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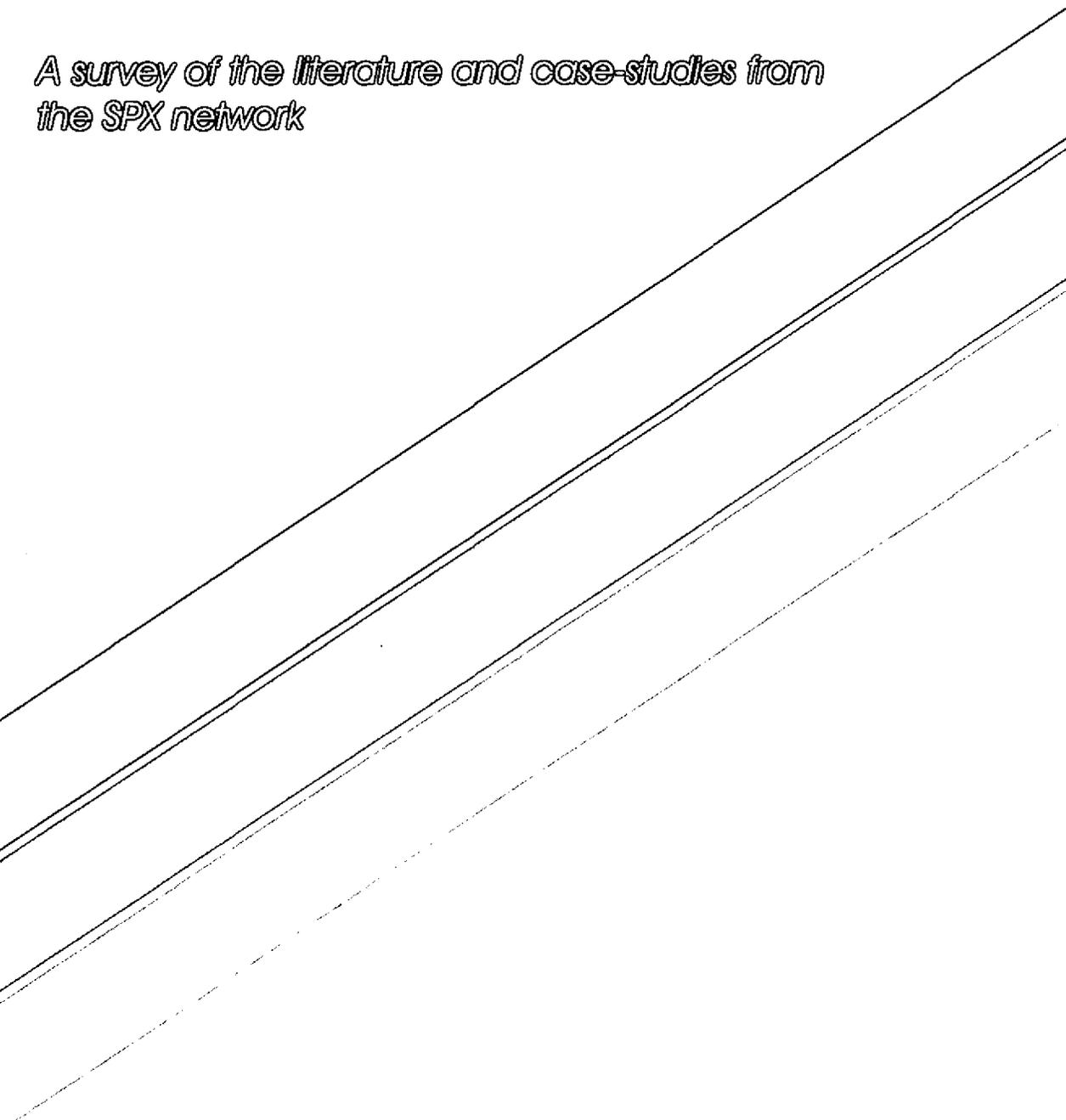
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# *International Subcontracting versus Delocalization?*

*A survey of the literature and case-studies from  
the SPX network*



UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

economy environment employment

# *International Subcontracting versus Delocalization?*

*A survey of the literature and case-studies from  
the SPX network*

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## ABSTRACT:

This study aims to determine whether or not international subcontracting into developing countries is indeed a cause for labour market changes in developed countries. It also aims to shed some light on the activities of the United Nations Industrial Development Organisation (UNIDO) in the context of delocalisation concerns. The study therefore analyses recent findings on the issue of delocalisation and its labour market implications upon developed countries in the context firstly of trade in the form of international subcontracting (or outsourcing) and secondly in the form of foreign direct investment.

The study also uses a sample of 14 international partnerships formed through Subcontracting and Partnership Exchanges set by UNIDO. The findings ensuing from partnerships involving developed country contractors and developing country subcontractors have shown that **contrary to delocalisation, international subcontracting is beneficial for the South as well as for the North.** In other words, in the context of UNIDO and as echoed by a number of academic studies, there is enough evidence to suggest that international subcontracting in developing countries should not be seen as a primary cause for labour market changes in developed countries. In contrast, driven by the natural competitive advantages of nations and underpinning an international division of labour, countries at different levels of development complement each other.

## **ACKNOWLEDGEMENTS:**

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EU	-	European Union
FDI	-	Foreign Direct Investment
GNP	-	Gross National Product
ISIC	-	International Standard Industrial Classification
OECD	-	Organisation for Economic Cooperation and Development
OEM	-	Original Equipment Manufacturer
R&D	-	Research and Development
RFE	-	Request For Estimate
SME	-	Small and Medium Enterprise
SPX	-	Subcontracting and Partnership Exchange
UNCTAD	-	United Nations Conference on Trade And Development
UK	-	United Kingdom
UNIDO	-	United Nations Industrial Development Organisation
US	-	United States
USA	-	United States of America

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## **I. INTRODUCTION:**

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Over the past 50 to 60 years, the world has seen major changes in the composition of its production processes. Falling transportation and communication costs, coupled with rapid technological changes, intensified competition and economic liberalisation have facilitated the process of global economic integration. This has in turn enhanced international trade flows, and especially trade of intermediate products through international subcontracting. Industrial subcontracting represents an essential component within industrial and commercial policies and acts as a strategy synonymous to competitive advantages. Its practice has spread to all regions of the world. For example, in 2001 subcontracting in the EU-15 was valued at 639,354 million Euros.

In this context, with the objective of enhancing, supporting and promoting small and medium-sized enterprises, mainly in developing countries, the United Nations Industrial Development Organisation' (UNIDO) Industrial Subcontracting and Supply Chain Management Programme has been establishing Subcontracting and Partnership Exchanges (SPXs) on a worldwide basis since 1982. These exchanges constitute meeting points between supply and demand of industrial subcontracting activities. When run according to certain guidelines, they have proved to be beneficial to all participants. The core of this UNIDO initiative is to promote specialist-based subcontracting partnerships. In fact, this initiative builds upon the concept of complementary-based subcontracting partnerships where the activities of subcontractors from developing countries and those of main contractors from developed countries complement each other. In these types of partnerships, not only do both entities benefit from the partnerships but so do their respective nations.

Nevertheless, some concerns have been expressed about the implications of subcontracting stemming from developed countries and targeted at developing countries. This concern falls under the heading of delocalisation: an economic phenomenon, which refers to an international transfer of productive activities from one country to another, as a result mainly of international cost differences. Delocalisation is at the heart of employment concerns in developed countries

The main purpose of this paper is twofold. Firstly, we aim to determine whether or not international subcontracting into developing countries is indeed a cause for labour market changes in developed countries. Secondly, we also aim to shed some light on the activities of UNIDO in the context of delocalisation concerns.

For this matter, the paper will be divided into five chapters. The first section will briefly introduce the concept of international subcontracting, describe its evolution and offer a summary of UNIDO's activities in this area. The second chapter will present the advantages that international subcontracting partnerships entail. The following chapter will explain the problem of delocalisation and notably review the importance of foreign direct investments in order to obtain a full picture of delocalisation. The fourth chapter will present the results of a survey based on some 14 international partnerships formed through SPXs set-up by UNIDO. The main objective is twofold: 1) To demonstrate the "win-win" nature of the partnerships for subcontractors from developing countries and contractors from developed countries; 2) To show how the North and the South both benefit from subcontracting partnerships involving one enterprise from each region. The final chapter will derive the conclusions of the study.

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## II. SUBCONTRACTING, UNIDO AND THE MODERN CONTEXT:

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### 1) The concept of industrial subcontracting:

#### *A. Definition:*

The role played by industrial subcontracting has become increasingly more important over the past few decades. Indeed, industrial subcontracting acts a very efficient mechanism to organize industrial production through the establishment of a co-operative agreement between various complementary units of production, namely between a main contractor and various suppliers or subcontractors.

In this type of agreement, the main contractor entrusts one or several enterprises with the production of parts, components, sub-assemblies or the provision of additional industrial services that are necessary for the completion of the main contractor's final product. Consequently, the subcontractors undertake the designated activity following the requirements of the main contractor, which in turn enables them to achieve higher levels of specialization in designated fields and sectors.

For our purposes subcontracting can be defined in the following manner:

*An economic relationship where one entity, the main contractor, requests another independent entity, the subcontractor or supplier, to undertake the production or carry out the processing of a material, component, part, subassembly or the provision of an industrial service in accordance with the main contractor's specifications.*

#### *B. Causes for the rise of subcontracting:*

For the past 30 years, industrial subcontracting markets have grown at a greater rate than the industrial sector taken in its entirety. There are many reasons that explain why this has happened. Firstly, over the 1960s and 1970s, the main medium of competition was that of price where companies simply sought to reach economies of scale and thereby to manage growth and acquire greater market shares. In such a system, quantity prevails over quality and therefore there is no strategic need to subcontract parts, components, or sub-assemble to meet specific product characteristics. In contrast, a better strategic policy is for the production process to be completely integrated (Cabinet Verley, Press Kit MIDEST 2002, page 24).

On the other hand, from the 1980s onwards, competition was not only based upon prices but also and more importantly upon quality or product characteristics. In other words, in such a system, innovation plays a crucial role for the product to be differentiated from the rest of the market. In turn, companies focus on upstream activities such as R&D, marketing and product design as well as on downstream ones such as sales and promotion. Progressively, the importance attached to the latter tasks causes the focus to be switched away from the means of production resulting in them being assigned to specialist partners in the supply chain (Cabinet Verley, Press Kit MIDEST 2002, page 24).

Secondly, an additional factor that has caused subcontracting to flourish is the development and widespread use of highly productive and flexible production techniques and methods based upon robotics and integrated production technologies. Subcontractors are usually in a better position to take advantage of such methods. Indeed, by combining a large number of orders from different clients, they are able to maximize the capacity use of their equipment

and hence to offer a better price for their services (Cabinet Verley, Press Kit MIDEEST 2002, page 24).

Finally, increased levels of competition and the development of new techniques of production have led to a high level of sophistication in the design of products. To manufacture a product that features all the adequate materials and principles in an efficient and profitable manner, it is necessary to call in partners with specific expertise in designated fields (Cabinet Verley, Press Kit MIDEEST 2002, page 25).

### *C. The importance of subcontracting:*

Today, subcontracting is omnipotent. Grossman and Helpman (2002, page 1) refer to an example (see case study 1) quoted in the 1998 World Trade Organization annual report illustrating the importance of subcontracting or outsourcing by showing that only 37 percent of the production value of a particular "American" car is generated in the US.

Similarly, subcontracting is equally important in the US duopolistic industry for mid-sized and large-sized aircrafts involving Airbus and Boeing. Boeing outsources the production of over 34,000 components from different manufacturers to be assembled into its 747 passenger aircrafts (Shy and Stenbacka, 2003, page 2).

#### **Case Study 1: The Production Process of a Particular American Car Producer**

"Thirty percent of the car's value goes to Korea for assembly, 17.5 percent to Japan for components and advanced technology, 7.5 percent to Germany for design, 4 percent to Taiwan and Singapore for minor parts, 2.5 percent to the United Kingdom for advertising and marketing services, and 1.5 percent for Ireland and Barbados for data processing. This means that only 37 percent of the production value ... is generated in the United States."

*Source: Grossman and Helpman, 2002, page 1.*

In fact, it is estimated that industrial subcontracting in the United States in 2001 generated about 300 billion US\$ in turnovers, with about 1,6 million enterprises subcontracting some of their activities. About 146,000 enterprises were registered as industrial subcontractors and suppliers. In fact, more than 30 percent of large enterprises were recorded as outsourcing more than 50 percent of their production through subcontracting orders (Schicchi, 2002, slide 9).

Nevertheless, subcontracting in the US was not always as extensive as it is today. At the outset, it was mostly an activity associated with Japanese companies. For example, up to the late 1980s, Japanese car producers applied subcontracting to a much higher extent than American car producers. Toyota produced roughly 70 cars per employee whereas GM's output was roughly 10 cars per employee. The main reason for this marked difference according to Shy and Stenbacka (2003, page 2) is found in the fact that Toyota outsourced almost all of the components it needed to assemble its cars.

Furthermore, in East Asia as a whole, in 1996, parts and components represented 20 percent of total exports of manufacturing products. It also represented at the time the fastest growing share of exports with a growth rate of 15 percent per year and correspondingly also accounted for an increasing share of industrial imports (Ng and Yeats, 1999, cover page).

European-based companies have also followed the same trend of taking advantage of the *efficient and complementary production processes that subcontracting offers* (see case study 2). According to figures from Daniel Coué (RIOST-CENAST, 2002, pages 8-9), shown in table 1, the subcontracting market of the EU-15 in 2001 was evaluated at 639,354 million Euros with approximately 750,471 companies registered and 5,566,665 employees engaged in subcontracting activity.

**Case Study 2: Some Figures on Subcontracting in Europe**

Based on a survey of 162 interviewed European companies, almost 50 percent of the companies were found to outsource all or a substantial part of their information (IT) functions. (Shy and Stenbacka, 2003, page 2). Furthermore, the Confederation of Finnish Industry and Employers has estimated that in 1996 subcontracting constituted up to approximately 50 percent of the sales of Finnish manufacturing firms (excluding those operating in the energy industries). Moreover, the magnitude of the outsourcing activities was estimated to have increased by 30 percent during the 1993-1996 period. It has also been estimated that Nokia alone makes use of more than 300 domestic Finnish subcontractors in addition to an almost equally high number of foreign subcontractors.

*Source: Shy and Stenbacka, 2003, page 2.*

The individual rankings of the countries forming the EU-15 show that Germany, France, Italy, the United Kingdom and Spain account for 82 percent of the value of industrial subcontracting (with Germany alone accounting for 30 percent of the total value), 77 percent of the number of companies and 81 percent of the number of employees.

*Table 1: Industrial Subcontracting in the EU-15 in 2001 (output, companies and employees).*

Country	Output Value of Industrial Subcontracting in 2001 (Euro millions)	Number of Companies	Employees Engaged in Subcontracting Activity
Germany	191,454.59	118,138	1,349,854
France	114,144.22	100,825	930,916
Italy	94,508.55	162,155	849,885
United Kingdom	79,342.52	102,111	774,102
Spain	46,137.56	99,019	618,097
The Netherlands	20,110.48	19,249	151,292
Belgium	18,731.19	22,331	132,002
Sweden	17,660.06	23,733	151,217
Austria	15,949.98	10,878	127,372
Portugal	10,387.85	36,966	175,895
Finland	10,135.20	9,853	73,974
Denmark	9,773.91	11,363	85,085
Ireland	5,280.21	12,218	60,244
Greece	4,611.34	20,847	78,319
Luxembourg	1,126.69	785	8,411
<b>EU Total - 15</b>	<b>639,354.35</b>	<b>750,471</b>	<b>5,566,665</b>

*Source: Daniel Coué (RIOST-CENAST, 2002, page 9).*

#### *D. Forms of subcontracting relationships:*

The growth of industrial subcontracting has led to the development of two main types of subcontracting relationships, one based on capacity and one based on specialisation.

##### 1. Capacity subcontracting:

The first type of subcontracting relationship is that of capacity subcontracting. In such a situation, the main reason causing the subcontracting relationship to take place is the fact that the main contractor does not have enough capacity to undertake the fabrication of the specific component, part or material (Cuny and de Crombrughe, 2000, page 16).

In other words, the main contractor has reached a capacity limit in its production process and in order to meet market demand for its product is required to refer to a subcontracting specialist at least for a temporary period of time. This usually represents a complementary horizontal disintegration of production (Taymaz and Kilicaslan, 2002, pages 2-3).

