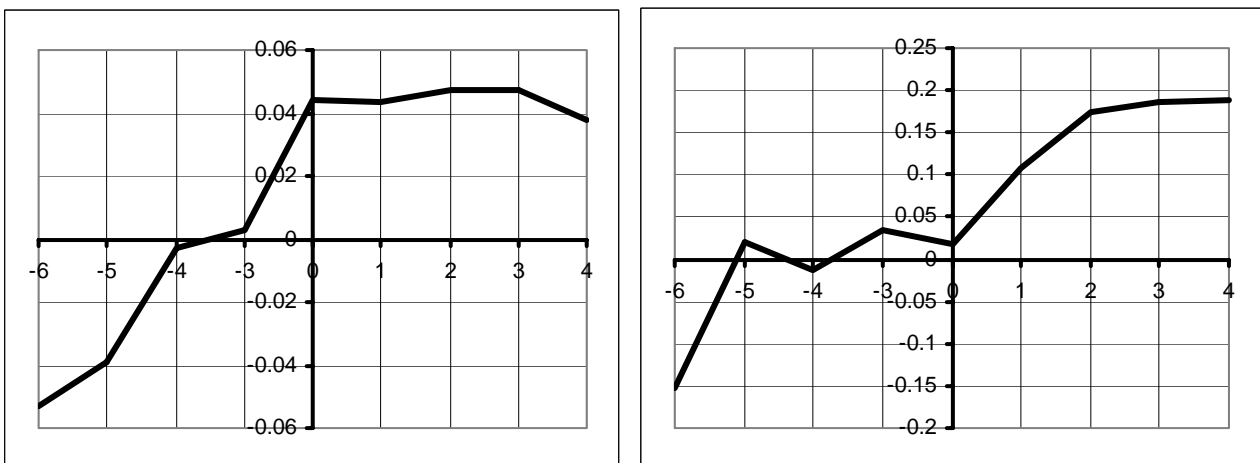


Fig. 7 makes clear that some firms have delocalized after a drop in per capita value added and of EBITDA. A rather reasonable result, that nonetheless requires caution in interpreting the coefficient estimates: firms in fact self-select into treatment. Some firms delocalize after a negative shock and this makes the average delocalization result – measured by the coefficient of the dummy variable of interest, to be overestimated if reported to the entire population (can be considered a case of omitted variables as well, as we are not able to depict firms heterogeneity: Heckman e Smith, 1999). One way to tackle this problem is to run the estimation after dropping a couple of years preceding delocalization and have a conservative estimate. As one can see from fig. 8 the dip preceding delocalization is now entirely wiped out. We report both estimates, the conservative one in brackets (the complete conservative estimate results are listed in appendix 1).

Fig. 8 – Residuals of the Regression of $\log VA$ (left) and $\log EBITDA$ (right) over Controls, Excluding the two Years before Delocalization



Estimates results (eq. 1, tables 2 and 3, col. 2) show a remarkable average effect both on value added per employee and on EBITDA. The delocalization impact, on average, is 16% (15%***) on value added, and 35% (20%) on EBITDA. The growth effect is non significant and this is a clear evidence that delocalization is a “once for all” shock, and does not imply a growing trend in the two variables. The robust estimates corresponding to the models listed in tables 2, 3, and 4 are reported in appendix 2.

Tab. 2 – Effects of Outsourcing on the Per Capita Value Added (Equation 1)

		<i>LogVA</i>			
		1	2	3	4
Average impact	<i>Dc</i>	0.1619276*** (3.93)	0.1656065*** (3.98)		
Growth impact	<i>TDC</i>		0.0052586 (0.68)		
Average impact through quota	<i>QDc</i>			0.2530271*** (3.98)	0.246418*** (3.79)
Growth impact through quota	<i>QTDc</i>				0.0053584 (0.49)
Sector orders	<i>Ord</i>	0.0079156*** (3.87)	0.0077754*** (3.78)	0.0076772*** (3.76)	0.0075176*** (3.63)
Average trend	<i>T</i>	0.0366413*** (4.83)	0.0346398*** (4.25)	0.0392443*** (5.31)	0.0386867*** (5.17)
Yearly dummies	γ	Yes	Yes	Yes	Yes
Firm's specific effects	<i>u</i>	Yes	Yes	Yes	Yes
R – Squared within		0.5420	0.5427	0.5423	0.5424

