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SPILLOVER EFFECTS AND BUSINESS LINKAGES
OF FOREIGN-OWNED FIRMS IN HUNGARY



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SUMMARY

The supplier links of foreign-investment enterprises (FIEs) started to develop as soon as they commenced operations in Hungary. Thus, their interest in developing local roots was already clear. Empirical evidence has shown that some FIEs outsourced only a few services, while others tried to outsource as much of the production as they could.

The demand of FIEs for local supplies depends very much on their status in the global network. Local affiliates of huge transnational corporations (TNCs) may play a rather marginal role, or their role and the scope and nature of their activity may change over time. In some periods, local TNC affiliates may also perform very simple activities of a subcontracting type. In fact, many do either assembly or simple labour-intensive processing, which do not provide much room for local suppliers. Further investment can develop these activities towards greater added value and sophistication, but this may be influenced primarily by foreign direct investment (FDI) and investment policy, rather than by linkage promotion.

Another interesting lesson from the early experiences was that FIEs tended to establish domestic business links with medium-sized Hungarian companies, apart from other FIEs. Some of these Hungarian firms supplied several FIEs in Hungary and also abroad. They maintained independent production and had even own products and brands, but the bulk of their turnover consisted of sub-deliveries and components shipped to TNCs. These medium-size Hungarian companies had similar sourcing policies to those of the FIEs, with much the

same requirements of would-be suppliers. The early empirical evidence showed that second and third-tier suppliers in Hungary, *i.e.* small and medium-sized enterprises (SMEs), could hardly meet these requirements. There was much room for development.

The Hungarian government has decided to launch a programme aimed at promoting the establishment of local supplier ties, as the most promising way of encouraging positive spillover effects from FDI. The Supplier Target Programme was launched in 1998. It aimed to create direct links between FIEs and Hungarian firms in selected industries: automobiles, electronics, and rubber and plastics. In doing so, it focused on providing information and on matchmaking, as well as training and consultancy for would-be suppliers among SMEs. Hungarian firms, especially SMEs, were placed in the centre of the programme, to support their preparations to meet quality requirements and to help in matchmaking and contracting. However, the programme failed to take account of two facts mentioned earlier: the variety of interests found in FIEs, and the previous existence of Hungarian mediators (first-tier suppliers) on the market. Efforts proved to be inefficient and the programme was described as a failure in a very critical report on its activity.

The Supplier Target Programme was reconsidered in 2000 and a new Supplier Integrator Target Programme launched in the same year.

The basic idea behind the new programme is that existing supplier networks can be developed further as a nucleus for a greater and more colourful cooperation network, a local cluster. It has therefore reversed the direction of the promotion activity, by starting from the needs and requirements of FIEs and other integrator firms. The primary purpose of the programme is to increase the share of local supplies from the current 10–20 per cent to 30–40 per cent. Matchmaking events are continuously organized. There are plans to update the established database and expand it to 4000–5000 records. Training and advising of SMEs remains on the agenda. Qualification and auditing of supplier members of the programme is foreseen (with financial support from the programme sources). Also planned is long-term finance for necessary investments by supplier firms, including both loans and equity participation (a venture-capital function). Support for quality-enhancement programmes also remains in place. The new state support agency regularly monitors the system and keeps in contact with participants.

The new programme may prove to be more effective and meet its revised tasks better than the previous programme did. There are important new elements. One is better coordination of the operation and use of parallel institutions and funds. Another important element is incorporation in the programme of both the interested sides. Linkage promotion should obviously not be a simple SME-support scheme. The expansion of the horizon of the project to potential creation of business clusters also looks promising.

However, there are some problems with the new projects, of which the most serious, perhaps, concerns the role of the state as a venture capitalist. Originally, programme-participant state-owned ‘venture-capital’ enterprises were established for the purpose of crisis management, not risk management, and may have troubles with their new role. Much depends on defining and describing tasks accurately. One of the major reasons for the inefficiency of the

previous project was inadequate staff knowledge of what was expected. In fact, the new concept was not defined in detail, so that it is still unclear whether this mistake has been avoided this time. It may not be fair to ask a new institution to cope with all kinds of development preferences. Perhaps regional development issues should not be incorporated into this framework. However, the new institution is almost certain to increase further the spatial tensions in the country, by supporting the development of clusters in their present locations, which are relatively the most developed parts of Hungary.