## 2. Specialist subcontracting:

Specialist subcontracting represents the second type of industrial subcontracting relationship. In this case, the main contractor relies upon the services of a subcontractor or set of subcontractors who has specialized equipment or machinery and skilled labour to undertake complex and precision tasks (Cuny and de Crombrughe, 2000, page 16).

Hence, this may involve either finished products or specialized components or supplies that require a higher level of technical expertise, which the main contractor does not possess or cannot meet. In such a situation, both firms have vertically related complementary assets and/or technologies (Taymaz and Kilicaslan, 2002, page 3).

### 2) The contribution of UNIDO to the development of subcontracting:

#### *A. The UNIDO initiative:*

As the latter sections have shown, industrial subcontracting is a very important component in modern economics and acts as a substantial vector for economic development. Its practice has developed and become widespread and the need arose for the establishment of a more permanent framework that facilitates the building of industrial subcontracting relationships.

The United Nations Industrial Development Organization (UNIDO) has recognized this and as a result in 1982 set up the Programme for the Promotion of Industrial Subcontracting and Partnership now referred to as the Industrial Subcontracting and Supply Chain Management Programme. At the core of the programme, UNIDO has been advocating the concept of "industrial partnerships" which refers to long-lasting and equitable industrial subcontracting relationships based upon the specialization and technological expertise of subcontractors or suppliers. The complementarity of the assets and technologies between the parties involved can thus form the basis for the establishment of vertical type relationships with a long-term sharing of responsibilities.

Within this context, UNIDO launched the programme to help developing countries as well as economies in transition generate the benefits entailed by industrial subcontracting agreements between small and large industries. The continuous aim of the programme is to enable small and medium sized enterprises (SMEs) in these countries to reach the following objectives:

- Increase production and employment levels
- Improve productivity and international competitiveness
- Encourage import substitution and promote the exportation of products
- Upgrade manufacturing processes and products
- Contribute to the international redeployment of manufacturing facilities and the transfer of industrial technology and know-how to SMEs in developing countries and economies in transition

UNIDO has therefore conceptualised a specific methodology to help meet these objectives and ensure that minimum conditions exist in countries to sustain viable subcontracting arrangements. This involves the setting-up of a Subcontracting and Partnership Exchange (SPX) in designated nations.

### *B. Subcontracting and Partnership Exchanges (SPXs):*

Subcontracting and Partnership Exchanges (SPXs) are technical information, promotion and match making centres for industrial subcontracting and partnership between main contractors, suppliers and subcontractors, aiming at the optimal utilization (the most complete, rational and productive) of the manufacturing capacities of the affiliated industries. In effect, the Exchanges appear not only as the meeting points and the instruments of regulation between the supply and demand of industrial subcontracting orders, but also as instruments of assistance to both partners, and particularly the small and medium supplier or subcontracting enterprise.

UNIDO provides technical assistance to developing countries for establishing and operating Subcontracting and Partnership Exchanges (SPXs). To this end, it assists in setting up a comprehensive roster of subcontractors, suppliers and main-contractors through a computerized database with detailed information for rapid retrieval on:

- Manufacturing capacities and capabilities
- Equipment with technical specifications and technical characteristics
- Quality of production
- Spare capacities available for subcontracting works
- Types of products and services offered by the subcontractor

SPXs undertake:

- The identification of subcontracting, supply and partnership inquiries or offers from large foreign or domestic buyers and main-contractors and their dissemination to potential subcontractors/suppliers/partners.
- Assistance to potential subcontractors/suppliers/partners in organizing production clusters and associations and in negotiating agreements with main contractors, which could be their own Governments.

In addition, as recommended by two UNIDO Expert Group Meetings on "Industrial Subcontracting and Partnership Exchanges and Policies", the new generation of SPXs act as centres of multidisciplinary assistance and information for subcontractors and suppliers, in fields such as:

- Technical support (product design, technology, equipment, innovation)
- Quality management, standards and certification
- Marketing strategies and analysis (including participation in international fairs and business promotion forums)
- Access to credit, financial facilities and incentives
- Management (rehabilitation, financial management, stock control)
- Legal advice (legal contracts, codes of conduct, reconciliation or settlement of disputes)
- Human resource management (training)

This assistance and information is provided either directly by the SPX in the form of surveys, advice, training, awareness seminars and industrial fairs, or by referring the enterprises to the relevant specialized institutions.

Furthermore, most SPXs organise "Supply Upgrading Programmes" to provide assistance to clusters of small-scale suppliers and subcontractors in order to upgrade their technical and commercial skills and their ability to meet the quality requirements of their main contractors or buyers.

### *C. The SPX Club:*

Using the methodology outlined above, the Industrial Subcontracting and Supply Chain Management Programme has successfully established more than 65 Subcontracting and Partnership Exchanges in 32 countries across South and Central America, Europe, Africa, the Middle East and Asia in the last 20 years, out of which 55 are still operating. In addition, more than 100 associate members from 46 nations second this whole network of linkages that has been set up between subcontractors/suppliers and contractors.

In other words, the range of subcontractors and suppliers and their geographical dispersion across the globe enables the SPX Club to have a very effective mechanism for large enterprises to network and find appropriate matches within specific countries. As a result, participating SMEs have access to the global market and global production systems or supply chains, thus they can promote their industrial products and services in national and international markets as well as identify and meet the needs of domestic and overseas partners (de Crombrughe, Bhushan and Roman; 2001; pages 1-2).

### **3) Conclusion:**

Industrial subcontracting has grown substantially across the world over the past two decades and UNIDO has been very active in promoting specialist-based subcontracting partnerships through the establishment of Subcontracting and Partnership Exchanges. Subcontracting partnerships are indeed very beneficial for the parties involved and our aim in the following chapter is to outline the benefits that they generate for subcontractors and main contractors and explain how these partnerships are a win-win situation.

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### III. THE BENEFITS OF SUBCONTRACTING:

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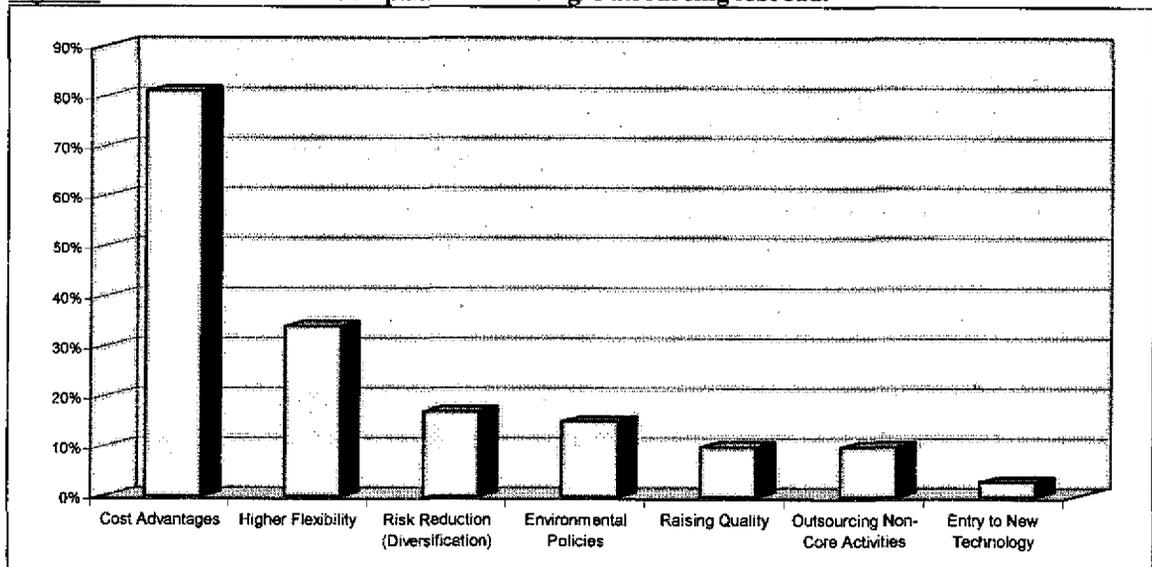
#### 1) The benefits of subcontracting to main contractors:

##### A. Cost reduction:

There are a number of reasons motivating companies to subcontract as part of a new mixture of overlapping strategic priorities. First of all, companies are driven to subcontract to take advantage of national, regional or international differences in factor costs, notably low wages or materials. For industrialised countries, production or purchasing abroad is in many countries cheaper than domestic production or domestic buying. Ultimately, this enables companies to reduce the cost of the final product and thereby to offer competitive prices.

For instance, according to a study undertaken by Van Eenennaam (1995), cost advantages were the first and by far most important reason for Dutch companies using international production facilities (see figure 1). Other reasons included: higher flexibility, risk reduction, environmental policies, raising quality or entry into new technology.

*Figure 1: Reasons for Dutch Companies Producing/Outsourcing Abroad.*



*Source: Adapted from Verra, 1999, page 4.*

There are a number of reasons that explain why placing orders with subcontractors helps reduce costs (de Crombrughe and Garrigós-Soliva, 1997, pages 41-42):

- Subcontractors have more flexibility as management can take decisions more rapidly whilst production programmes may be changed or adjusted more easily
- Highly specialized subcontractors are more efficient in their production processes and undertake these processes in a cheaper manner than contractors
- Subcontractors usually conduct little research, marketing and development activities which reduces their costs
- Low overhead and administrative costs
- Subcontractors usually have less equipment and machinery as well as simpler workshops than large firms

However, the advantages must be weighed against the disadvantages of producing/subcontracting abroad and these disadvantages are often underestimated (see case study 3). There are indeed extra costs and time factors involved. There are high costs of international travel and communication as well as broker and agent's fees and finally costs of distribution which add another 10 to 15 percent to a product's unit cost (Verra, 1999, page 3).

**Case study 3: Costs of Subcontracting Abroad**

A study by Murphy and Daley (1994) suggests that 75 percent of the respondents in their study spent at least 25 percent of their purchasing budget on transportation. Added to that, they found that due to the distribution problems, it is necessary to maintain an inventory buffer adding another 5 to 10 percent to unit cost. Finally, Murphy and Daley also found that the time needed to deliver products from abroad is typically five to ten times longer when compared with domestic delivery.

*Source: Verra, 1999, page 3.*

*B. Higher quality:*

Secondly, the search for higher quality products with high reliability in a growingly sophisticated environment pushes companies to subcontract. Very often, in-house specialists may not match and may not meet the required criteria and as a result companies refer to the specialist skills and higher degrees of competencies available through outside suppliers or subcontractors.

These are more efficient and more effective and can provide the part, component, assembly or sub-assembly with a higher level of accuracy and precision. The alternative of having to train and upgrade the skills and abilities of the labour force or to acquire the relevant machinery and equipment requires both time and large financial deployments. In this sense, subcontracting represents an excellent process to complement the core activities of a company with high quality components, parts, packaging or other elements.

In fact, some countries, regions or even clusters of industrial sites have acquired an international reputation for manufacturing or producing high quality products, parts or components. Hence, using subcontracting agreements enables companies to remain competitive and sustain a competitive advantage (Verra, 1999, page 3).

*C. An efficient mechanism to respond to demand fluctuations:*

Thirdly, the availability of products/raw materials is an additional reason why companies decide to source internationally. In order to meet product demands, companies can add international suppliers to their portfolio of domestic suppliers (Verra, 1999, page 3). In other words, using international subcontractors acts as a hedge against fluctuations in demand.

When faced with a temporary increase in demand or a seasonal upward trend, contractors have to decide whether they wish expand their capacities through heavy investments or alternatively subcontract the activities. The former decision however involves the risk of under-utilization of this investment in the future. Expanding the capacities of an enterprise to respond to demand levels induces heavy investments in machinery, equipment and plants and some large manufacturers tend to use plant and equipment well beyond depreciation stage to avoid having to undergo such large re-investment burdens. In contrast, entrusting a subcontractor or supplier with the completion of parts, components, assemblies or sub-assemblies, is a much more capital-effective way of meeting upward demand fluctuations and avoids excess capacity (de Crombrughe and Garrigós-Soliva, 1997, page 41).

#### *D. Accessing regions with potential growth prospects:*

Finally, international subcontracting offers commercial opportunities by penetrating markets with growth prospects. By subcontracting in a promising country, companies establish a link with that particular location and penetrate new markets with growing outlets and purchasing power such as, for example, in the automobile and electronics industries in India or China.

In addition, by increasing the local content of products sold in countries with trade barriers it is often possible to lower the obstacles for their own products (Verra, 1999, page 3) and to lower the breakeven point between cost-benefit and thus to decrease the sales price in this new market.

### **2) The benefits of subcontracting to subcontractors:**

#### *A. Higher productivity and efficiency:*

The benefits of subcontracting are also plentiful for subcontractors, especially those of developing countries. Firstly, subcontracting leads to a specialization in the completion of specific activities or specific components or parts. This type of specialization enables the subcontractor to achieve a higher level of efficiency and skill and thereby higher levels of capital and especially labour productivities.

In fact, according to Hondai (1992) quoted in Hayashi (2002, page 2), subcontracting agreements enables SMEs to reduce information and transaction costs through the easy and cheap acquisition of new technologies, product designs, production processes, management methods, marketing and input materials from large-scale clients (see case study 4). In some cases, this could eventually lead to an ability to conduct research and development activities and hence to develop and innovate in the technology or process involved.

#### **Case Study 4: The Benefits of Subcontracting in the Case of Indonesia**

Using a sample of 61 interviews of local metalworking and machinery SMEs in the Indonesian automobile and motorcycle industries, Hayashi (2000) found that vertical inter-firm cooperation through commercial transactions was perceived as one of the most effective sources of technical and marketing support to SMEs. This finding coincides with the theoretical counterpart of the study which indicates that a positive relationship exists between subcontracting ties and technological and marketing capabilities of SMEs.

Hayashi furthered his study of Indonesia based on an interview and questionnaire-based field survey carried out between August 1999 and March 2000 on small and medium-scale metalworking and machinery firms which supplied their products or processing services to automobile, motorcycle, agricultural machinery and bicycle producers. The study found that the role of subcontracting linkages in improving labour productivity of SMEs is pivotal. According to the estimated production functions, the subcontracting ratio is a dominant variable in explaining variations in labour productivity. Also, indices of total factor productivities vary in line with the contribution of subcontracting to total factor productivity. His findings indicate that subcontracting linkages are beneficial to SMEs in improving their productivity.

In fact, the study quantitatively confirmed earlier studies that subcontracting is conducive to industrialisation. For instance, referring to their case studies in rattan furniture, wooden furniture and garment sectors, Berry and Levy (1999) explained that subcontracting agreements provided SMEs in Indonesia with an important opportunity to learn new technology. Harianto (1996) found benefits of SMEs from intensive technical linkages in subcontracting ties while Sato (1998) illustrated a case in which a higher-layer supplier firm in the Indonesian motorcycle industry fostered its subcontractors through the provision of production facilities and training programmes on technology and management.

*Source: Hayashi, 2002, pages 2-3.*

### *B. Use of spare capacity:*

Subcontracting arrangements also enables enterprises to increase the rate of utilisation of the installed capacity and to improve capital and labour productivity. Indeed, very often, they have under-utilised facilities.

Finding outlets for spare industrial capacity helps increase production thereby raising output and ultimately revenue. An additional consequence is that it generates the creation of employment opportunities. In fact, contractors, even occasional ones, enable subcontractors to stabilize their orders over a given period of time.

### *C. Economies of scale:*

Thirdly, by concentrating on a single and specialized activity or discipline, subcontracting service providers can gain economies of scale whilst at the same time further the cost advantages they offer to original equipment manufacturers (OEMs). Scale economies result from larger facilities, broader and denser networks, and even greater purchasing clout.

### *D. Technology transfer:*

Fourthly, subcontracting arrangements act as very efficient mechanisms and tools for the technological enhancement of small and medium-sized enterprises (see case study 5). By engaging in an active collaborative agreement with specific customers, suppliers and subcontractors benefit from a large amount of technology transfer. In our context, technology refers to “all forms of physical assets, knowledge and human learning and capabilities that enable the efficient organization of goods and services” (Dunning, 1993, page 287).

In order to ensure that the inputs required to complete the production of goods meet some standard level, contractors including large multinational enterprises can provide suppliers not just with specifications but sometimes also with assistance in raising their technological capacities. UNCTAD’s 2001 World Investment Report indicates that “strong linkages can promote production efficiency, productivity growth, technological and managerial capabilities and market diversification in supplier firms”.