Notes for tables 2, 3, 4 and 5: 48 companies, 795 observations, period 1982-2003. All the regressions include specific firm intercept for each company, year dummies and temporal trend. The t-value is in brackets. ***: significance 1%, **: significance 5%, *: significance 10%.

Tab. 3 – Effects of Outsourcing on EBITDA (Equation 1)

		<i>logEBITDA</i>			
		1	2	3	4
Average impact	<i>Dc</i>	0.3600682** (2.54)	0.3533884** (2.47)		
Growth impact	<i>TDC</i>		-0.0095481 (-0.36)		
Average impact through quota	<i>QDc</i>			0.5850422*** (2.68)	0.56287** (2.52)
Growth impact through quota	<i>QTDc</i>				0.0179767 (0.48)
Sector orders	<i>Ord</i>	0.0153289** (2.18)	0.0155834** (2.20)	0.0147963** (2.11)	0.014260 ** (2.00)
Average trend	<i>T</i>	-0.0128709 (-0.49)	-0.0092369 (-0.33)	-0.0076784 (-0.30)	-0.0095491 (-0.37)
Year dummies	γ	Yes	Yes	Yes	Yes
Firm's specific effects	<i>u</i>	Yes	Yes	Yes	Yes
R – Squared within		0.0942	0.0944	0.0951	0.0954

Using the information contained in the survey regarding the proportion of goods produced abroad by each firm when delocalization takes place, a different “intensity” can be attributed to the delocalization process. The information on delocalized quota refers to year 2003 and it is assumed that this firm-quota has remained the same over the years so the 2003 values give a good estimate of the extent of outsourcing over the whole period. This assumption loses any information regarding the gradualness of the process.

Two further outsourcing variables are constructed, which take into account the different productive volumes involved in the event. The quota of goods produced abroad by each company is represented by Q_i , which varies between 0 and 1, that multiplied by Dc represents the average delocalization effect through the quotas, QDc_{it} , and multiplied by TDC represents the growth effect of delocalization through the quotas, $QTDc_{it}$.

These variables repeat the pattern of the variables Dc and TDC , with the difference that in the presence of active outsourcing, the delocalized dummy interacts with the quota of goods actually produced abroad. If, as a first approximation, the relationship between the productive volumes obtained abroad and the dependent variables is linear, the coefficient of the outsourcing variable interacting with the quota indicates how much per capita value added and EBITDA vary for each percentage point of production delocalized by a delocalizing company. The average effect through

the quotas (tables 2 and 3, cols. 3 and 4) tells us that for one additional point of the product manufactured abroad, per capita value added increases by 0.25 while EBITDA rises by 0.56 (respectively 0.23*** and 0.45*). Even here the growth effect doesn't seem significant.

The decision to delocalize implies moving abroad those phases which were once carried out within the company itself or were delocalized domestically. In the first circumstance the decision to delocalize implies process fragmentation, while in the second circumstance phases already outsourced are moved out of the nation borders. If slicing production and allocating abroad superimpose one another, the estimate blurs the effect attributed to outsourcing with the effect of fragmentation. The example at par. 4 makes clear that per capita value added for the final producer increases just as a consequence of outsourcing some production phases, even if domestic production costs are equal to the cost measured when production is outsourced²². With reference to the per capita value added, it is therefore appropriate to disentangle fragmentation from delocalization so as to evaluate the net impact of the offshore alternative. To do so we split the sample in two sub-samples, made by treated and untreated firms:

- treated firms are firms that delocalize abroad and at the same time fragment production,
- non treated firms are firms that delocalize abroad production phases previously outsourced in the domestic market.