The analysis of the Hungarian linkage promotion package showed that the early years of operation did not bring a breakthrough and the new system is still under development. It was therefore difficult to find matching case-study evidence, *i.e.* case studies that contain some information about the usage of this particular development programme. However, there is plenty of evidence about linkages where the research is case-study based. Empirical surveys agree that Hungarian suppliers play an appreciable, if fairly small role in FIE activity. The scale of the contribution lags far behind what is found in developed countries, especially if foreign-owned suppliers are ignored. On the other hand, it is markedly higher than in the developing countries. The studies also agree that there is an increasing tendency, although the barriers on the side of Hungarian would-be suppliers are considerable, especially for SMEs.

INTRODUCTION

The main aim of this paper is to summarize the available knowledge on FDI-related corporate linkages and spillover effects in Hungary. It also analyses the policy tools applied by Hungarian governments to promote the development of linkages and positive spillover effects. Much of the available literature on the topic in Hungarian has been collected here, including as completely as possible the analyses of linkage-promoting policies, especially the Supplier Target Programme (STP) and Integrator Supplier Target Programme (ISTP). In other areas, such as the development of corporate networks and horizontal spillover effects, the paper is not exhaustive, confining itself to a few relevant contributions.

There is a relatively rich literature on spillovers and vertical linkages in Hungary, which includes some statistics and the results of several empirical surveys and case studies. However, little attention is paid to the policy measures for promoting linkage creation and development. This paper pays most attention to describing and analysing vertical linkages and the support mechanism. Also needed for a better understanding of the special circumstances is a brief introduction to such related issues as corporate network development up to 1998 and vertical and horizontal spillover effects from FDI.

Turning to the structure of the paper, *Chapter 1* briefly covers some events in Hungary's economic transition that fundamentally altered corporate cooperation networks. The main factors influencing companies in their decisions about what, where and from whom to purchase production inputs and sell outputs were the changes in market structure, the radical downsizing of their activities, the wave of bankruptcies, the liberalization of trade, and privatization. These early events fundamentally altered the economic environ-

ment for firms, bringing important changes for all market players – partners, competitors and customers alike.

The increasing importance of transnational corporations (TNCs) in the Hungarian economy meant that TNCs played a major part in the change and replacement of traditional supplier networks. The new, TNC-related linkages differ strongly from the old. *Chapter 2* therefore describes some specific features of supplier contacts between TNCs and Hungarian firms. *Chapter 3* summarizes the empirical evidence on the vertical spillover impacts of TNC–Hungarian SME trade and cooperation linkages.

Chapter 4, dealing with policy issues, constitutes the main body of the paper. Topics discussed include the linkage-development effects of free trade zones, the roles of various FDI-promotion tools, and vertical discrimination practice in Hungary. Also introduced are the findings of some empirical surveys and case studies, and the policy conclusions to be drawn from them. Finally, there is detailed analysis of the STP and ISTP.

The case-study evidence is presented in *Chapter 5*.

1) DECLINE, CHANGE AND REPLACEMENT IN CORPORATE NETWORKS

This chapter summarizes the events of the Hungarian transition that led to massive foreign penetration of the Hungarian economy, by analysing foreign activity in developing a direct presence through investments, trade links and cooperation networks.

The reasons for the dissolution and reorganization of corporate cooperation and business links in transition economies are well documented. The first major stimulus came from the decline and dissolution of COMECON. The overall liberalization meas-

ures taken in transition economies quickly revealed that products produced under COMECON cooperation agreements were unable to compete effectively with Western imports. Hungary's was especially dependent on COMECON cooperation and COMECON markets. It was a small, open economy, over 40 per cent of whose GDP was exported, with a similarly high proportion of imported production inputs. The dissolution of COMECON paralysed a large number of enterprises and some whole industries, causing a substantial decline in economic activity.