Moreover, technology transfer can take one of three forms. The first area of technology transfer relates to product technology (UNCTAD, 2001, page 143) which occurs via the following routes:

1. *Provision of proprietary product know-how*
2. *Transfer of product designs and technical specifications*
3. *Technical consultations with suppliers to help them master new technologies*
4. *Feedback on product performance to help suppliers improve performance*

The second area is that of process technology (UNCTAD, 2001, page 143). This occurs in the following ways:

1. *Provision of machinery and equipment to suppliers:* Contractors can transfer machine-embodied process technology by providing machinery/equipment to local suppliers. Such equipment may be related to the manufacturing of the product to be purchased or testing equipment for quality control (UNCTAD, 2001, page 143).
2. *Technical support on production planning, quality management, inspection and testing:* This type of support includes assisting domestic suppliers in improving their manufacturing processes, quality control techniques, inspection and testing methods. In addition, contractors may also provide

advice on the selection/use of process equipment/technologies (UNCTAD, 2001, page 143).

3. *Visits to supplier facilities to advise on layout, operations and quality:* Foreign investors may send relevant personnel to visit the supplier's premises in order to provide advice on factory layout, installing machinery, production planning, production problems and quality control. Moreover, this could also consist of sending affiliates' engineers to the supplier's factory for a specific period (UNCTAD, 2001, page 143).

Thirdly, contractors can lead to the transfer of organizational and managerial know-how (UNCTAD, 2001, page 143). This can take several forms:

1. *Assistance with inventory management and the use of just-in-time and other systems*
2. *Assistance in implementing quality assurance systems (including ISO certification):* Some companies may provide support to their suppliers in designing and implementing quality assurance systems or total quality control techniques (UNCTAD, 2001, page 143).
3. *Introduction to new practices such as network-management or financial, purchase and management methods* (UNCTAD, 2001, page 143).

#### **Case Study 5: Technology Transfers Through Subcontracting in the Czech Republic**

Deardorff and Djankov (2000) studied the significance of subcontracting as a source of knowledge transfer and increased efficiency for Czech firms over the period from 1993 to 1996. For this matter, they were able to obtain balance sheets and profit and loss accounts for a sample of 373 manufacturing firms in the Prague region in the metal product, base metal, electric, machinery, chemical, clothing, textiles, paper and printing, food, lumber and furniture sectors. Moreover, the data included detailed information on output produced, firm expenditures and employment as well as data on sales, subsidies and inventory changes. The survey also included a qualitative part with information on enterprises that signed subcontracting agreements with foreign partners. Indeed, by the end of 1996, 201 subcontracting arrangements were made between local firms and foreign companies.

To study the effects of subcontracting on employee training and the consequent increased efficiency for subcontractors, they analyze the relationship between subcontracting agreements and two enterprise parameters over the period from 1993 to 1996. Specifically, they study the stocks of firms that have subcontracting arrangements and try to determine whether there are any changes to the ratios of market value to replacement value. Secondly, they analyze the changes in the shares of variable costs to sales. The cost share variable is taken to be indicative of variable cost per unit, under the assumption that prices are constant.

In turn, using these two parameters, if subcontracting leads to technology transfer and thereby increased efficiency, then enterprise performance and valuations would improve. The results of their analyses indicate that there is indeed a positive correlation between subcontracting and knowledge transfer thereby resulting in increased efficiency.

*Source: Deardorff and Djankov, 2000.*

#### *E. Risk mitigation:*

Fifthly, the most recent thinking concerning subcontracting relates to risk mitigation. It is argued that one of the reasons for engaging in subcontracting arrangements is rooted in the need to reduce business risks (such as inventory obsolescence, uncertainty and stock-outs related to volume fluctuations – Chung, Jackson and Laseter; 2002; page 3) while increasing the rate of profit through special orders and improved payment conditions (Hayashi, 2002, page 2).

#### *F. Financial support:*

Finally, contractors could provide financial support or improved access to credit to their subcontractors, for instance a contract could serve as collateral for loans. For large contractors originating from industrialized countries such as Japan, financial assistance could take the form of advanced payments or low-cost rental of standard factories (de Crombrughe and Garrigós-Soliva, 1997, page 41) and even the form of equity participation in the suppliers'/subcontractors' capital. Hondai also explains that subcontracting improves creditworthiness through the use for instance of debt guarantees by parent firms (Hayashi, 2002, page 2).

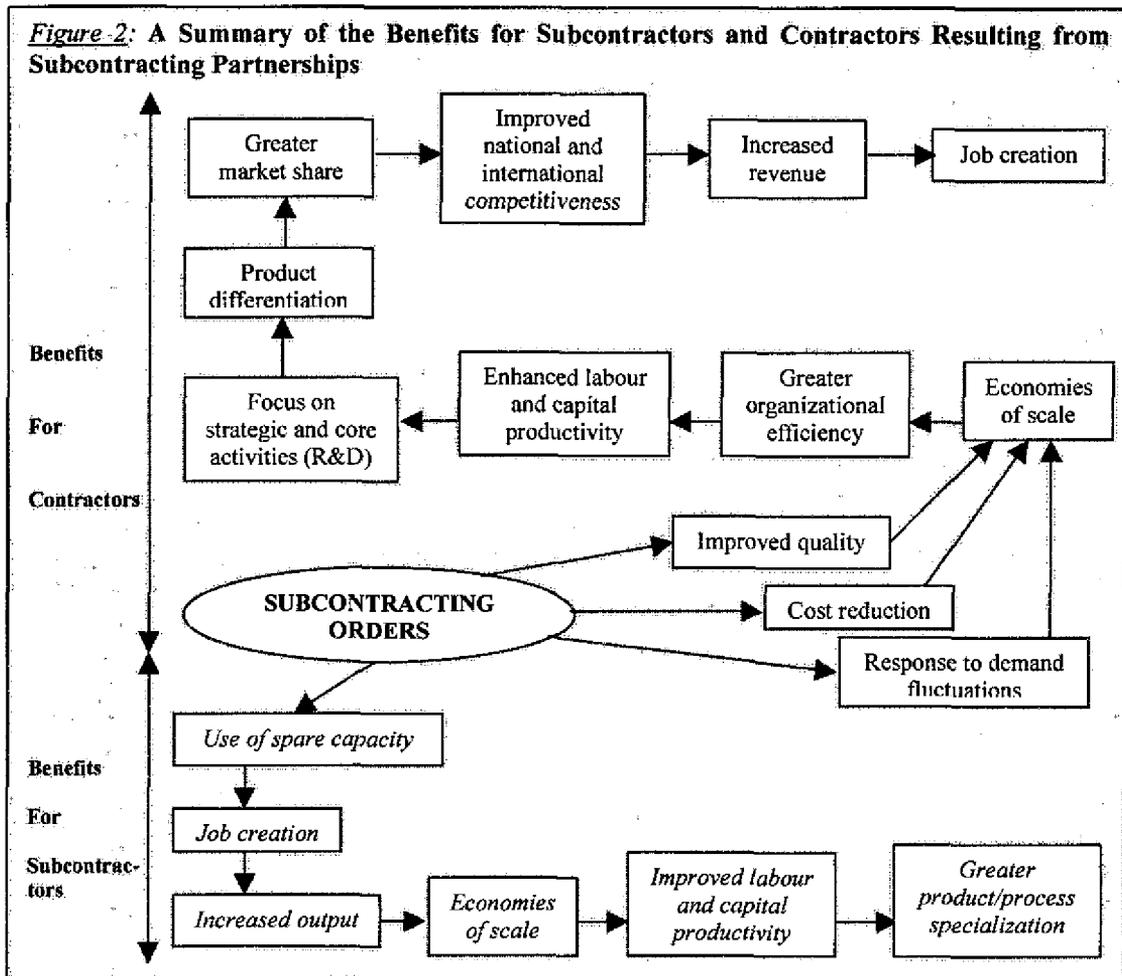
#### **3) International Subcontracting: A win-win phenomenon for developed and developing countries:**

Companies in industrialized nations recognize that supplier relationships represent very efficient mechanisms for the organization of their production processes (Shy and Stenbacka, 2003, page 1). As mentioned earlier, the economic world is increasingly competitive and globalized, and in this context, subcontracting agreements are important technically, economically, managerially, as well as strategically if companies are to maintain and improve their national and international competitiveness (Amesse et al, 2001, page 561).

As figure 2 shows, subcontracting part of the supply chain represents the first stage of a virtual economic circle for main contractors. Complementary subcontracting activities enable firms to reduce their costs, to improve the quality of their products, and to respond effectively and rapidly to demand fluctuations. Economies of scale are made as the level of output increases. In turn, the labour and capital productivities of the given company are enhanced as it becomes more organizationally efficient. Companies can therefore focus on their key or core productive activities and spend more on R&D in order to significantly differentiate the characteristics of their products from those of their competitors. It thus gains market share and hence achieves a higher level of national and international competitiveness. Enough revenue is ultimately generated for the company to create new job opportunities in its home country whilst maintaining its core productive activities and hence saving employment.

From the subcontractor's point of view, the advantages of receiving subcontracting orders are equally beneficial. By drawing upon its spare capacity, it generates more products and at the same time creates a number of job opportunities. Through this, it reaps the benefits of economies of scale as the demand for specific and precise products rises in parallel with orders from main contractors. The subcontractor's labour force thereby becomes more productive. As the labour force focuses on and specializes in the completion of specific products or processes, it becomes more efficient and acquires specific skills. Very often, these skills are enhanced as a result of the technology and knowledge of the contractor transferred on to the subcontractor through spillover mechanisms.

Overall, the dispersion of production processes, assets and technologies of subcontractors and contractors are complementary and lead to increased efficiency on both sides. In effect, an international division of labour is achieved from the competitive advantages and skills of nations driven by market forces. In fact, Marc Chevalier argues that in the future supplier relationships will become more vital for the success of companies than strategic alliances have proved to be over the past few years (Chevalier, 2003, page 56). Furthermore, the Internet offers a number of commercial opportunities and could facilitate and enhance the establishment of subcontracting arrangements in the future (see case study 6).



Source: Author's Workings.

Apart from the benefits to contractors and subcontractors arising from subcontracting agreements, it also has a very positive impact on the general level of economic development for both developed and developing countries.

Indeed, subcontractors are often small and medium-sized enterprises and these types of enterprises are important for the economic development of developing countries. Berry and Mazumdar (1991) quoted in Hayashi (2002, page 2) put forward a number of reasons why this is so. Firstly, SMEs are important because of the number of establishments, the number of employees and the value of output they represent in developing countries. Secondly, SMEs contribute extensively to the favourable combination and utilization of production factors such as capital and labour through the adoption of technologies appropriate to resource endowments and through this participation in an inter-firm division of labour. In this way, SMEs contribute to economic industrialization. Finally, SMEs facilitate equal income distribution as a consequence of their larger share in labour earnings (Hayashi, 2002, page 2).

By drawing upon specialised suppliers, subcontracting can therefore enhance, accelerate and facilitate economic development in developing countries. This process is conducted in a variety of ways. These include:

1. **Identification of available spare capacity in industrial sectors and optimal allocation of national resources:** Industrial subcontracting broadens the industrial base and ensures the efficient and full utilization of capital and labour resources. In this way, it maximizes the use of spare capacity and increases the

- total level of national industrial production (de Crombrughe and Garrigós-Soliva, 1997, pages 7-8).
2. **Employment creation and reduction in employment fluctuations** (de Crombrughe and Garrigós-Soliva, 1997, pages 7-8)
  3. **Flexibility of industrial production with greater possibilities of diversification** (de Crombrughe and Garrigós-Soliva, 1997, pages 7-8)
  4. **Access to international subcontracting routes thereby prompting regionally integrated industrial clusters hence boosting exports** (de Crombrughe and Garrigós-Soliva, 1997, pages 7-8)
  5. **Increased specialization of small and medium industries thereby improving productivity and efficiency:** Industrial subcontracting enables SMEs to focus on the production of specific products or processes and hence over time to acquire a competitive advantage in a given range of activities as their technological and technical competencies improve (de Crombrughe and Garrigós-Soliva, 1997, pages 7-8).
  6. **Import substitution:** Industrial subcontracting increases the endogenous production of parts, components, sub-assemblies and assemblies that were previously imported and hence creates savings in foreign exchange through import substitution (de Crombrughe and Garrigós-Soliva, 1997, pages 7-8).

#### **Case Study 6: The Internet and New Supply Chain Solutions**

The Internet offers great commercial opportunities for profit-making companies and enterprises and subcontracting could also take advantage of this medium of interaction. Indeed, e-procurement solutions may help buyers to reach a large number of potential suppliers at a very low vendor search cost within a short period of time, thereby allowing buyers to improve overall profitability without any negative impact on total purchasing cycle time.

Barchi Peleg (2002) conducted a research study to analyse the value of using web-based procurement applications to attain improved cost management. For this reason, he used data taken from the Noosh database which included more than 9,000 records of Request-for-Estimates (RFEs) with two or more suppliers (each including a specific job description and price quotes received from each of the contacted suppliers).

The final results indicated that buyers who submitted RFEs to five or more suppliers gained on average 34 percent reductions in purchasing costs as opposed to those who did not submit any RFEs. Peleg identified the following factors as contributing to the improved productivity and cost reductions realized:

1. Web-based applications let buyers contact a large number of suppliers for a price quote, with a minimal impact on time and their total overhead costs.
2. Due to the simplicity of submitting online bids, more suppliers are expected to respond to a RFE.
3. Web-based applications provide buyers with advanced tools to compare all bids and choose the one that best satisfies their criteria, making the selection process more efficient.
4. Many web-based applications provide supporting tools to assist buyers in keeping track of supplier performance and manage their supplier database in the most efficient way.

Moreover, suppliers benefit as well from the use of e-procurement bidding.

1. Being listed as an approved vendor makes suppliers more visible to their potential customers, who might otherwise be unaware of the services they provide.
2. Automating parts of the process of receiving RFEs and submitting price quotes reduces overhead costs associated with the process and allows the suppliers to take part in more bids, thus increasing the expected number of orders received.

However, despite these advantages, Peleg's study did not consider the problems entailed for subcontractors and suppliers by e-procurement and these should be considered to determine its net effects.

Source: Peleg, 2002.

#### **4) Conclusion:**

International subcontracting, as demonstrated by UNIDO's growing network of SPX members (55) and associate members (more than 100), has become an increasingly useful tool for both subcontractors and main contractors. On the one hand, subcontractors improve their productivity and efficiency, reduce their spare capacity, develop economies of scale and benefit from technology transfers. Moreover, by concentrating on small and medium sized suppliers in developing countries, it stimulates a whole process of linkages within different industrial sectors and hence facilitates their industrial development. On the other hand, main contractors from developed countries improve their competitiveness by reducing their production costs; by having access to high quality components, parts, sub-assemblies or industrial services and by penetrating markets with commercial opportunities. This increased efficiency and the resulting spare resources then enables them to generate new employment opportunities. Hence, not only do the contractors from developed countries and the subcontractors from developing countries benefit but so do their respective nations. Complementary-based subcontracting partnerships are therefore a win-win situation for the North as well as the South.

Nevertheless, despite these market-driven advantages, some concerns have been expressed about the implications of subcontracting stemming from developed countries and targeted at developing countries. Falling transportation and communication costs, rapid technological changes, the reduction in trade barriers (tariff and non-tariff related) and intensified competition within consumer markets have forced enterprises to improve their competitiveness by reaping the benefits of costs differences available across the world. In this search for improved competitiveness, companies have delocalised internationally, either by subcontracting outside their domestic markets or by moving part or the entirety of their production processes to foreign countries. It is with the issue of delocalisation that we shall therefore turn to in the following chapter.

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## **IV. DELOCALISATION, SUBCONTRACTING AND FDI:**

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### **1) What is delocalisation?**

Strictly speaking, delocalisation is difficult to quantify statistically since it takes different forms. Delocalisation refers to a geographical movement or transfer of productive activities, as a result essentially of a more advantageous cost price. This international movement of productive activities is either the end result of a deliberate enterprise strategy or the result of the natural market forces of the competitiveness of nations. Delocalisation is therefore at the heart of employment concerns in developed countries.