In order to tackle the problem we define the variable *Fra*, which is 0 for firms which delocalize abroad phases already outsourced domestically and 1 for firms which transfer abroad phases previously processed within the company, and a variable *Nfra*, which is 0 for companies that outsource production previously processed directly and 1 for the remaining. The delocalized dummies interact with the fragmentation dummies, giving rise to *FraDc*, *NfraDc* and *FraTDc*, *NfraTDc* variables. Equation (2) takes into account the delocalized and fragmentation processes

$$\log VA_{it} = \beta_0 + \beta_1 T_{it} + \beta_2 FraDc_{it} + \beta_3 FraTDc_{it} + \beta_4 NfraDc_{it} + \beta_5 NfraTDc_{it} + \beta_6 Ord_{it} + \gamma_t + u_i + \varepsilon_{it} \quad (2)$$

The splitting of the sample is made on the following assumption: if between the year that precedes and the year that follows the decision to outsource abroad, firm's employment falls considerably (more than 10%) while the turnover remains more or less the same or rises (we require that it doesn't drop more than 5%) then the firm is defined as treated and the parameter estimate reflects

²² As in the example at par. 4, the effect on value added is "automatic", while EBITDA are not directly affected by production disintegration.

both delocalization abroad and fragmentation. In the group 9 firms accomplish this assumption, the remaining firms are untreated and their estimate reflects only delocalization, as production was fragmented early in time.

Even in this case it is possible to show the interaction of delocalized variables, the variables referring to the fragmentation processes and the quota of goods produced abroad, in order to take into account different degrees of intensity with which outsourcing occurs. Thus the variables $QfraDc$, $QNfraDc$ and $QfraTDc$, $QNfraTDc$ are obtained.

Tab. 4 – Net/Gross Effects of Delocalization and Fragmentation (Equation 2)

		<i>logVA</i>		<i>logEBITDA</i>	
		1	2	3	4
Average impact and fragmentation	<i>FraDc</i>	0.309578*** (4.29)		-0.010319 (-0.04)	
Growth impact and fragmentation	<i>FraTDc</i>	0.0086148 (0.83)		0.0568687 (1.59)	
Average impact net of fragmentation	<i>NfraDc</i>	0.132401*** (2.98)		0.473258*** (3.08)	
Growth impact net of fragmentation	<i>NfraTDc</i>	0.000258 (0.03)		-0.0463409 (-1.55)	
Average impact and fragmentation through quotas	<i>QFraDc</i>		0.418799*** (3.62)		-0.0135098 (-0.03)
Growth impact and fragmentation through quotas	<i>QFraTDc</i>		0.0144203 (0.90)		0.1244277** (2.26)
Average impact net of fragmentation through quotas	<i>QNfraDc</i>		0.1750968** (2.39)		0.703467*** (2.79)
Growth impact net of fragmentation through quotas	<i>QNfraTDc</i>		0.0162667 (1.31)		0.032166 (0.75)
Sector orders	<i>Ord</i>	0.007795*** (3.82)	0.006694*** (3.23)	0.0162696** (2.31)	0.0139488* (1.95)
Average trend	<i>T</i>	0.034805*** (4.31)	0.038738*** (5.20)	-0.0075061 (-0.27)	-0.015675 (-0.61)
Year dummies	γ	Yes	Yes	Yes	Yes
Firm's specific effects	<i>u</i>	Yes	Yes	Yes	Yes
R – Squared within		0.5504	0.5470	0.1040	0.1025

The coefficient of the variables (table 4, cols. 1 and 3) tell us that delocalization increases the per capita value added by 13% (11%**) in firms which had already fragmented production processes domestically. Instead it increases by 31% (29%***) in firms which delocalize but hadn't previously outsourced to national subcontractors²³.