At corporate level, the macroeconomic decline manifested itself in a massive surge of market exits that took various forms. Many firms underwent formal insolvency proceedings and liquidation. The results of the harsh Hungarian bankruptcy regime of 1992–3 have been well documented by several authors (FUTÓ, 1993; SCHAFER, 1997; GRAY *et al.*, 1996; MITCHELL 1997). Another, less draconian form of market exit, still more important in reducing economic activity, was downsizing and voluntary market exit. This course was chosen by far more firms than bankruptcy (BALCEROWICZ *et al.*, 1998). Furthermore, contraction of activity had preceded most bankruptcy proceedings (GRAY *et al.*, 1996). This also indicates that the decline in economic activity was a system-specific feature of transition, rather than the result of economic-policy mistakes or faulty institution building. This view is also supported by the fact that downsizing on a similar scale occurred also in transition economies where there were practically no formal, judicial exits (BALCEROWICZ *et al.*, 1998). The downsizing on a massive scale, in both domestic and foreign markets, necessarily led to a contraction of cooperation networks. Market links that vanished had to be replaced, in many cases through new contacts with TNCs. This process was especially strong in the small, open Hungarian economy.

The liberalization of trade and economic activity increased domestic and foreign competition on the Hungarian market, which had hitherto been strongly protected.

Hungarian firms soon started to replace suppliers of inferior quality and reliability, to improve or regain their own competitiveness. This process also started well before the 1992 wave of bankruptcies and independently of it. The replacement of suppliers usually meant resorting to imports from developed economies. There is some empirical evidence that improved service from suppliers substantially increased the competitiveness of numerous Hungarian firms (SZANYI, 1996). There were fundamental changes downstream as well, as the sales markets of Hungarian firms altered. The main direction of the changes was replacement of COMECON deliveries by sales to the OECD, especially the EU. The strong economic growth that ensued in the late 1990s was driven mainly by the greenfield investments made by TNCs, which then increased the structural openness of the Hungarian economy. They also increased the role of foreign supplies to Hungarian production facilities.

Privatization was also an important factor in the development of corporate networks. Hungarian privatization policy favoured sales to foreign strategic investors. Many firms already had experience of cooperating with partners in developed countries, and for obvious reasons, privatization tended to develop alongside these existing business links. Also active in this privatization process was the management of firms to be privatized, who often supported the sale of firms to such existing cooperation partners. In these cases, cooperation links strengthened further even before the privatization deal was concluded. When the transaction was over and the Hungarian firm had become an affiliate, the business links up and downstream were reconsidered and substantially changed in most cases.

2) TNC NETWORKS IN HUNGARY

The reorganization of cooperation links and the re-creation of value chains proceeded rather differently in domestically owned firms and foreign-owned firms. The major similarity in the recreated value chains was that in many cases, there would be a core company acting as integrator of the cooperation network. According to some authors (STARK, 1996; McDERMOTT, 1996), the integrator firm was typically a Hungarian state-owned enterprise (SOE) and the owner of its subcontractors. Thus, the newly created company network in fact camouflaged the subsequent survival of only quasi-privatized economic power centres. Further research revealed that in fact only a few companies possessed an ownership-integrated network. Many other former or even currently state-owned firms established or re-established cooperation networks with independent participants (SZANYI, 2001). A clear tendency to reconstruction of previously abandoned cooperation was also observed (SZANYI and TARI, 2000). Hungarian firms also participated and developed strategic alliances, which became another form of economic cooperation that spread quickly. The economic rationale of even SOE integrated networks was the same as that of TNC integrated corporate networks (SZANYI and TARI, 2000). Their existence fitted well into the general tendency of concentrating on core business, outsourcing and networking.

The networks that evolved round some Hungarian management buy-outs (MBOs), acting as integrators, often sought to re-establish previous cooperation links with other Hungarian companies. Good examples are Rába in the road-vehicle industry and Transelektro and Ganz Gépgyár Holding in electrical machinery (SZANYI and TARI, 2000). These recreated networks also sought to improve their competitiveness by supplementing their cooperation arrange-

ments with new (sometimes foreign) links. Cooperation in these cases went beyond the arms-length business links usually found. Core companies would support their suppliers with technology and know-how, and sometimes with finance as well. Long-term contacts were established and cooperation contracts signed.

When large state-owned enterprises (SOEs) were purchased by foreign strategic owner, the development could take various trajectories, of which three were typical.