The deterioration of labour market conditions especially for unskilled workers in many OECD countries during the 1980s and 1990s has been a primary catalyst for this concern. Furthermore, firms delocalising is often allied to a concern that increasing import penetration (including trade in intermediary inputs) particularly from low-wage (developing) countries, has adverse labour market consequences for domestic unskilled workers in developed countries. Indeed, one of the arguments put forward to explain the rise of unemployment in developed countries is based either on the geographical shifting of productive activities to developing countries, on the use of subcontracting in developing nations or on increased imports from developing countries.

Besides, the link between this break-off of trade relations with a domestic source for the benefit of a foreign source is very often the result of an enterprise's decision that therefore acts as the agent of this delocalisation effect. It is thus essential when referring to the problem of delocalisation, to appreciate not only the importance of international subcontracting but also the importance of foreign direct investments. Indeed, delocalisation can occur in the form of FDI. Economists Feenstra and Hanson in fact share this same opinion (2001, page 26).

Very often the importance of foreign direct investments as a cause for the rise of unemployment in developed countries is neglected. "Foreign direct investment constitutes the aggregate of corporate economic activity that forms part of the financial account of a country and is recorded in IMF balance of payment statistics. It comprises: (1) the net acquisition of share and loan capital through mergers and takeovers, joint ventures, and the establishment of new greenfield subsidiary companies; (2) profits of overseas subsidiaries which are reinvested earnings and (3) parent to subsidiary capital transfers" (Bartels and Pass, 2000, page 44). Foreign direct investment is distinguished from portfolio investment, which represents investments in corporate stocks, shares and government stocks up to 10 percent of the capital invested. The key difference is that FDI deals with the maintenance and creation of real productive assets whilst portfolio investment implies the transfer of a financial asset from one individual or institution to another (Bartels and Pass, 2000, pages 44-45).

In this chapter, in order to appreciate the importance of delocalisation in its entirety, we shall analyse recent findings on the issue of delocalisation and its labour market implications upon developed countries in the context firstly of trade in the form of international subcontracting (or outsourcing) and secondly in the form of foreign direct investment.

Although we shall present some findings which encompass many OECD countries, the US experience is perhaps the most suitable to analyse the effects of delocalisation described in this sense for three main reasons. Firstly, US wages are generally more flexible than those in other countries such as Japan and the EU. Secondly, the US share of consumption of manufactured goods from developing countries is higher and has risen more rapidly over the 1980s. Finally, the US remains the world's largest multinational investor (Lawrence, 1994, page 6).

## 2) The labour effects of international trade and subcontracting:

### *A. Findings arguing that trade does not have a significant impact:*

Academic studies have tried to quantify statistically the impact of international trade between developed and developing countries on OECD labour markets including trade in intermediate inputs or international subcontracting. The majority of them have concluded that the effect of such trade flows is too small to account for OECD labour market changes.

For instance, a 1992 OECD study quoted in Baldwin (1995, pages 13-18) indicates that the net employment effects of changes in exports and imports between developed and developing countries have not been significant enough to account for OECD labour market changes. Using a very detailed data sample of 33 industries, the study used input-output techniques covering the 1970s and 1980s to decompose changes in output and employment by industry in nine OECD countries; namely Australia, Canada, Denmark, France, Germany, Japan, the Netherlands, the United Kingdom and the United States. The study finds that domestic factors such as changes in the demand for domestic goods and increases in labour productivity were generally much more important in accounting for labour market changes. It was also noted in the countries and periods covered that the employment-creating effects of increased exports usually dominated the employment-displacing effects of increased imports. However, a second conclusion is that trade changes have produced significant adverse employment effects in particular industries, especially labour-intensive sectors such as textiles, clothing, timber, furniture, leather, drink, food and tobacco.

Nevertheless, it is important to note that the natural competitiveness of nations would actually lead to this second effect. Indeed, in a global economy, nations would be driven to make full use and to take advantage of the resources (whether these are natural or human) in which they are relatively better endowed. In other words, developed countries would concentrate on capital-intensive or high-skill activities while developing countries would concentrate on labour-intensive or low-skill activities.

In addition, in 1990, 70 percent of the US's manufacturing imports came from other OECD countries. In contrast, manufacturing imports from developing countries, despite having increased over the 1980s, only accounted for about 2.1 percent of US GNP (Lawrence, 1994, page 13). Furthermore, Sachs and Shatz (1994) quoted in Lawrence (1994, page 13) find that over the 1978-1990 period, trade with developing countries reduced US manufacturing employment by 5.7 percent, a figure equal to only about one percent of employment overall. Moreover, Berman, Bound and Griliches (1994) quoted in Baldwin (1995, pages 23-26) use data on US workers in four-digit ISIC industries between 1973 and 1987. They argue that the magnitude of outsourcing (international subcontracting) is too small to account for the observed wage and employment changes in the US and therefore reject outsourcing as a possible explanation. As a result, they conclude that US labour market changes in the 1980s were primarily due to domestic factors (Lawrence, 1994, page 16).

Indeed, one main argument put forward by economists to explain labour market changes in OECD countries suggests that developed countries produce increasingly more sophisticated and high quality goods thereby reducing the demand for unskilled workers within their frontiers. This is a natural market-driven economic phenomenon referred to as skill-biased technological change that is based on the most efficient use of national resources, whether these are natural or human. In other words, this represents a situation where technological changes are favourable to one part of the labour force, the skilled population, but unfavourable to the other part of the labour force, the unskilled population. In fact, many economists researching the decline in wages of low-skilled workers during the 1980s and 1990s, both in real terms and relative to wages of skilled workers, have concluded that it is

not trade which is the dominant or even important explanation for the shift in wages, but rather technological change.

Nevertheless, despite these findings which suggest that domestic factors rather than international subcontracting form the roots for OECD labour market changes, one school of thought argues for the opposite.

*B. Findings arguing that trade has a significant impact:*

Among the main opponents to the view that trade in the form of international subcontracting with developing countries is too small to account for OECD labour market changes are Feenstra and Hanson. They argue that trade in intermediate inputs or subcontracting has the same effect as skill-biased technological changes (Feenstra and Hanson, 2001, page 1). Their opinion is that distinguishing between wage changes due to trade in intermediate inputs and wage changes due to technological change is an empirical rather than a theoretical question since both of these will shift demand away from low-skilled activities while raising relative demand and wages of the higher skilled (Feenstra and Hanson, 2001, pages 1-2).

They define outsourcing as an economic phenomenon “which in addition to imports by US multinationals, includes all imported intermediate or final goods that are used in the production of, or sold under the brand name of an American firm” (Feenstra and Hanson, 1995, page 20). With this definition, Feenstra and Hanson using regression techniques try to determine whether outsourcing can account for a significant part of the shift towards skilled labour. For this matter, they explain changes in the share of skilled labour in the total wage bill on the basis of various industry variables notably changes in the import share. They use a panel of 450 four-digit ISIC industries in the US during the 1980s for their analyses.

They conclude that between 15 and 33 percent of the shift towards skilled labour within US manufacturing industries over the 1979-85 period is explained by the rising import share (Feenstra and Hanson, 1995, page 28). Additional work undertaken by both authors (Feenstra and Hanson, 1996, abstract) in fact revises the figure from 15-33 percent to 31-55 percent. Hence, they find evidence in both studies that rising imports reflecting the outsourcing of production activities helps explain the reduction in the relative employment and wages of unskilled workers in the US during the 1980s (Feenstra and Hanson, 1995, abstract). Furthermore, one case that they use to defend their view is the example of US firms exporting intermediate inputs to the Maquiladora plants in Mexico, where the assembly of inputs and other production activities take place rather than in the USA (Raghavan, 2002, page 2).

Nevertheless, our response to these findings is as follows: the shift away from unskilled workers and towards skilled workers in developed countries is a natural market-driven phenomenon driven by the competitiveness of nations and the resources in which they are better endowed.

*C. Summary of the labour effects of international subcontracting:*

Most of the findings under the international subcontracting heading of delocalisation suggest that trade with developing countries is too small to account for labour market changes in OECD nations. Most of the studies argue that the source for these labour market changes stem from domestic factors, the most notable one being technological changes. The main opponents to this view are economists Feenstra and Hanson who argue that international subcontracting has the same effect as domestic technological changes. The point put forward by these two economists is that international subcontracting has adverse consequences for the unskilled portion of the job market in developed countries. We have argued that in fact, this is a natural market-driven phenomenon in the context of a global economy.

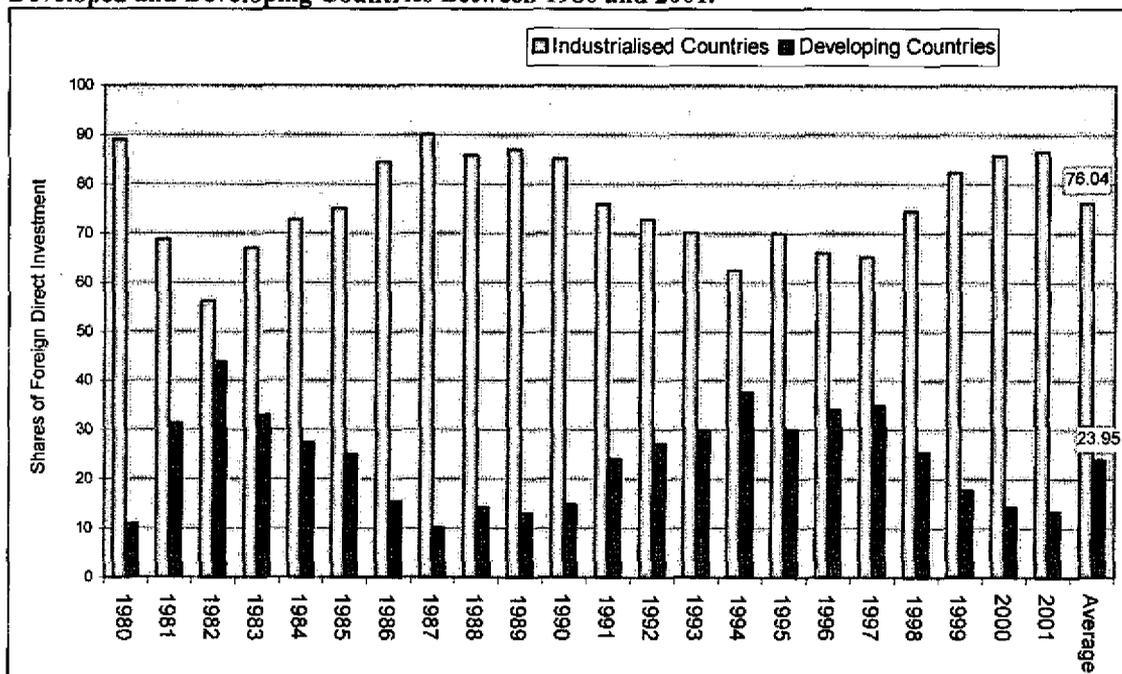
However, international subcontracting only covers one component of delocalisation. As we mentioned earlier, in order to obtain a full view of delocalisation, one should also bear in mind the importance of foreign direct investments and their ramifications upon labour markets within OECD nations.

### 3) The labour effects of FDI in the context of delocalisation:

#### A. The patterns of foreign direct investment:

As Gaston and Nelson (2002) point out, the greater portion of FDI inflows is directed towards industrialized countries. This pattern has been more or less stable since the end of the Second World War up to this day. According to FDI figures compiled using UNIDO methodology (see figure 3), over the period between 1980 and 2001, developed countries received an annual average (over the period) of 76 percent of all FDI inflows with developing countries receiving an annual average of 24 percent.

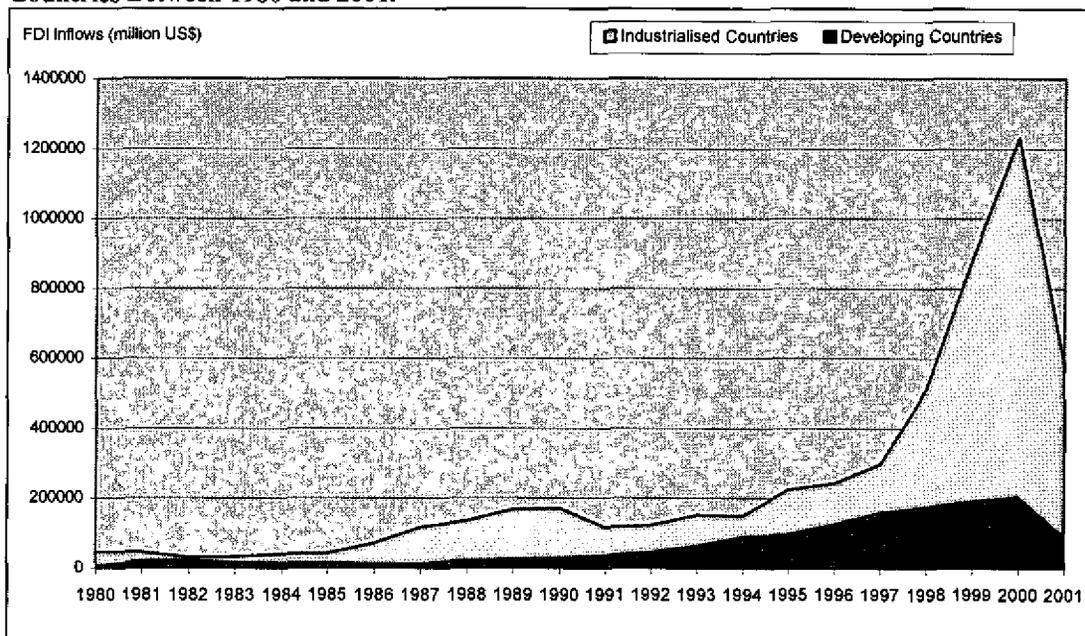
**Figure 3: Foreign Direct Investment Inflows (in percentage value of world FDI Inflows) in Developed and Developing Countries Between 1980 and 2001.**



**Source:** UNIDO Statistics compiled from the International Finance Statistics (from International Monetary Fund) according to UNIDO List of Countries and areas in selected groupings in the International Yearbook of Industrial Statistics 2002.

In monetary terms, in 1980 developing countries received US\$ 5,718.27 million worth of FDI inflows in contrast to US\$ 46,478.87 million for developed countries. In 1990, the figures were respectively US\$ 29,954.01 million and US\$ 172,239.47 million. By 2000, the levels were US\$ 204,713.91 million for developing nations and US\$ 1,2 billion for developed countries. Indeed, as figure 4 shows, increases in levels of inward foreign direct investment flows were much higher in the case of developed countries than in the case of developing countries.

**Figure 4: Foreign Direct Investment Inflows (in million US\$) in Developed and Developing Countries Between 1980 and 2001.**



**Source:** UNIDO Statistics compiled from the International Finance Statistics (from International Monetary Fund) according to UNIDO List of Countries and areas in selected groupings in the International Yearbook of Industrial Statistics 2002.

In addition, the top ten exporters of direct investment capital accounted for more than 90 percent of the world total in the period 1989-1993 while the top ten recipients accounted for more than 75 percent of reported inflows. However, six of the top ten exporters were also among the top ten recipients (Gaston and Nelson, 2002, page 442). In addition, the exporter group which usually encompasses the United States of America, the United Kingdom, Japan, France, Germany, Canada, the Netherlands, Spain, Belgium/Luxembourg and Sweden has been extremely stable over time.

These statistics suggest that the bulk of FDI follows an intra developed country trend (Gaston and Nelson, 2002, page 442) even though China as well as a number of Emerging Economies (such as the Asian Tigers: Korea, Hong Kong, Singapore and Taiwan as well as Brazil, Mexico and Argentina) have been strong FDI recipients over the past decade. In fact, although the bulk of FDI until 1990 was concentrated in the manufacturing sector, this trend has been reversed since the 1990s as the tertiary sector accounts for the majority of FDI. The latter trend tends to reinforce the intra developed country feature of FDI patterns (Gaston and Nelson, 2002, page 442).

Hence in view of this intra developed country orientation that they follow, foreign direct investment flows should have very significant effects upon labour markets in developed countries. In other words, in order to obtain a global view on delocalisation, one should bear in mind the influence of foreign direct investment flows rather than single out international subcontracting into developing countries as the cause for labour market changes in developed countries. Many studies have in fact been conducted to account for labour market changes in developed countries in the context of foreign direct investment.