The effect on EBITDA is 47% (32%*) for firms which have already fragmented production while the coefficient does not appear significant for the remaining firms (very limited in number)²⁴. Taking into account the quota, as far as the per capita value added is concerned (Table 4, cols. 2 and 4), the effect on per capita value added corresponding to an increase of one percentage point of production shifted abroad by firms which had already outsourced domestically 0.17 (0.15*), and 0.42 (0.40***) by firms that both delocalize and split the production process. In the case of EBITDA, the net average effect is 0.70 (0.62*). The average impact is not significant for firms that delocalize and fragment the processes, while the growth effect is slightly positive.

6 Conclusions

At the moment information on globalization of Italian firms is extensive but incomplete and bitty. We have analytical data relative to direct overseas investments and their effect on the firms profitability (Barbara Navaretti and Castellani, 2004). However, we are aware that globalization is a much vaster phenomenon.

This work estimates the effect of organising production in a global value chain framework, on the firm value added and gross earnings. Both subcontracting relations and direct investments abroad are considered. A database has been constructed on the basis of a direct survey, supplemented by information available from the firms' balance sheets and micro employment data. The per capita value added – and even more so the gross operative margin – positively feel the impact of relocation abroad. Moreover the increase in the quota of production moved abroad is associated with a significant net increase of both the per capita value added and the gross operative margin.

²³ The attentive reader will note that the weighted mean of the two coefficients 13% and 31% give an approximate value of 17%, equivalent to the delocalization constant dummy in equation 1, tab. 2. The same happens for the coefficient values relative to the quota interaction.

²⁴ Firms which break down production show a high increase in the per capita value added while the EBITDA doesn't appear to be affected by delocalization. The first result highlights how delocalizing firms reduce labour used in manufacturing and in this way they get higher value added for employment (more qualified) which remains in the company. The second result shows that the reduction in production costs does not mean profit increase. We speculate that companies that outsource and fragment at the same time, are – at least initially – less able to manage subcontracting efficiently with respect to firms that had already experienced outsourcing.

The delocalization strategy seems to offer an important contribution in order to increase the company profitability. A higher profitability in turn means to recover chances of survival for firms facing difficulties, and to grasp more opportunities of growth and development for the other firms. At the same time, international relocation increases the per capita value added of people remaining in the domestic firms. This means that in the domestic firm higher skilled jobs are preserved and, at least in principle, employees are paid more. However delocalization is a measure which does not seem to have any direct effect on the rate of growth of productivity, and therefore we shouldn't expect lasting effects when all the companies are delocalized. The rationale for this conclusion is that outsourcing, in the majority of cases, occurs with the transfer abroad of phases and processes previously carried out in Italy, urged on by increased price competition, while the machinery and the production techniques remain unchanged. In the near future, reorganization of processes on a global scale will probably bring about other management innovations (product modularisation, export of knowledge, etc.) that are liable to further increase productivity and encourage the use of new technologies, once the new international production strategy is settled down.

Working in a more and more complex international context encourages the final producers to improve managerial and organisational efficiency and increases the demand for skilled high value added services²⁵. Nonetheless the choice to delocalize has an immediate strong negative impact on employment and on the connected skills, particularly in a region where the number of people employed in manufacturing is high, as in the Veneto clothing and footwear sectors (Tattara, 2001). The negative consequence of the drastic reduction of subcontracting in the region and the crisis of some big brands, which have not been able to manage the value chain at an international level, is evident.

An area which has always been characterized by the presence of small businesses clustered in industrial districts, where the destiny of the firm has often been considered in symbiosis with that of the workers, is now making his way along a different trend. Profit realization is now farther and farther away from places where companies that lead the productive chains are located. Therefore a profit increase by the final producers no longer directly reflects positive corresponding variations in local employment and in local revenues.

²⁵ Gereffi (1999) stresses that being part of a value chain at an international level means acquiring knowledge and therefore having a significant production upgrading.