One was for the foreign company to discontinue or severely cut back its production in Hungary. A recent example of such action has been Győri Keksz, a biscuit-making division of Danone. An earlier example was the Szolnok Paper Mill, belonging to the Prinzhorn Group. In both cases, the business changed over time and the production of Hungarian affiliates became surplus to requirements. Similar cases have also occurred with greenfield FDI capacity, for instance with Nokia's monitor factory and the recent move by Mannesmann from Europe to Asia. It therefore becomes possible not to accuse of deliberate liquidation of Hungarian competitors strategic investors who abandon the privatized facilities they have acquired. However, the closure of companies certainly affects suppliers as well.

Other strategic investors simply took over the previous activity of the privatized firm and developed it, more or less as an independent Hungarian subsidiary. This happened on a mass scale in certain branches of the food industry, where international division of labour was not widespread (JANSIK, 2001; SZABÓ, 2000). In these cases, the development of cooperation networks was rather similar to the pattern of other, Hungarian-owned firms in the same market.

However, the most important pattern of TNC penetration in Hungarian manufacturing industry was integration of acquired or established affiliates into the international (global) corporate network of the new owner. In the case of acquired fa-

cilities, this involved substantial tailoring of activities. The degree of specialization usually became much greater than before and the number of products and activities carried out much reduced. Auxiliary activities such as like R and D, own logistics, training, *etc.* were often discontinued (FARKAS, 1997 and 1999).

In some instances, the reshaping of activities was so extensive that very little remained of the original company, which was restructured according to the different role it was to play in the global network of the new owner. In fact, many companies differed very little from TNC greenfield investments after such restructuring. They were only using the same buildings, office space and of course labour as the business they had taken over. The cooperating networks of such companies were also reshaped, of course. Previous suppliers were seldom able to retain their positions, as TNCs preferred to rely on established suppliers to the group, even if that meant importing inputs.

In other cases, restructuring was less fundamental. Much of the activity was maintained, providing an opportunity for continued business links with previous suppliers, so long as they met the increased expectations. The continued presence of an incumbent management in privatized firms also increased the propensity to maintain previous supplier links. Where local supplies were replaced with imports, this was often done as a safety measure by the new owner, to secure smooth operation with traditional partners. Lack of knowledge of local supplier capacities could also prevent new owners from resorting to advantageous local sources. Local supplies began to grow strongly in such cases as the local knowledge of the new management increased. This learning period could be saved if the incumbent management was retained.

A significant proportion of the FDI in Hungary is linked to local suppliers, through subcontracting contracts and links of outward processing trade (OPT). In fact, the latter accounts for a quarter of Hun-

gary's exports (ANTALÓCZY and SASS, 1998), so that many facilities operating in Hungary are subject of OPT. As well as Hungarian firms entering into subcontracting deals with TNCs, there are many TNC affiliates that also perform OPT. These are greenfield investments, which work under the provisions of international OPT regulations, as a way of gaining some of the benefits of such deals.

From the present point of view, subcontracting and OPT are interesting as a deliberate activity of many Hungarian firms. There were fierce discussions on the drawbacks of such trade (described in PELLEGRIN, 1998). The most common reproaches were that subcontracting firms became isolated from the rest of the economy, saw little technology transfer or progress, experienced little income generation, lacked resources for investment, abandoned their own R and D, and became locked in positions with no alternative products of their own. More recent analyses and empirical surveys (ANTALÓCZY and SASS, 1998; SZANYI 2001) revealed that the nature of subcontracting was changing over time into a form of international networking. Many Hungarian firms entering subcontracting links with TNCs chose such a link deliberately as the cornerstone of their restructuring efforts. They hoped thereby to receive strategic inputs for restructuring: technology, know-how and markets. It also turned out that subcontracting was not so badly paid after all. Many firms entered it gained acceptable levels of profits. The authors stated that subcontracting was an important channel by which Hungarian small and medium-sized enterprises (SMEs) could integrate into international corporate networks.