*B. FDI into developing countries as complements and FDI into developed countries as substitutes to domestic labour in industrialised countries:*

Brainard and Riker (1997) study the effects of US multinationals on the labour market of the US economy. They use a three-dimensional data panel, in which each firm's production activities in up to 90 countries are tracked over a ten-year period ending in 1992, yielding approximately 70,000 firm-country-time observations. They also include all firms whose parent industry is in the manufacturing sector. The panel thus includes data on an annual basis for each reported affiliate and parent on employment, employee compensation, exports, sales, location, and a three-digit industry identifier (page 6). They find that labour in the US does compete with labour abroad via multinational production (page 17). However, their results indicate that substitution between labour employed by parents in the US and affiliates abroad is low. In fact, they argue that labour substitution is far greater between affiliates at similar levels of development. That is, labour within affiliates in developing countries competes with labour in other developing countries and labour within affiliates in industrialised countries competes with labour in other industrialised countries (page 17).

In another study, Riker and Brainard (1997) use the same methodology and empirical techniques and find that affiliate activities in developing countries are complementary to rather than substituting for affiliate activities in industrialised countries. For instance, they show that in the electronic components industry, a 10 percent decline in affiliate wages in a developing country leads to a 1.9 percent increase in affiliate employment in industrialised countries. This wage decline causes a 3.7 increase in employment in local affiliates in that country while reducing affiliate employment in other developing countries by 6.3 percent (pages 18-19). This effect occurs in the following manner: reduced wage costs in a developing country causes the demand for labour in that country to increase at the cost of labour in other developing countries. Furthermore, as a result of the vertical relations between the production processes of developed and developing countries, the decrease in wages in the developing country and the resultant increase in products will cause an increase in the demand for labour in the developed country. In other words, when employment shifting takes place, it does so between offshore affiliates in less developed countries. Hence, the effect is not substitution between workers at foreign affiliates and workers in industrialised nations, but substitution between other low-wage locations (Gaston and Nelson, 2002, pages 445-446).

Lawrence (1994) uses data on US multinationals compiled from benchmark surveys by the US Bureau of Economic Analysis in 1977 and 1989 and finds that overall multinationals are not necessarily attracted abroad simply by cheap labour: only about a third of US multinational affiliate employment is in developing countries (pages 22-23). In contrast, Lawrence argues that the catalyst for domestic labour market changes in the US was essentially domestic and reflects ongoing technological shocks "that would be present even if the US economy was closed" (page 39).

In addition, Slaughter (2000) quoted in Feenstra and Hanson (2001, pages 26-27) finds that FDI was not an important channel for moving US jobs abroad. Between 1977 and 1989, employment in majority-owned affiliates of US multinationals fell as it did in the US parents of these plants. In other words, employment at home and employment abroad were not substitutes.

### *C. Summary of the labour effects of FDI:*

FDI flows follow above all a North-North pattern. Over the 1980-2001 period, on average 76 percent of annual FDI flows were aimed at developed countries. The findings that we have surveyed to this effect suggest in addition that the substitution of productive activities occurs between countries at similar levels of development. In contrast, productive activities between developed and developing countries appear to complement each other.

It is essentially this type of policy that the United Nations Industrial Development Organisation aims to promote in the context of North-South international subcontracting: facilitating "win-win" international partnerships based upon complementary productive activities between developed and developing countries rather than a substitution of activities between the North and the South.

#### **4) The role of UNIDO in promoting complementary productive activities:**

The United Nations Industrial Development Organization programme for Industrial Subcontracting and Supply Chain Management recently conducted some case studies focusing on the partnerships established between subcontractors and contractors using its SPX network. The examples stemmed from agreements made in Central and South America (Argentina, Brazil, Chile, Colombia, Cuba, Guatemala, Mexico, Paraguay, Peru, Uruguay), Africa (Algeria, Senegal, Tunisia and Mauritius), Asia (Turkey and India) and Eastern Europe (Slovakia)<sup>1</sup>.

Among the case studies mentioned a number of them consisted of international agreements made between a local subcontractor and an international client of developed country origin. The conclusions emanating from these examples illustrate the usefulness of an SPX as a matchmaking entity capable of fostering relationships at an international level. As the previous sections of our study have shown these illustrations of subcontracting agreements are beneficial to both sides.

On the one hand, the international clients acquired high quality parts or components at a low cost thereby gaining productivity and achieving a higher level of international competitiveness. On the other hand, subcontractors recorded employment increases, increases in production and also benefited from technology transfers. The latter further facilitated export promotion in certain regions.

Essentially however, many of the relationships used in the surveys were of two types. The first type of relationship involved subsidiaries of international companies located in developing countries used for commercial distribution of the product in the regional market. The second type of relationship consisted of subcontracting part of the supply chain to a low-cost developing country subcontractor. Once the part, component, assembly, sub-assembly or packaging completed, the product would then be transferred back to the developed country for further industrial work.

Hence, in essence, these agreements were win-win industrial partnerships where the activity of subcontracting into the developing regions acted as a complement to, rather than a substitute for the production processes of the developed-country companies. In this sense, subcontracting did not lead to the delocalisation of plants from the developed nation to the developing country.

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<sup>1</sup> The examples are taken from: de Crombrughe, Bhushan and Roman, 2001 and de Crombrughe and Garrigós-Soliva, 1997.

Moreover, in certain cases, the activities and role of UNIDO have assisted in preventing industrial sites from closing down and thereby preventing jobs from being lost. For instance, in 1994, French-based electronics subcontractor **Polytech** relocated part of its supply chain to Morocco and thereby prevented the whole enterprise from closing down (Lortal, 1994, page 5).

As part of its programme for the development of subcontracting in Arab nations, UNIDO supported **Polytech** in relocating one of its 11 manufacturing processes phases to Morocco by setting up **Novaprim**. Indeed, French electronics subcontractors were losing ground and clients to their Asian competitors and **Polytech** was therefore at a critical phase. Thanks to the SPX in Morocco and to UNIDO's initiative, the company was able on the one hand to recuperate French markets and on the other to develop greater market share. Furthermore, about 100 jobs were created in Morocco as well as 15 to 20 jobs in France. In addition, the enterprise was able to become more flexible and capable of responding to a variety of electronics subcontracting requests (Lortal, 1994, pages 5 and 42).

### 5) Conclusion:

Delocalisation is a concept which embraces many facets of the global economy taking into account on the one hand natural market-driven activities and on the other deliberate enterprise strategies. In other words, delocalisation refers not only to international subcontracting activities between developed and developing countries but also occurs in form of foreign direct investment. Indeed, the impact of FDI between developed countries on their labour forces is very often neglected at the cost of targeting international subcontracting into developing countries as a cause for labour market changes within many OECD nations.

In this chapter, we have presented a broad view of delocalisation taking into account academic studies concerning the impact of international subcontracting and FDI on labour market changes in OECD nations.

Firstly, in the context of international subcontracting, the evidence is split into two groups. One school of thought argues that international trade with developing countries is too small to account for labour market changes in developed countries. Instead, the cause for these labour market changes is found in domestic factors such as technological changes. Another school of thought, led by economists Feenstra and Hanson, argues that international trade has the same effect as these technological changes. Furthermore, they argue that both have a negative effect on the unskilled portion of workers in developed countries. We have suggested that this phenomenon is in fact a natural end result of the competitiveness of nations within a global economy, where developed and developing countries make the most efficient use of the resources in which they are better endowed. In other words, developing countries focus on labour-intensive (low-skill) activities while developed countries focus on capital-intensive (high-skill) activities.

Secondly, in the context of FDI, we have shown through a number of academic studies - mostly based on US multinationals - that FDI into developing countries acts as a complement to the domestic labour force rather than a substitute. The studies also indicate that the substitution of productive activities is a phenomenon that occurs with countries at similar levels of development, in other words between labour forces of developing countries or between labour forces of developed countries.

It is this philosophy that UNIDO adopts and strives to follow through its SPX network: promoting complementary-based "win-win" industrial partnerships between developed and developing country partners. To illustrate this point further, we shall in the following section, use a number of case studies based upon specific partnerships in the SPX network.

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## V. CASE STUDIES FROM THE SPX NETWORK:

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### 1) Methodology:

#### *A. Background:*

In order to analyse the issue of delocalisation and building upon some of our earlier work, the Industrial Subcontracting and Supply Chain Management programme conducted a survey using as a source its large and geographically diverse pool of SPXs. Indeed, many of the SPXs have not only been used as a platform for the promotion of subcontracting between local suppliers and national clients but have also fostered partnerships with international clients in an extensive number of cases.

Therefore, the large number of companies registered within the established SPXs would clearly constitute a good population from which to draw a sample for a survey on the role of international subcontracting and its position vis-à-vis delocalisation. The SPXs were hence requested to provide very detailed and specific information at the company/partnership level rather than personal impressions. Some of the questions required an intimate knowledge of the partnerships as well as the bilateral benefits (i.e. contractor and subcontractor) entailed by the partnerships. It is therefore assumed that a very high correlation exists between the answers provided and reality.

#### *B. Content of the questionnaire:*

The questionnaire was drafted in English (see appendix 1) and then translated into both French and Spanish. In addition, an explanatory letter was attached to the questionnaire in order to provide the recipient with some background information on the survey and its purpose (see appendix 2).

The questionnaire consisted of three sections, namely "Background Information", "General Information on the SPX" and "International Partnerships". The section on "Background Information" simply asked for the name of the SPX, the name of the person filling in the questionnaire as well as the date of the SPX's establishment. The following section entitled "General Information on the SPX" requested the respondent to briefly enumerate the sectors represented in the SPX and the scope of the partnerships at three levels, namely local, national and international.

The reason for integrating both these sections was simply to have a historical perspective on the specific SPX's activities; to be able to determine how important international partnerships were in relation to the total number of partnerships formed and to provide a brief summary of the main sectors represented in the SPX.

The third section of the questionnaire, "International Partnerships", requested the respondent to use up to four examples of partnerships involving international partnerships between an international company and a local subcontracting counterpart. We noted moreover that international partnerships in the electronic, electric, chemical, metal, mechanical or plastics sectors were preferable because these are the sectors which induce a large number of interdependent production processes and in which therefore there was a large potential of international networking between countries.

This section consisted of 13 parts that follow one another in a logical manner. The first and second part respectively asked for the main contractor's industrial sector, name and country of origin and the subcontractor's industrial sector and name. The country of origin was obviously a key feature of the questionnaire as the debate is a geographical one in nature

consisting of a substitution of the labour force in the North by a labour force in the South. The third question followed upon the previous two by asking for the type of product (or service) that the subcontractor produced (or supplied) in the context of the partnership selected.

The fourth and fifth parts were crucial to the survey as they respectively asked the respondent to determine whether the product produced (or service supplied) existed in the home country of the main contractor and whether it was sent back to this home nation for additional assembling or processing as part of the supply chain. Indeed, these two points were important because the answers would enable us to suggest whether there was indeed a substitution of activities in the developed country by a labour force in the developing country or rather that the activities were complementary illustrating an international division of labour. The questions were closed ones in the sense that they were of the yes/no type and could easily be obtained from the main contractor.

The following three sections related firstly to the length of the partnership, secondly to the number of additional jobs created for the subcontractor/supplier thanks to the agreement and finally to the revenue it generated as a result of the partnership. These questions were integrated in order to determine the potential benefits that the subcontractor gained from the relationship thereby demonstrating one side of the win-win situation that international subcontracting would entail, namely the subcontractor's side.

The next section asked the respondent to supply any information which shows the way in which the subcontractor by networking back with enterprises from the main contractor's home country created additional jobs there.

The final four sections requested information firstly on the contact details of the main contractor, secondly on the benefits the partnership generated for the main contractor in the industrialized country in terms of competitiveness, thirdly on the benefits it gained in terms of market share and finally on the benefits it gained in terms of job creation. The answers to the last three questions would act as illustrations for the second side of the win-win situation that international subcontracting generates, namely the main contractor side.

#### *C. Selection of respondents and response rate:*

In total, 16 SPXs received the questionnaire via email in the end of February 2003, six of which were English-speaking, four French-speaking and six Spanish-speaking. The sampling process was based upon previous publications, knowledge of specific international partnerships within the SPXs and their geographical locations all of which suggested that there was a high chance of finding international partnerships in the selected SPXs. Reminders on a number of occasions were sent out to all recipients that had not replied. Furthermore, further clarification on certain responses was requested via email.

By the end of June 2003, 13 SPXs had replied. In total, eight SPXs provided concrete examples of international partnerships, some involving international partners from developed countries (USA and EU) and others involving partners from other developing countries. In total, 14 cases of international partnerships were obtained, as table 3 shows. Another seven commented on the survey without filling out the questionnaire. The response rate of nearly 50 percent is very satisfactory (even though the active interest of the SPXs in UNIDO's activities nears 82 percent).

**Table 2: Summary of Responses.**

Country / City of SPX:	Examples Obtained:	Nationality of Main Contractor:	Other Responses:
Argentina / Buenos Aires	0	NA	YES
Brazil / Sao Paulo, Sebrae	0	NA	NO
Costa-Rica / San José	2	1. USA 2. USA	YES
Côte d'Ivoire / Abidjan	0	NA	YES
India / Hyderabad	0	NA	YES
India / New Delhi	2	1. China 2. China	YES
India / Pune	1	1. Singapore	YES
Mexico / Queretaro	0	NA	YES
Morocco / Casablanca	0	NA	NO
Paraguay / Asunción	2	1. Paraguay 2. Brazil	YES
Senegal / Dakar	0	NA	YES
Sri Lanka / Colombo	2	1. The Netherlands 2. Germany	YES
Slovakia / Bratislava	2	1. Germany 2. France	YES
Tanzania / Tumbes	0	NA	NO
Turkey / Istanbul	2	1. United Kingdom 2. Germany	YES
Uruguay / Montevideo	1	1. Argentina	YES
<b>Total:</b>	14	/	13

*D. Comment on the questionnaire and answers:*

The answers that were obtained necessitate a number of comments. Firstly, not all sections of the questionnaires that were obtained were filled out. Indeed, in a number of cases either the questions or sections were not applicable to the case mentioned, or the information was not available or was considered confidential.

Secondly, with regards to section four of the questionnaire, namely the section asking the respondent to determine whether the product existed in the home nation of the main contractor, a number of interpretations are possible. Indeed, if the answer is positive (i.e. that the product existed in the home nation of the main contractor), it could either mean that the main contractor was forced to use international subcontractors rather than national ones because no spare capacity was available in the home country to undertake the tasks. The alternative is that the main contractor decided not to use national subcontractor for a variety of strategic reasons. In contrast, if the answer is negative, no interpretational problems occur: the product simply did not exist in the home nation of the main contractor.

Thirdly, the questionnaire specifically requested the respondent to provide examples using international partners. As table 3 shows, eight of the partnerships involved partnerships with enterprises from developed countries (United States and European Union). The remaining six examples consisted of partnerships with partners from other developing or emerging economies. This pattern is very important as it would enable us to confirm or contrast the evidence laid out in the previous section, i.e. whether delocalisation takes place with countries at similar levels of development or not.

## 2) Presentation and analysis of the survey results:

### A. Costa Rica:

#### i - The Bolsa de Subcontratación Industrial de Costa Rica:

The *Bolsa de Subcontratación Industrial de Costa Rica* was launched in November 1995 and has subcontractors and suppliers registered in the following fields:

- 1) Metal
- 2) Mechanical
- 3) Plastic
- 4) Electronic
- 5) Packaging

The BSA de Costa Rica provided two examples involving international subcontracting partnerships.

#### ii - Case 1: Trimpot Electronicas (USA) and Desarrollos AKA Precision S.A.:

The first case consisted of an agreement made between a subsidiary of the American electrical company **Bourns**, namely **Trimpot Electronicas S.A.**, located in Costa Rica and a local metal-mechanical subcontractor, **Desarrollos AKA Precision S.A.**

The subcontractor was requested to assemble machines for electrical components and the partnership was defined as a permanent one involving on average two months per contract. The subcontractor benefited substantially. Indeed, over a period of five years, about 50 teams of employees were involved and the revenue generated for the subcontractor was on average 100,000 US\$ per year. Moreover, as a result of the cooperative agreement, 10 more jobs were created within **Desarrollos AKA Precision S.A.** itself along with a number of other second and third tier party jobs. This demonstrates the economics of externalities or spillovers implied by backward linkages. Backward linkages are much more pronounced in the manufacturing industry than in the primary or tertiary sector. The manufacturing sector is indeed an excellent breeding ground for this phenomenon as a result of the large number of interdependent but neatly distinct stages of production (Morcos, 2002, page 37).

The main contractor also gained substantially from the relationship. The advantages consisted of technological improvements as well as cost reductions thereby improving the competitiveness of the multinational. This increase in competitiveness also enabled the company to possibly develop greater market share.