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Appendix 1 – Estimates of Outsourcing Effects, Excluding the two Years before Delocalization

Effects of Outsourcing on the Per Capita Value Added (Equation 1)

		<i>LogVA</i>			
		1	2	3	4
Average impact	<i>Dc</i>	0.1447041*** (2.91)	0.1478584*** (2.77)		
Growth impact	<i>TDC</i>		0.0014268 (0.16)		
Average impact through quota	<i>QDc</i>			0.231226*** (3.09)	0.2287091*** (3.04)
Growth impact through quota	<i>QTDc</i>				0.0041501 (0.37)
Sector orders	<i>Ord</i>	0.0080256*** (3.67)	0.0079997*** (3.65)	0.0077691*** (3.57)	0.0076464*** (3.47)
Average trend	<i>T</i>	0.0373385*** (4.62)	0.0366442*** (4.01)	0.0396769*** (5.11)	0.0391675*** (4.96)
Yearly dummies	γ	Yes	Yes	Yes	Yes
Firm's specific effects	<i>u</i>	Yes	Yes	Yes	Yes
R – Squared within		0.5674	0.5674	0.5681	0.5682

Notes for tables in appendix: 48 companies, 702 observations, period 1982-2003. All the regressions include specific firm intercept for each company, year dummy and temporal trend. The t-value is in brackets. ***: significance 1%, **: significance 5%, *: significance 10%.

Effects of Outsourcing on EBITDA (Equation 1)

		<i>logEBITDA</i>			
		1	2	3	4
Average impact	<i>Dc</i>	0.2654148 (1.55)	0.2029966 (1.11)		
Growth impact	<i>TDc</i>		-0.0282342 (-0.94)		
Average impact through quota	<i>QDc</i>			0.4581211* (1.78)	0.448569* (1.74)
Growth impact through quota	<i>QTDc</i>				0.0157507 (0.41)
Sector orders	<i>Ord</i>	0.0148343** (1.98)	0.0153479** (2.04)	0.0143966* (1.93)	0.0139308* (1.84)
Average trend	<i>T</i>	-0.0060723 (-0.22)	-0.0076662 (-0.24)	-0.0027616 (-0.10)	-0.0046948 (-0.17)
Year dummies	γ	Yes	Yes	Yes	Yes
Firm's specific effects	<i>u</i>	Yes	Yes	Yes	Yes
R – Squared within		0.1030	0.1042	0.1041	0.1043

Net/Gross Effects of Delocalization and Fragmentation (Equation 2)

		<i>logVA</i>		<i>logEBITDA</i>	
		1	2	3	4
Average impact and fragmentation	<i>FraDc</i>	0.291957*** (3.61)		-0.1257119 (-0.45)	
Growth impact and fragmentation	<i>FraTDc</i>	0.003998 (0.36)		0.037402 (0.97)	
Average impact net of fragmentation	<i>NfraDc</i>	0.1122469** (2.00)		0.3207147* (1.67)	
Growth impact net of fragmentation	<i>NfraTDc</i>	-0.0018926 (-0.20)		-0.0641683* (-1.96)	
Average impact and fragmentation through quotas	<i>QFraDc</i>		0.407067*** (3.32)		-0.0506062 (-0.12)
Growth impact and fragmentation through quotas	<i>QFraTDc</i>		0.0102388 (0.63)		0.1182808* (2.12)
Average impact net of fragmentation through quotas	<i>QNfraDc</i>		0.1525981* (1.80)		0.6201647* (2.14)
Growth impact net of fragmentation through quotas	<i>QNfraTDc</i>		0.0182445 (1.44)		0.0353207 (0.81)
Sector orders	<i>Ord</i>	0.008079*** (3.70)	0.006808*** (3.08)	0.016024** (2.14)	0.0135548* (1.78)
Average trend	<i>T</i>	0.036236*** (3.99)	0.038925*** (4.95)	0.0089482 (0.29)	-0.0122861 (-0.45)
Year dummies	γ	Yes	Yes	Yes	Yes
Firm's specific effects	<i>u</i>	Yes	Yes	Yes	Yes
R – Squared within		0.5742	0.5722	0.1147	0.1116

Appendix 2 – Robust Estimates of Outsourcing Effects

Effects of Outsourcing on the Per Capita Value Added (Equation 1)