To sum up this chapter, it can be concluded that there was a variety of cooperation network development in Hungary after the initial years in which such networks dissolved. At one extreme, there were greenfield investments based on close cooperation with traditional suppliers. Their activity in Hungary was reduced to a handful of lines, with very little capacity for receiv-

ing local inputs. On the other hand, many privatized firms, both domestic and foreign-owned, started vigorous development of cooperation networks, but often concentrated on local suppliers. Some even wished to restore some cooperation links previously disrupted. An important, special feature was the extensive spread of subcontracting links. Subcontracting evolved over time into a new form of international corporate network. Many Hungarian firms entered into international cooperation through this channel, using it as a primary tool for reconstruction and modernization.

3) EMPIRICAL EVIDENCE ON VERTICAL LINKAGES AND SPILLOVER EFFECTS OF TNCs

The empirical research on the vertical linkages of TNCs can be classified into two groups. Some papers set out to estimate the volume of local activity performed by TNCs and their local suppliers. Others concentrate more on qualitative changes and the spillover effects of cooperation with TNCs (UNCTAD, 2001, p. 192). Debate on the potential and real impacts of TNC penetration into transition economies started immediately after the volume of FDI flows began to increase in the early 1990s. Much evidence has been collected since on the positive and negative features of FDI and its spillover effects.

Unfortunately, there has hardly been a neutral contribution to the debate, since researchers, policy-makers and institutions alike approach it from predetermined angles. Some observers see FDI and TNC activity in transition economies from the strongly critical and sceptical platform shared by many development economists, starting from the collective experience of TNC activity in the Third World in the 1950s–1970s. At the other extreme are observers who believe that FDI is the main (or even single) motive force for economic

turnaround and modernization in the transition economies. They tend to neglect or belittle even obvious cases of negative externalities.

The following account concentrates on four distinct issues, which can be regarded as positive or negative externalities of FDI or of participation in TNC networks. The first is the changing production and trade patterns of economies and firms. Also linked with this are subcontracting and outward processing trade (OPT). The third topic is foreign-investment enterprise (FIE) activity in industrial free-trade zones. The fourth is technology transfer and R and D. Chapter 4 then follows on with the problem of business links between FIEs and domestic firms.

3.1. Integration through trade links

An important line of empirical literature concerns the impact of FDI on trade flows. The topic was picked up by several scholars (e.g. DJANKOV and HOEKMAN, 1996; NAUJOKS and SCHMIDT, 1995; ÉLTETŐ, 1999; SEREGHYOVA, 1998). The main point here is whether the westward reorientation of export and import flows helped to upgrade facilities and integrate international production networks efficiently into the economy (positive externalities), or whether the reorientation degraded export facilities and caused loss of value added potentials (negative externalities). Intra-industry trade is regarded as a sign of close integration, while supply of raw materials, energy and simple processed goods is usually associated with inferior positions in international trade.

Recent analyses (ÉLTETŐ, 1999 and 2001; SEREGHYOVA, 1998; HUNYA, 2000) reveal that FDI in the transition economies of Central Europe changed massively the volume and sectoral structure of foreign trade. The share of high and medium-technology products increased dramatically, while the

share of low-tech products in exports declined. Consequently, the characteristics of exports became very similar to what is found in developed industrialized countries. Critical observers regard this as misleading, arguing that the sectoral breakdown of the statistical system is not fine enough to capture the quality of local value added (SEREGHYOVA, 1998). Szalavetz (2000) states that the 'technology content of the products is...unrelated to the skill content of the work input' (p. 73), so that the spectacular achievements in upgrading export structure should be treated with some caution.

Djankov and Hoekman (1996) found that the export performance of Central and Eastern European (CEE) economies correlated strongly with growth in vertical intra-industry trade with the EU. In trying to explain changes in intra-industry trade, they found that level of FDI was the only significant explanatory factor for the development of intra-industry trade. Other variables, such as relative level of GDP or geographical distance, were not significant. Similar findings were made by Naujoks and Schmidt (1995).

A possible interpretation is that the export performance increased most in the transition economies integrated into vertical intra-firm cooperation networks via FDI. In transition economies, intra-industry trade mainly means intra-firm trade. This argument also holds for complete value chains integrated by TNCs. Intra-industry trade in this sense means trade among economically dependent but legally distinct firms. This may hold for traditional supplier networks of TNCs, as well as for outward processing (*e.g.* subcontracting) by CEE firms for TNCs.