Furthermore, the establishment of the partnership stemmed from the fact that the product that **Trimpot Electronicas S.A.** requested from the Costa-Rican subcontractor did not exit in the home nation of the parent firm. Upon completion of the duties by the subcontractor, the machine assembly of the electric components undertaken by **Desarrollos AKA Precision S.A.** did not undergo further processing in the home nation of **Trimpot Electronicas S.A.**' parent firm. In this way, the industrial activities of the subcontractor were complementary to those of the contractor and did not therefore involve any substitution of its activities and hence no conflict of interest between the USA and Costa Rica.

This example illustrates the advantages that both entities gained as a result of the contractor subcontracting part of its supply chain into Costa Rica and also exemplifies the geographical complementarity of their production processes.

iii - Case 2: **Babyliss C.R. – CONAIR – (USA) and Cia Leogar S.A.:**

The second case consisted of a collaboration between a Costa-Rican subsidiary of the American multinational **CONAIR**, **Babyliss C.R.**, and **Cia Leogar**, a Costa-Rican supplier specialised in the manufacturing of components (particularly metallic components). Moreover, **CONAIR** is a major producer of electrical appliances and is recognised as one of the largest producers of hair dryers in the world. In this context, **Babyliss C.R.** requested the subcontractor to provide pipes and metallic covers required for the completion of professional dryers. The collaboration lasted for a whole year and enabled the subcontractor to add one major international contract to its customer base.

The agreement enhanced the contractor's competitiveness as it provided it with a facilitated access to inputs and also permitted it to enter into a new market niche. Moreover, importantly it was indicated that the pipes and metallic covers didn't exist in the USA and that the partly completed product was sent back to the USA for further processing. In this way, by networking with entities in the home country of **Babyliss C.R.**' parent firm, this subcontracting agreement led to the creation of 40 new employment opportunities in the United States. Furthermore, the contractor reportedly generated a new service line as a result of the partnership and thereby also created more jobs.

As was the case in the previous example, the fact that the pipes and metallic covers were not available in the home nation of the parent firm of **Babyliss C.R.**, namely in the United States, illustrates the complementarity of the assets, technologies and production processes of the home countries of the parties involved.

iv - Contact details for the Bolsa de Subcontratación Industrial de Costa Rica:

For further information on the Bolsa de Subcontratación Industrial de Costa Rica or on the case studies, please contact:

*Miss Barbara Campos Ballard, SPX Manager*

Address: Bolsa de Subcontratación Industrial de Costa Rica, Cámara de Industrias de Costa Rica, 300 metros Sur de la Fuente de la Hispanidad San Pedro, San José, Costa Rica

Tel: +506 281 0006

Fax: +506 234 6163

E-Mail: bcampos@cicr.com

***B. India - New Delhi:***

i - The CII-UNIDO Subcontracting and Partnership Centre (CII-SPX) of New Delhi:

The CII-UNIDO Subcontracting & Partnership Centre (CII-SPX) of New Delhi was established in 1999 and has local subcontractors and suppliers from the following industrial sectors represented in its computerised roster:

- 1) Metal Working
- 2) Automotive
- 3) Mechanical & Electrical Engineering
- 4) Plastic & Rubber Component
- 5) Electronic

Furthermore, the SPX of New Delhi has been very effective in establishing a hybrid mix of partnerships for the registered subcontractors. Indeed, about 65 percent of the partnerships realised or facilitated thanks to the SPX of New Delhi are of an international nature. Partnerships at the national level represent about 20 percent of the partnerships and local ones account for the remaining 15 percent. As a result of this large pool of international agreements

formed thanks to the services that it offers, the SPX of New Delhi supplied two examples involving a Chinese contractor and a local Indian counterpart.

ii - Case 3: Yiyuan Electric Light Sources Co Ltd (China) and Lumax Industries Ltd:

A Chinese enterprise in the electrical sector, **Yiyuan Electric Light Sources Co Ltd** formed a partnership with the Indian subcontractor **Lumax Industries Ltd** in order to obtain lighting equipment namely torch bulbs and signalling bulbs.

The example encompassed a number of interesting aspects. Firstly, even though the equipment that **Lumax Industries Ltd** supplied to its Chinese counterpart was sent back to China for further processing or assembling thereby possibly generating additional employment opportunities, the equipment was reported as existing in China. In this sense, the establishment of the partnership between **Lumax Industries Ltd** and **Yiyuan Electric Light Sources Co Ltd** could potentially have caused a substitution of the labour force in China by an Indian labour force. However, this potential substitution effect among emerging economies is more in line with the evidence we put forward earlier in the study, namely that delocalisation is more often associated with nations at similar levels of development rather than between a developed country and an emerging economy/developing country.

However, despite the latter, both **Yiyuan Electric Light Sources Co Ltd** and **Lumax Industries Ltd** gained from the cooperative agreement. No less than 15 new employment opportunities and 0.1 million Indian Rupees' worth of revenue were generated for the latter whilst the former improved its business efficiency through reduced costs thereby enhancing its competitiveness and experienced robust growth in its market share.

iii - Case 4: Fasten Group Co (China) and Anikka International PVT Ltd:

The second example provided by the SPX of New Delhi again involved a Chinese contractor that produces metal products, **Fasten Group Co**, and the Indian subcontractor, **Anikka International PVT Ltd**. **Anikka International PVT Ltd** was requested to provide stainless steel telecommunication materials. However, the materials were reported as existing in China and once the materials were obtained from the Indian subcontractor, they were not sent back to the home nation for further processing or assembly. Hence, the scope for the generation of job opportunities back in China resulting from this further processing or assembly is relatively low if not non-existent. As case 4 showed, the existence in China of the material provided by the Indian manufacturer tends to support the employment substitution argument between both countries, which are at the same level of economic development.

Nevertheless, thanks to the partnership, on the one hand, the Indian manufacturer was able to employ an additional five individuals and generated about 0.2 million Indian Rupees in revenue. On the other hand, the Chinese enterprise was able to become more competitive by having access to higher quality materials available at a low cost by virtue of the specialist skills of **Anikka International PVT Ltd**. This then enabled **Fasten Group Co** to increase its market share.

iv - Contact details for the CII-UNIDO Subcontracting and Partnership Centre:

For further information on the CII-UNIDO Subcontracting and Partnership Centre (CII-SPX) of New Delhi or on the case studies, please contact:

*Ms. Sonia Braha, SPX Manager or Mr. Suvendu Mahapatra*

Address: Industrial Subcontracting and Partnership Exchange of New Delhi, Confederation of Indian Industry - CII, Indian Habitat Centre, 4th Floor, Core 4A, Lodi Road, New Delhi 110 003, India

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E-Mail: Sonia.bhrara@ciionline.org or suvendu.mahapatra@ciionline.org

### ***C. India - Pune:***

#### **i - The Industrial Subcontracting and Partnership Exchange (SPX) of Pune:**

The Industrial Subcontracting and Partnership Exchange (SPX) of Pune has a wide variety of 359 subcontractors and suppliers registered in its database. The breakdown is as follows:

- 1) Automotive Components (10)
- 2) Sheet Metal Industries - Press Parts (56)
- 3) Machining Industries (44)
- 4) Forging Industries (11)
- 5) Casting Industries (11)
- 6) Metal Working Industries (65)
- 7) Manufacturing of Machinery & Equipments (53)
- 8) Rubber Industries (27)
- 9) Plastic Industries (29)
- 10) Electrical & Electronics Industries (50)
- 11) Miscellaneous (3)

#### **ii - Case 5: Santana Brothers MFG PTE Ltd (Singapore) and Pune Metagraph:**

The SPX of Pune supplied information concerning a one-year agreement made between **Santana Brothers MFG PTE Ltd** - a Singapore-based automotive enterprise - and **Pune Metagraph** - an automobile sector subcontractor. The purpose of the partnership was for the subcontractor to supply decorative laminates (graphics) printed on vinyl and to be pasted on the panels and fuel tanks of the motorcycles.

In this case, the tasks required by the Singaporean contractor were reported as existing in the home country as well as in India. Moreover, once the laminates were supplied, they were not sent back to the home nation for further assembly or processing. As was the case with earlier examples, there seems to be a potential substitution of activities between both Singapore and India.

However, both partners gained from this relationship. **Pune Metagraph** recorded four extra jobs in different levels of design and textures and also received 160,000 Indian Rupees in revenue. **Santana Brothers MFG PTE Ltd**, the Singaporean counterpart, acquired good quality laminates at a competitive cost and hence was able to further its competitiveness. In addition, it was able to maintain its market leadership and therefore market share in Singapore thanks to the availability of these products. Finally, thanks to the availability of freed resources, it also created additional employment, specifically in its marketing and sale compartments, in order to promote and market their newly positioned product in Singapore.

#### **iii - Contact details for the Industrial Subcontracting and Partnership Exchange (SPX) of Pune:**

For further information on the Industrial Subcontracting and Partnership Exchange (SPX) of Pune or on the case studies, please contact:

*Ms. Tejaswini Gogate, CII Director or Mr. Ajay Todkar*

Address: Industrial Subcontracting and Partnership Exchange (SPX) of Pune, c/o CII office Pune (Confederation of Indian Industry - CII), Bungalow number 2, Ganeshkhind Road, Near Rahul Cinema, Pune 411 005, India

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Fax: +9120 5536 892

E-Mail: ciipune@vsnl.com or ciipsp@vsnl.net

#### *D. Paraguay:*

##### i - The Bolsa de Subcontratación del Paraguay:

The Bolsa de Subcontratación del Paraguay was established in October 1991 and has subcontractors and suppliers registered in the following industrial sectors:

- 1) Metal
- 2) Mechanical
- 3) Plastic and Rubber
- 4) Electrics
- 5) Electronics
- 6) Textiles
- 7) Agro-Industries
- 8) Industrial Services
- 9) Textiles
- 10) Wood

The matchmaking activities of the BSA del Paraguay results in the majority of cases in local partnerships. About 60 percent of the partnerships fostered thanks to the BSA del Paraguay are local ones with 30 percent at the national level and only 10 percent at international levels. Two international partnership agreements were mentioned.

##### ii - Case 6: Mc. Donald's (Paraguay) and Industrias Fatecha:

The first example provided by the BSA del Paraguay is an ongoing partnership involving **Mc. Donald's Paraguay** and a local bread supplier, namely **Industrias Fatecha**, which supplies bread to **Mc. Donald's** for commercialisation in Paraguay.

The products supplied by **Industrias Fatecha** were originally imported from Argentina. As a result of the local procurement, the partnership was successful in being a substitute to imports for the Paraguayan economy. This illustrates again the labour force substitution-effect between two developing countries, Argentina and Paraguay. In addition, by virtue of the product's nature, it could not undergo additional processing.

The partnership generated many advantages for the local bread supplier. First of all, the formation of the partnership helped **Industrias Fatecha** reduce its spare capacity by virtue of the extra orders created by **Mc. Donald's Paraguay**. In fact, the supplier is in a process of widening the variety of bread products supplied. Secondly, the agreement generated three extra employment opportunities. Finally, it also helped the supplier gain 15,000 US\$ per year in revenue, a figure that could increase.

In addition, for **Mc. Donald's**, the main benefit was the fact that the partnership with **Industrias Fatecha** helped it reduce its logistical costs.

##### iii - Case 7: Local Paraguayan supplier and large Brazilian company:

The second partnership mentioned by the BSA consisted of an agreement in the heavy and light clothes textiles industry between a Brazilian enterprise and a medium-sized Paraguayan subcontractor. At the time of writing this paper, the partnership was still ongoing (with a duration of over a year). Here, the subcontractor was responsible for a number of textile-related activities despite their availability in Brazil; namely cutting, ironing and knitting.

Before their ultimate commercialisation, the partly completed products were sent back to Brazil for further processing upon completion of the activities in Paraguay.

Despite the resulting possibility of a substitution of activities from Brazil to Paraguay, each party gained from the agreement. On the one hand, the medium-sized Paraguayan supplier cooperated with two small-sized second and third tier local tailor workshops with an average of 30 employees and generated approximately 50,000 US\$ per contract. On the other hand, the Brazilian main contractor realised production cost reductions thereby enhancing its competitiveness that resulted in it gaining a greater share in the Brazilian market.

iv - Contact details for the Bolsa de Subcontratación del Paraguay:

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*E. Slovakia:*

i - The Subcontracting and Partnership Exchange of Slovakia:

The Subcontracting and Partnership Exchange of Slovakia was established in 1994 and represents a very unusual SPX as 100 percent of the partnerships that they help foster for their subcontractors and suppliers are formed at the international level. In fact, the majority of requests received by the SPX of Slovakia come from companies of Western European countries (France, Germany, Belgium, Switzerland, the Netherlands, Austria etc).

Moreover, the subcontractors and suppliers registered in the SPX's database come from the machinery industrial sector (casting and forging, machining, welding, tooling, plastic parts, metal sheet forming, etc).

In this context, the SPX of Slovakia submitted two interesting examples of international partnerships.

ii - Case 8: Ingersoll-Rand Group (USA) and Topoz, Team Industries and BMZ:

The first example referred to a partnership involving a network of four main contractors, **Air Solutions**, **Portable Power**; French-based **IR-Montabert** and German-based **IR-ABG**. All four companies are enterprises registered under the trading name of the American corporate giant **Ingersoll-Rand (IR)** that has a history going all the way back to 1871. The first two companies, **Air Solutions** and **Portable Power**, are respectively industrial solutions and infrastructure subsidiary brands of **Ingersoll-Rand (IR)** whilst the other two **IR-Montabert** and **IR-ABG**, also infrastructure subsidiaries, were acquired by **Ingersoll-Rand (IR)** in the 1990s and now form an integral part of the Group.

In fact, **Ingersoll-Rand (IR)** had previously established a subcontracting agreement with members of the SPX of Slovakia. After a long screening process, **Ingersoll-Rand (IR)** selected seven Slovak suppliers for two of its projects for the production of pressure vessels and hydraulic cylinders its world-renowned affiliates **Bobcat** and **Thermo King**. **Ingersoll-Rand (IR)** required steel structures and welded parts for **Bobcat** valued at US\$50 million and

sheet metal parts for **Thermo King** valued at US\$10 million. Following completion of this project, **Ingersoll-Rand (IR)** consolidated its cooperation with the SPX of Slovakia through the following partnership.

The **Ingersoll-Rand (IR)** affiliated companies (**Air Solutions, Portable Power, IR-Montabert and IR-ABG**) contacted the SPX of Slovakia in order to acquire welded and machined parts and components from subcontractors registered in its database. A network of three machinery-sector subcontractors, **Topoz, Team Industries and BMZ**, was eventually selected to perform six projects. The value of the partnership was not supplied as it was considered confidential.

The partnership lasted about a year and generated many benefits, mostly for the main contractors. First of all, the welded and machined components and parts were obtained at a relatively low price and thereby facilitated the success of the main contractors' final products on the market hence contributing to their competitiveness. This in turn enabled the **Ingersoll-Rand (IR)** network to increase its market share.

However, it was also indicated that the supply of welded and machined components was an activity that existed in Germany and France and therefore could have been undertaken there. Nevertheless, the activities undertaken by the Slovakian subcontractors and suppliers were only an intermediary process leading to the completion of the final products. Indeed, the **Ingersoll-Rand (IR)** network only subcontracted part of their supply chain to Slovakia whereby the completed components were eventually sent back to the home nations of **Air Solutions, Portable Power, IR-Montabert and IR-ABG** for further assembling or processing.

The Slovakian subcontractors concentrated on the supply of welded and machined parts and by networking back with other German and French companies helped create more sophisticated, high skill and high added-value jobs in both countries. It was in addition noted that the partnership formed between the **Ingersoll-Rand (IR)** network and the Slovakian network of subcontractors helped the **Ingersoll-Rand (IR)** entities create more than 60 employment opportunities in their home nations, namely France and Germany.

On the whole therefore, it is difficult to estimate what the net job effect was in Germany and France following the establishment of the partnership. On the one hand, the partnership clearly led to the creation of a large number of high-skill job opportunities in France and Germany. On the other hand, the subcontracted activities could have been conducted in the home nations of the **Ingersoll-Rand (IR)** network. It must also be stressed that due to the layout of the questionnaire the reason why they were not completed there cannot be given, for instance whether this was due to cost differences between Germany/France and Slovakia or because no spare capacity was available in Germany/France at the time the components were needed.