		<i>LogVA</i>			
		1	2	3	4
Average impact	<i>Dc</i>	0.1619276*** (2.66)	0.1656065*** (2.78)		
Growth impact	<i>TDc</i>		0.0052586 (0.31)		
Average impact through quota	<i>QDc</i>			0.2530271** (2.13)	0.246418** (2.08)
Growth impact through quota	<i>QTDc</i>				0.0053584 (0.23)
Sector orders	<i>Ord</i>	0.0079156** (2.50)	0.0077754** (2.52)	0.0076772** (2.45)	0.0075176** (2.51)
Average trend	<i>T</i>	0.0366413*** (3.40)	0.0346398*** (2.59)	0.0392443*** (3.56)	0.0386867*** (3.23)
Yearly dummies	γ	Yes	Yes	Yes	Yes
Firm's specific effects	<i>u</i>	Yes	Yes	Yes	Yes
R – Squared within		0.5420	0.5427	0.5423	0.5424

Notes for tables 2, 3, 4 and 5: 48 companies, 795 observations, period 1982-2003. All the regressions include specific firm intercept for each company, year dummy and temporal trend. The t-value is in brackets. ***: significance 1%, **: significance 5%, *: significance 10%.

Effects of Outsourcing on EBITDA (Equation 1)

		<i>logEBITDA</i>			
		1	2	3	4
Average impact	<i>Dc</i>	0.3600682* (1.88)	0.3533884* (1.90)		
Growth impact	<i>TDc</i>		-0.0095481 (-0.15)		
Average impact through quota	<i>QDc</i>			0.5850422 (1.52)	0.56287 (1.45)
Growth impact through quota	<i>QTDc</i>				0.0179767 (0.22)
Sector orders	<i>Ord</i>	0.0153289 (1.52)	0.0155834 (1.59)	0.0147963 (1.48)	0.014260 (1.54)
Average trend	<i>T</i>	-0.0128709 (-0.35)	-0.0092369 (-0.19)	-0.0076784 (-0.21)	-0.0095491 (-0.24)
Year dummies	γ	Yes	Yes	Yes	Yes
Firm's specific effects	<i>u</i>	Yes	Yes	Yes	Yes
R – Squared within		0.0942	0.0944	0.0951	0.0954

Net/Gross Effects of Delocalization and Fragmentation (Equation 2)

		<i>logVA</i>		<i>logEBITDA</i>	
		1	2	3	4
Average impact and fragmentation	<i>FraDc</i>	0.309578*** (3.08)		-0.010319 (-0.03)	
Growth impact and fragmentation	<i>FraTDc</i>	0.0086148 (0.67)		0.0568687 (1.20)	
Average impact net of fragmentation	<i>NfraDc</i>	0.132401** (1.91)		0.473258** (2.20)	
Growth impact net of fragmentation	<i>NfraTDc</i>	0.000258 (0.01)		-0.0463409 (-0.61)	
Average impact and fragmentation through quotas	<i>QFraDc</i>		0.418799*** (2.54)		-0.0135098 (-0.03)
Growth impact and fragmentation through quotas	<i>QFraTDc</i>		0.0144203 (0.71)		0.1244277* (1.75)
Average impact net of fragmentation through quotas	<i>QNfraDc</i>		0.1750968** (1.18)		0.703467 (1.50)
Growth impact net of fragmentation through quotas	<i>QNfraTDc</i>		0.0162667 (0.55)		0.032166 (0.30)
Sector orders	<i>Ord</i>	0.007795*** (2.66)	0.006694** (2.27)	0.0162696* (1.70)	0.0139488* (1.50)
Average trend	<i>T</i>	0.034805*** (2.59)	0.038738*** (3.37)	-0.0075061 (-0.15)	-0.015675 (-0.40)
Year dummies	γ	Yes	Yes	Yes	Yes
Firm's specific effects	<i>u</i>	Yes	Yes	Yes	Yes
R – Squared within		0.5504	0.5470	0.1040	0.1025