The short time frame of the partnership (only a year), however, suggests that the reason for subcontracting in Slovakia, was the lack of spare capacity in France and Germany, even though no information was submitted on this matter.

### iii - Case 9: Pomagalski (France) and network of Slovakian subcontractors:

The second case consisted of a partnership between **Pomagalski S.A.**, a French contractor based in Grenoble, and a network of four machinery (ski-lifts) Slovakian subcontractors and suppliers: **VSZ Kosice (now part of US Steel), VUSAM Zvolen, KOHYT Kosice and ZSNP Ziar nad Hronom.**

The partnership lasted for a full year and involved the supply of welded construction components (iron and pressure die casting). In total, VSZ Kosice was assigned six projects and the other three a total of three projects. As in the previous case, the value of the partnerships was not given as it was considered confidential.

The main benefits were generated mostly for the main contractor, Pomagalski S.A.. It was able to enhance the value of its final product by obtaining welded construction components from the Slovakian suppliers that meet international standards of quality warranty. Hence, this enabled Pomagalski S.A. to increase its competitiveness in the French market and maintain its market leadership.

Furthermore, this case also illustrates how subcontracting part of the supply chain internationally is beneficial for the developed country as new jobs were created there. Indeed, once the welded construction components were obtained from the Slovakian subcontractors, they were then returned to France for additional assembling/processing. In this way, the subcontractors were networking back with French companies and thereby helped create new high-skill and high added-value employment opportunities there. Indeed, thanks to the partnership, Pomagalski S.A. was able to generate about 40 new jobs in France.

However, it was noted that welded construction components existed in France and hence could have been acquired there. Nevertheless, the short-term nature of the partnership with the French company, just one year, again suggests that no spare capacity was available in France at the time the components were needed by Pomagalski S.A., even though no information was submitted on this matter.

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#### ***F. Sri Lanka:***

##### i - The Subcontracting and Partnership Exchange of Sri Lanka:

Established in May 2001, the Subcontracting and Partnership Exchange of Sri Lanka possesses subcontractors and suppliers from the following sectors registered in its database:

- 1) Engineering
- 2) Rubber
- 3) Plastics
- 4) Electronics
- 5) Electrics
- 6) Coir

About 60 percent of the partnerships that are formed through the matchmaking activities of the Sri Lankan SPX are of a national nature with international partnerships forming the rest. Out of this pool of international partnerships, the SPX of Sri Lanka submitted two examples of agreements involving international contractors, both of which were of European origin.

ii - Case 10: FDN Trade BV (the Netherlands) and Sanford PVT Ltd:

The first partnership involved Dutch trading company, **FDN Trade BV**, and the local Sri Lankan plastics supplier, **Sanford PVT Ltd**. It was requested to supply plastic and related synthetic products. Negotiations for the partnership started in September 2002. Upon submission of the plastic samples and following price negotiations, the Dutch counterpart approved the samples. At the time of writing, the subcontractor was still awaiting the official order.

The potential revenue that the subcontractor was expected to generate thanks to the agreement is estimated at 7300 euros. It was not known whether the services offered by the Sri Lankan supplier were available in the Netherlands but it was indicated that once the plastic and related synthetic products would be supplied, they would not undergo further processing in the Netherlands.

The main benefit for the Dutch contractor was reported as cost reductions, which is what Van Eennennaam (1995), using a sample of Dutch firms, determined was the main reason pushing Dutch companies to produce/outsource abroad<sup>2</sup>.

iii - Case 11: Xedam-Design (Germany) and Kandyan Artcraft PVT Ltd:

The second example that the SPX of Sri Lanka sent consisted of a potential partnership involving a German-based engineering and trading enterprise, **Xedam-Design**, and a local Sri Lankan engineering foundry, **Kandyan Artcraft PVT Ltd**. It was requested to subcontract handicraft products. Indeed, the partnership was, at the time of writing, in its very early stages whereby the handicraft product samples of **Kandyan Artcraft PVT Ltd** were ready to be sent and the business contacts one month away of being established.

However, it was noted, despite the project's early stages, that the handicraft products required by **Xedam-Design** were not available in Germany but would be sent back there for further processing or assembling. This adds to our previous examples of international partnerships involving European/American contractors and developing country subcontractors by showing that there exists a complementarity between the production processes of the South and the North rather than a substitution of activities.

Furthermore, both **Kandyan Artcraft PVT** and **Xedam-Design** would benefit from their mutual involvement. If the project were to materialize, it was noted that the subcontractor would be given an introductory order of US\$ 1000 with the possibility of further yearly orders ensuing. In addition, **Kandyan Artcraft PVT** works in close cooperation with a whole network of second and third tier suppliers and subcontractors that it uses for the execution of certain operations in relation to specific orders. Therefore, in the case of yearly orders arising from the partnership with **Xedam-Design**, **Kandyan Artcraft PVT** would use this network and thereby not only generate employment opportunities internally but also within the network. This exemplifies the so-called industrial spillover effect, which was also found in Case 1.

The partnership could turn out crucial for the German client **Xedam-Design**. Indeed, **Xedam-Design** was in the process of introducing a new product into the market. Therefore, the partnership with the Sri Lankan subcontractor would enable it to make cost savings and hence to price the product competitively.

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<sup>2</sup> This study was referred to earlier in this survey, see page 8.

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**G. Turkey:**

i - The Turkish Subcontracting and Partnership Exchange, Turk Yan Sanayi Borsasi:

The Turkish Subcontracting and Partnership Exchange was established in 1990. A very effective SPX, it has no less 1200 local Turkish subcontractors and suppliers registered in its database. The majority of them are enrolled in the following sectors:

- 1) Metal
- 2) Plastics and Rubber
- 3) Electric
- 4) Electronics

Over the past few years, the Turkish SPX has been extremely active in fostering international partnerships between Western European contractors and local firms. Indeed, based on a sample of 12 to 15 match-makings fostered by the SPX, partnerships have been established between local Turkish subcontractors/suppliers from the metal, sheet metal, foundries and machining sectors and foreign automotive and machine building contractors. However, most of the partnerships last between six and twelve months with only a few lasting for more than a year.

Although no information was provided on this matter and therefore should be analysed as purely speculative, the short time frame of the international partnerships could be interpreted as reflecting temporary partnerships that result from the home country of the foreign contractor reaching a maximum capacity and thereby being unable to supply the contractor. Two examples were thus supplied.

ii - Case 12: Deltron Emcon Ltd (UK) and Arslan Makina:

**Deltron Emcon Ltd** is a British-based electrics and electronics company and was able to establish a partnership with the aluminium casting Turkish supplier **Arslan Makina** thanks to the matchmaking activities of the Turkish SPX.

**Arslan Makina's** task was to supply aluminium-casting boxes to be integrated in the electric and electronic products of its British partner. The partnership lasted for a period of two years and enabled the Turkish subcontractor to create six additional employment opportunities. Over this period, the Turkish subcontractor was able to generate 351,100 euros per year. It is clear therefore that it gained substantially from the contract.

Due to the nature of the partnership it was necessary for the aluminium boxes supplied by the Turkish enterprise to be sent back to the United Kingdom for further processing or assembling. Despite the latter, over the two-year period, it was reported that aluminium-casting boxes used for future integration into electric and electronic products did exist in the

United Kingdom. Hence, there is scope for arguing that a Turkish labour force substituted a German one. In fact, the length of the partnership suggests the decision to subcontract in Turkey was based on strategic reasons (e.g. cost differences, quality etc), even though no information was submitted on this matter.

iii - Case 13: AS-KA GmbH (Germany) and Ozkar Otomotiv Parcalari Sanayi A.S.:

The second example provided by the Turkish SPX involved a German bicycle manufacturer, **AS-KA GmbH** and a local Turkish automotive-and-motorcycle-sector subcontractor **Ozkar Otomotiv Parcalari Imalat Sanayi A.S.**

In this case, the Turkish subcontractor was requested to assemble a bicycle trailer. The partnership lasted for a period of two years and over this period the Turkish subcontractor created seven additional jobs thanks to the contract and also generated about 250,000 euros in revenues.

Once the task was completed the component was not sent back to Germany for additional processing or assembling. In fact, the nature of the completed part, an assembled bicycle trailer, rules out (or at least reduces) the possibility of it undergoing further processing or assembling, as indeed it represents the end part in the supply chain. However, the assembly of bicycle trailers was reported as an activity that existed in Germany and this also points to the same direction as the previous example, case 12. In other words, the substitution of German activities/labour by Turkish ones is possible in this example. Indeed, the length of the partnership (more than one year) suggests that.

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***H. Uruguay:***

i - The Bolsa de Subcontratación del Uruguay:

The Bolsa de Subcontratación del Uruguay started its activities in November 1991 and has local Uruguayan subcontractors and suppliers originating from a variety of sectors in its roster. The sectors that are represented are:

- 1) Metal
- 2) Mechanical
- 3) Plastics
- 4) Electrics
- 5) Electronics
- 6) Wood
- 7) Agro-Industry

One international partnership was sent for the survey.

ii - Case 14: Cementos Avellaneda S.A. (Argentina) and Imzama S.A.:

The example provided by the BSA del Uruguay consisted of a partnership involving a local metal-mechanical subcontractor **Imzama** and an Argentinean civil construction enterprise, **Cementos Avellaneda S.A.** Two Spanish cement companies, Cementos Molins and Cementos Uniland, European leaders in the field, in fact jointly and equally own **Cementos Avellaneda S.A.**

The SPX responded to a demand by the civil construction company requesting it to find a subcontractor capable of providing metallic structures. **Imzama** was eventually chosen to conduct the activity. The agreement/project lasted for a full year and helped the subcontractor create one additional job opportunity. No information was submitted concerning the value of the contract.

The respondent explained that the fabrication of metallic structures was an activity that existed in Argentina when it was needed by **Cementos Avellaneda S.A.** thereby leading us to suggest that there could have been a substitution of activities between both nations. However, we could not identify whether the Argentinean contractor did so because no spare capacity was available in Argentina or for strategic reasons. Furthermore, the metallic structures were eventually sent back to Argentina for additional processing and assembly.

Finally, the contractor gained significantly from the partnership. It was able to increase its competitiveness thanks to the lower costs of production in metallic structures available through the Uruguayan subcontractor. In addition, the partnership also helped **Cementos Avellaneda S.A.** increase its market share. Indeed, after opening a new cement production plant, one of the largest and most modern in South America, **Cementos Avellaneda S.A.** was able to increase its participation not only in Argentina but also in Uruguay by networking with the Uruguayan subcontractor. Moreover, by subcontracting the fabrication of metallic structures to **Imzama**, the partnership helped **Cementos Avellaneda S.A.** concentrate on its core civil construction (concrete and masonry) skills. As a result, **Cementos Avellaneda S.A.** was able to create additional job opportunities which consisted of a new industrial company that employs on average 100 direct workers.

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### 3) Summary of results:

In total, 14 examples of international subcontracting partnerships were presented in the survey. Eight of them involved partnerships with main contractors from developed countries and another six involved main contractors from developing countries. We have categorised the findings in tables 3 and 4 in order to highlight the key similarities and differences between both types of partnerships.

#### *A. Partnerships with contractors from developed countries:*

Table 3 presents the information for partnerships involving main contractors from developed countries. The partnerships consisted either of American enterprises (three cases) or of European-based enterprises (five cases).

As our survey indicated earlier, these partnerships were beneficial - "win-win" - for both the (developing country) subcontractors and the (developed country) main contractors. In the case of subcontractors, the benefits consisted of the following: 1) job creation (either internally or externally through local subcontracting networks), 2) job preservation (as opposed to job creation whereby jobs are not created but maintained), 3) increased revenues, 4) technology improvements/upgrading, 5) adding international clients to the customer base and 6) international clients acting as an additional source of orders (project generation).

In the case of main contractors, the benefits consisted of the following: 1) job creation (creation of new service lines, concentration on core and high-skill activities), 2) cost reductions, 3) improved competitiveness, 4) increased market share (maintaining market leadership, access into new markets, new product entry into market), 5) access to raw materials, 6) acquisition of high quality components/parts (technological improvements) and 7) enhanced value of the final product.

Furthermore, these partnerships also illustrate how developed and developing countries have complementary productive activities. Indeed, in five cases out of the eight partnerships, the subcontracted product requested by the main contractor was not available in the home nation. We should note, nevertheless, that in two cases the product was reported as existing in the home nation of the main contractor. The short-term nature of the partnerships in these two cases (one year), however, led us to argue that the reason for not using subcontractors at home was a lack of spare capacity, although no information was submitted to confirm this. For the remaining three partnerships, in one case, no information was available as to the existence of the subcontracted product in the home nation of the main contractor. In the final two, the product was reported as existing.

Finally, in six cases out of the eight partnerships, the subcontracted product was returned to the home nation of the main contractor for further processing/assembling. In fact, in one of the remaining two partnerships, the nature of the subcontracted product prevents this possibility. Since the subcontracted products represented the final stage in the supply chain, when it was returned to the home nation of the main contractor, it did not undergo further processing or assembling.

Overall, therefore, the main conclusion that stems from these partnerships is that in the majority of cases, the productive activities of subcontractors from developing countries and those of contractors from developed countries complement each other rather than substitute for each other. This finding is very much in line with the evidence we outlined in section IV where we explained that countries at different levels of development complement each other. Driven by the natural competitive advantages of nations and underpinning an international division of labour, countries at different levels of development complement each other. Hence, these partnerships illustrate the following statement: "not only do the subcontractors

from developing countries and the contractors from developed countries benefit from international subcontracting partnerships but so do their respective nations. Complementary-based subcontracting partnerships are a win-win situation for the North as well as the South”.

**Table 3: Summary of Findings for Partnerships Involving a Developed-Country Main Contractor.**

<i>Case study number and country of origin of main contractor:</i>	<i>Benefits generated for the subcontractor as a result of the partnership:</i>	<i>Benefits generated for the main contractor as a result of the partnership:</i>	<i>Existence of the product supplied or service provided in the home nation of the main contractor:</i>	<i>When the subcontracted product was returned to the home nation of the contractor did it undergo further processing or assembling:</i>
Case 1 - USA	<ol style="list-style-type: none"> <li>1. 50 teams of employees preserved</li> <li>2. Job creation - ten and other second and third tier party jobs</li> <li>3. Increased revenue of 100,000 US\$ per year over a five-year period</li> </ol>	<ol style="list-style-type: none"> <li>1. Cost reduction</li> <li>2. Technological improvements</li> <li>3. Improved competitiveness following 1 and 2</li> <li>4. Possible increase in market share</li> </ol>	NO	NO
Case 2 - USA	<ol style="list-style-type: none"> <li>1. One project (contract)</li> <li>2. Adding one major international client to customer base</li> <li>3. Employment preservation</li> </ol>	<ol style="list-style-type: none"> <li>1. Facilitated access to raw materials</li> <li>2. Improved competitiveness following 1</li> <li>3. Entry into new market niche</li> <li>4. New service line created</li> <li>5. Job creation - 40 in USA</li> </ol>	NO	YES
Case 8 - USA	<ol style="list-style-type: none"> <li>1. Six projects (contracts)</li> <li>2. Market outlets</li> <li>3. Employment preservation</li> </ol>	<ol style="list-style-type: none"> <li>1. Cost reduction</li> <li>2. Facilitated final product access into the market</li> <li>3. Improved competitiveness following 1 and 2</li> <li>4. Increased market share</li> <li>5. Job creation - 60 (concentration on high-skill activities)</li> </ol>	NO <i>Note:</i> Despite the subcontracted product's availability in the USA, the short-term nature (one year) of the partnership suggests that there was a lack of spare capacity in the USA to undertake the required tasks.	YES

Case 9 - France	1. Nine projects (contracts) 2. Market outlets 3. Employment preservation	1. Acquisition of high quality components 2. Enhanced value of final product 3. Improved competitiveness following 1 and 2 4. Market leadership maintained 5. Job creation - 40 (concentration on high-skill activities)	NO Note: Despite the subcontracted product's availability in France, the short-term nature (one year) of the partnership suggests that there was a lack of spare capacity in France to undertake the required tasks.	YES
Case 10 - Netherlands	1. Increased revenue of 7300 euros	1. Cost reduction 2. Improved competitiveness	Not known	YES
Case 11 - Germany	1. Increased revenue of US\$ 1000 2. Job creation - internally as well as externally through networks of second and third tier firms	1. Cost reduction 2. Introduction of new product into the market at a competitive price 3. Improved competitiveness following 1 and 2	NO	YES
Case 12 - UK	1. Job creation - six 2. Increased revenue - 351,000 euros per year over a two-year period	Not available	YES	YES
Case 13 - Germany	1. Job creation - seven 2. Increased revenue of 250,000 Euros over a two-year period	Not available	YES	NO Note: The subcontracted product represented the final stage of the supply chain.

*B. Partnerships with contractors from developing countries:*

Table 4 presents the information for partnerships involving main contractors from developing countries. The partnerships involved either Asian enterprises (three cases) or South-American enterprises (three cases).

The partnerships were also beneficial for both the subcontractors as well as the main contractors. In the case of the subcontractors, the benefits consisted of the following: 1) job creation (either internally or externally through local subcontracting networks), 2) job preservation (as opposed to job creation whereby jobs are not created but maintained), 3) increased revenues, 4) spare capacity reduction and 5) technology improvements/upgrading.

In the case of main contractors, the benefits consisted of the following: 1) job creation (concentration on core activities), 2) cost reductions, 3) improved business efficiency, 4) improved competitiveness, 5) increased/maintained market share (maintaining market leadership) and 6) access to high quality components/parts.

Moreover, as the studies we mentioned earlier suggested, the substitution of activities between nations occurs with countries at similar levels of development. Indeed, in all the cases mentioned, the subcontracted product was reported as existing in the home country of the main contractor. Furthermore, in only three out of the six partnership cases, the subcontracted product was sent back to the home country of the main contractor for further processing/assembling as part of the supply chain.

Overall, the main conclusion stemming from these partnerships is that the productive activities of subcontractors and contractors from developing countries *seem to substitute for each other*. This finding is again in line with the evidence we put forward in section IV, namely that the substitution of activities is a phenomenon that takes place with countries at similar levels of development, notably between developing countries.

**Table 4: Summary of Findings for Partnerships Involving a Developing-Country Main Contractor.**

Case study number and country of origin of main contractor:	Benefits generated for the subcontractor as a result of the partnership:	Benefits generated for the main contractor as a result of the partnership:	Existence of the product supplied or service provided in the home nation of the main contractor.	When the subcontracted product was returned to the home nation of the contractor did it undergo further processing or assembling.
Case 3 - China	1. Job creation - 15 2. Increased revenue of 0.1 million Indian Rupees	1. Cost reduction 2. Improved business efficiency 3. Improved competitiveness following 1 and 2 4. Growth in market share	YES	YES
Case 4 - China	1. Job creation - five 2. Increased revenue of 0.2 million Indian Rupees	1. Cost reduction 2. Access to high quality materials 3. Improved competitiveness following 1 and 2 4. Increase in market share	YES	NO
Case 5 - Singapore	1. Job creation - four 2. Increased revenue of 160,000 Indian Rupees	1. Cost reduction 2. Access to good quality laminates 3. Improved competitiveness following 1 and 2	YES	NO

- 4. Maintaining market leadership (maintaining market share)
- 5. Job creation - marketing/sales

Case 6 - Paraguay	1. Job creation - three 2. Increased revenue of US\$ 15,000 3. Reduced spare capacity	1. Reduction in logistical costs	NO <u>Note:</u> Product originally imported from Argentina.	NO <u>Note:</u> Not possible
Case 7 - Brazil	1. Use of two-small scale second tier suppliers with average of 30 employees 2. Increased revenue of US\$ 50,000 per project	1. Cost reductions 2. Improved competitiveness following 1 3. Increased market share	YES	YES
Case 14 - Argentina	1. Job creation - one	1. Cost reductions 2. Improved competitiveness 3. Increased market share 4. Job creation (concentration on core activities)	YES	YES

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## VI. CONCLUSION:

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The practice of industrial subcontracting at an international level has spread substantially since the early 1970s. In an ever more competitive environment, the global economy presents a number of opportunities for firms to take advantage of geographically dispersed productive activities.

Today, one of UNIDO's aims is to provide a platform for development, job creation, productivity-enhancement, export-promotion and import-substitution through subcontracting partnerships established either at the national or international level. Since 1982, UNIDO has been promoting the concept of "industrial partnerships" which refers to long-lasting and equitable industrial subcontracting relationships based upon the specialization and technological expertise of subcontractors or suppliers. The complementarity of the assets and technologies between the parties involved can thus form the basis for the establishment of vertical type relationships with a long-term sharing of responsibilities.

The main institutional mechanism used by UNIDO to achieve these development targets and to facilitate the international redeployment of manufacturing facilities is to set-up Subcontracting and Partnership Exchanges (SPXs). These exchanges are designed to build up technical information systems and networking potentials, so as to facilitate production linkages between small, medium and large manufacturing firms. They act as matchmaking and technical centres for industrial subcontracting partnerships between supply and demand. Since 1982, UNIDO has established a network of no less than 65 Subcontracting and Partnership Exchanges and more than 100 associate members across the globe.

We have seen in this paper how complementary-based industrial subcontracting partnerships between subcontractors from developing countries and contractors from developed countries are indeed very effective tools *to achieve higher levels of competitiveness for both partners. They represent a "win-win" situation for the North and the South.* Subcontractors improve their productivity and efficiency, create jobs, reduce their spare capacity, develop economies of scale and benefit from technology transfers. Main contractors from developed countries improve their competitiveness by reducing their production costs; by having access to high quality components, parts, sub-assemblies or industrial services and by penetrating markets with commercial opportunities. In turn, this enables them to increase their efficiency and to have spare resources available that could be used to generate new employment opportunities. In these types of partnerships, developed countries main contractors not only maintain their productive activities and thereby save jobs but also increase their competitiveness and hence their market share and thereby create new jobs.

Nevertheless, despite these market-driven advantages, many concerns have been expressed about the implications of subcontracting stemming from developed countries and targeted at developing countries. It has been argued that firms have delocalised and have therefore been the cause for labour market changes within many developed countries in the 1980s and 1990s. Delocalisation represents an economic phenomenon entailing a geographical transfer of productive activities, as a result essentially of a more advantageous cost price. A full empirical definition of delocalisation encompasses the subcontracting activities of developed-country firms outside their domestic markets and the partial/entire geographical movement of their production processes to foreign countries through foreign direct investments.

We have tried in this paper to determine whether or not the view that international subcontracting into developing countries is a cause for labour market changes in developed countries is justified. Bearing in mind the above-mentioned definition of delocalisation we adopted, we made a number of interesting conclusions.

Firstly, in terms of the labour market effects of international subcontracting into developing countries we have shown that the evidence is split into two groups. On the one hand, most economists argue that international trade with developing countries (including international subcontracting) is too small to account for labour market changes in developed countries. The cause is instead attributed to domestic factors such as technological change. On the other hand, a few researchers led by economists Feenstra and Hanson, argue that international subcontracting has the same effect as technological change and therefore contributes to labour market changes. In fact, they argue that both technological change and international subcontracting negatively affect the unskilled portion of the labour force in developed countries. Our main argument is that in fact this is a natural economic phenomenon driven by the competitiveness of nations in a globally integrated economy where both developed and developing nations use more intensively those factors of production in which they are better endowed.

Secondly, we have demonstrated through a summary of academic studies (mostly based on US multinationals) that FDI into developing countries acts as a complement to the labour force of developed countries. Moreover, we have seen that the substitution of productive activities is a phenomenon that occurs with countries at similar levels of development, i.e. between labour forces of developing countries or between labour forces of developed countries.

Furthermore, in line with the second objective of this survey, we have illustrated the latter evidence in the context of UNIDO activities by using a total of 14 international partnerships fostered through the SPX network set up by UNIDO. All partnerships involved a subcontractor from a developing country and an international main contractor. In eight cases, the main contractor originated from developed countries (either the USA or the EU) and in the remaining six, the main contractor was of developing country origin.

In all cases, the partnership proved to be beneficial or "win-win" for both the subcontractors and the main contractors, whether the latter were from developing countries or developed countries. The benefits that were generated for the subcontractors consisted of the following: 1) job creation (either internally or externally through local subcontracting networks), 2) job preservation (as opposed to job creation whereby jobs are not created but maintained), 3) increased revenues, 4) technology improvements/upgrading, 5) adding international clients to the customer base thereby acting as an additional source of orders (project generation) and 6) spare capacity reduction. In the case of main contractors, the benefits consisted of the following: 1) job creation (creation of new service lines, concentration on core and high-skill activities), 2) cost reductions, 3) improved competitiveness, 4) improved business efficiency, 5) increased/maintained market share (maintaining market leadership, entry into new market niches, new product entry into market), 6) access to raw materials, 7) acquisition of/access to high quality components/parts (technological improvements) and 8) enhanced value of the final product.

Moreover, through these partnerships we have demonstrated two facts. Firstly, we have shown in the context of North-South subcontracting partnerships that the productive activities of subcontractors from developing countries and those of contractors from developed countries complement each other rather than substitute for each other. Indeed, in 62.5 percent of cases (in five cases out of the eight partnerships involving developed country contractors), the subcontracted product was not available in the home nation of the main contractor. In addition, in 75 percent of cases (in six cases out of the eight partnerships involving developed country contractors), the product was returned to the home nation of the main contractor for further processing or assembling. In fact, in the remaining 25 percent of cases, the nature of the subcontracted product prevented the possibility of it undergoing further processing/assembling. Thus, these partnerships demonstrate the philosophy that UNIDO has

adopted and follows: *promoting complementary-based "win-win" industrial partnerships between developed and developing country partners through its SPX network.*

Secondly, in the context of South-South industrial subcontracting partnerships, we have demonstrated that the substitution of activities between nations occurs with countries at similar levels of development. Indeed, in all the cases mentioned, the subcontracted product was reported as existing in the home country of the main contractor. Furthermore, in only 50 percent of cases (in three cases out of the six partnerships involving developing country contractors), the subcontracted product was returned to the home nation of the main contractor for further processing/assembling.

Therefore, the findings ensuing from the international partnerships involving developed country contractors and developing country subcontractors have shown that **contrary to delocalisation, international subcontracting is beneficial for the South as well as for the North**. In other words, in the context of UNIDO and as echoed by a number of academic studies, there is enough evidence to suggest that international subcontracting in developing countries should not be seen as a primary cause for labour market changes in developed countries. In contrast, driven by the natural competitive advantages of nations and underpinning an international division of labour, countries at different levels of development complement each other.

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# UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

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Dear Sir or Madam,

**Subject:** Subcontracting versus Delocalisation Survey

I am an intern working with André de Crombrughe who has requested me to contact you for the following purpose.

Over the past few years and as demonstrated by our growing network of SPX members (55) and associate members (more than 100), subcontracting has become an increasingly useful tool for the industrial development of developing countries. By concentrating on small and medium sized suppliers within the latter countries, it stimulates a whole process of linkages within different industrial sectors.

Nevertheless, despite these benefits, some doubts have been expressed about the positive impact that subcontracting could have in developing nations. Indeed, it has been suggested that subcontracting into developing countries could be the direct cause of job losses within parallel industries in Europe, Japan and the US. In other words, subcontracting would be the equivalent to delocalisation, or the closing down major industrial sites. It is particularly important for us to demonstrate that subcontracting is usually a win-win situation between the industrialized and developing countries / partners, contrary to delocalisation of plants, even more so since it is some of the industrialized countries that are actually funding our industrial assistance projects.

In order to counter this problem and build upon some of our earlier work, the Industrial Subcontracting and Supply Chain Management team of UNIDO has decided to conduct a survey on this matter. The survey will firstly aim to show the way in which subcontracting part of a company's supply chain into developing countries does not necessarily lead to job losses in the home nation. On the contrary, it can help the main company located in an industrialized country to survive and even to expand and gain new market shares as it becomes more competitive.

Secondly, we hope to be able to use a number of case studies that will act as illustrations. For this purpose, we shall use as our foundation for the study some of the most successful SPXs in our network. We would therefore like to invite you to fill in the attached questionnaire. Upon completion of the study, we shall use it as a tool to promote subcontracting that we shall then forward on to you.

In the hope of hearing from you soon, I remain

Yours Sincerely

Jean-Louis Morcos, Intern  
Industrial Subcontracting and Supply Chain Management Programme  
Industrial Investment and Technology Promotion Branch



# UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

## SUBCONTRACTING VERSUS DELOCALISATION SURVEY - QUESTIONNAIRE

### 1. Background information:

Name of the SPX:	
Name of person(s) who completed the questionnaire:	
Date of establishment of the SPX:	

### 2. General information on the SPX:

Which industrial sectors are represented in the SPX:							
Scope of partnerships:	<table> <tr> <td>At the local level</td> <td style="text-align: right;">%</td> </tr> <tr> <td>At the national level</td> <td style="text-align: right;">%</td> </tr> <tr> <td>At the international level</td> <td style="text-align: right;">%</td> </tr> </table>	At the local level	%	At the national level	%	At the international level	%
At the local level	%						
At the national level	%						
At the international level	%						

### 3. International partnerships:

In the following section, we would like you to select 2 to 4 partnerships between a local subcontractor/supplier registered in your SPX database and an **international** contractor. It would be preferable if you could use examples from the electrical, electronics, chemical, metal, mechanical or, plastics sectors.

#### Example 1:

Industrial sector of the contractor and name:	
Industrial sector of the subcontractor/supplier and name:	
Type of product produced by the subcontractor/supplier:	
Did the product exist in the home country of the contractor:	
Is the product sent back to the home country as part of the supply chain for more processing or assembling:	
Length of the partnership between the subcontractor/supplier and the contractor:	
Number of jobs created for the subcontractor/supplier as a result of the partnership:	
Revenue generated for the subcontractor/supplier as a result of the partnership:	
Information which shows how the subcontractor by networking back to the contractor's home nation has created more jobs there:	
Contact details of the contractor:	
Benefits generated for the main contractor in the industrialised country in terms of competitiveness:	
Benefits generated for the main contractor in the industrialised country in terms of market share:	
Benefits generated for the main contractor in the industrialised country in terms of job creation:	

Example 2:

Industrial sector of the contractor and name:	
Industrial sector of the subcontractor/supplier and name:	
Type of product produced by the subcontractor/supplier:	
Did the product exist in the home country of the contractor:	
Is the product sent back to the home country as part of the supply chain for more processing or assembling:	
Length of the partnership between the subcontractor/supplier and the contractor:	
Number of jobs created for the subcontractor/supplier as a result of the partnership:	
Revenue generated for the subcontractor/supplier as a result of the partnership:	
Information which shows how the subcontractor by networking back to the contractor's home nation has created more jobs there:	
Contact details of the contractor:	
Benefits generated for the main contractor in the industrialised country in terms of competitiveness:	
Benefits generated for the main contractor in the industrialised country in terms of market share:	
Benefits generated for the main contractor in the industrialised country in terms of job creation:	

Example 3:

Industrial sector of the contractor and name:	
Industrial sector of the subcontractor/supplier and name:	
Type of product produced by the subcontractor/supplier:	
Did the product exist in the home country of the contractor:	
Is the product sent back to the home country as part of the supply chain for more processing or assembling:	
Length of the partnership between the subcontractor/supplier and the contractor:	
Number of jobs created for the subcontractor/supplier as a result of the partnership:	
Revenue generated for the subcontractor/supplier as a result of the partnership:	
Information which shows how the subcontractor by networking back to the contractor's home nation has created more jobs there:	
Contact details of the contractor:	
Benefits generated for the main contractor in the industrialised country in terms of competitiveness:	
Benefits generated for the main contractor in the industrialised country in terms of market share:	
Benefits generated for the main contractor in the industrialised country in terms of job creation:	

Example 4:

Industrial sector of the contractor and name:	
Industrial sector of the subcontractor/supplier and name:	
Type of product produced by the subcontractor/supplier:	
Did the product exist in the home country of the contractor:	
Is the product sent back to the home country as part of the supply chain for more processing or assembling:	
Length of the partnership between the subcontractor/supplier and the contractor:	
Number of jobs created for the subcontractor/supplier as a result of the partnership:	
Revenue generated for the subcontractor/supplier as a result of the partnership:	
Information which shows how the subcontractor by networking back to the contractor's home nation has created more jobs there:	
Contact details of the contractor:	
Benefits generated for the main contractor in the industrialised country in terms of competitiveness:	
Benefits generated for the main contractor in the industrialised country in terms of market share:	
Benefits generated for the main contractor in the industrialised country in terms of job creation:	

The Industrial Subcontracting and Supply Chain Management Programme team would like to thank you for the time and effort you have put into completing this questionnaire.

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