Naujoks and Schmidt (1995) also draw the attention to an increasing share of outward processing activities in intra-industry trade. Outward processing was also found to be highly relevant for CEE countries by other authors (*e.g.* ÉLTETŐ and SASS, 1998; PELLEGRIN, 1998; SEREGHYOVA, 1998), who argue that a high share of tight intra-firm trade is most likely to occur with highly complex manufactures, where trans-

actions include intangible assets or R and D-intensive goods. Makers of standardized goods enter not into equity links, but into intra-industry type of trade, such as outward processing. This means intra-industry-type trade, not intra-firm trade. In both cases, Naujoks and Schmidt argue that cooperation leads to downgrading of operations, rather than upgrading, or at least, partners 'flatten out' into a simple sub-delivery base or assembly unit. Sereghyova (1998) and Farkas (1997) also provide some empirical evidence of downgrading of activities in Czech and Hungarian firms privatized through FDI.

The main concluding remark here is that FDI fundamentally changed the trade patterns of transition economies. Hungary's production growth was fuelled by exports. FIE influence was strong in various directions: assemblers and host-country exporters boosted trade volume through their own activity. This trade was mainly intra-industry, resulting from global specialization, and in the case of assemblers, mostly intra-firm. The product structure of trade also changed. High and medium-tech product groups gained importance, while low-tech manufacturing exports declined steadily. However, the favourable changes in commodity structure do not necessarily reflect a skilled labour-intensive local contribution. Another strong direction of TNC-related changes in trade patterns is an increasing share of outward processing trade (OPT).

3.2. Subcontracting and the role of OPT

Subcontracting became an important activity for many Hungarian manufacturers, thus boosting the proportion of OPT in total foreign trade turnover. The share of OPT in exports was as high as 30 per cent in the early years of the transition and declined only relatively, to some 20 per cent, by the late 1990s, without losing real volume. In

fact, the exports of many new greenfield investments started to grow much faster than that, while OPT turnover remained rather stagnant (SZANYI, 2001b). This issue is more important here, since it is one of the most frequent forms of cooperation by Hungarian firms with TNCs (located abroad). The mainstream opinion about subcontracting and OPT regards them very negatively. Sereghyova (1998) calls it a ‘prolonged workbench with the exclusion of any innovative initiative of the eastern OPT partner, which leads to the degeneration of the technological potential of the firm linked to the sourcing network of the partner in this manner – especially if the majority of its capacity is dedicated to OPT’ (p. 39).

On the other hand, subcontracting is a frequent form of corporate outsourcing and networking. Subcontracting also accompanied the establishment of the new cooperation structures of the ‘new economy’. In this new role, the characteristics of this form of cooperation changed, yielding many of the advantages usually attributed to the ‘new economy’ or ‘network economy’. Subcontracting today is flexible, steadily more durable, inclusive of technology and knowledge transfer, and productive of adequate level of profits. Szanyi (2001b) tested empirically the main features of subcontracting links, using a Hungarian sample of some 120 subcontractors and 300 other companies. Apart from the new phenomena just mentioned, it was found that subcontracting became a strategy for catching up that many Hungarian manufacturing firms deliberately selected. Furthermore, it attracted numerous companies that engaged in subcontracting only ‘part time’ (*i.e.* in whose turnover it played a minor role), because it provided an adequate alternative source of revenue and profit. Subcontracting was not being chosen as a last resort in any hopeless attempt at survival.

Antalóczy and Sass (1998) provide plenty of anecdotal and case-study evidence of the positive spillover effects of subcontracting. Their main conclusion is that subcontracting provides chances of the accu-

mulation necessary for corporate adjustment and modernization technology, know-how, capital, investments and market expertise. Many subcontracting firms maintain their own production as well. As far as spillover effects are concerned, they emphasize the possibility of advancing from a subcontracting position to full supplier status. TNCs may be interested in promoting this shift. This is apparent in the way that local sourcing has become more widespread in subcontracting relationships.

It is possible to agree with Szalavetz (2000) in finding that concentration on production instead of pre-production and post-production activities is less beneficial for Hungarian manufacturing firms. But participation as a production plant in the globalizing value chains of TNCs may provide more modernization impetus than remaining outside such networks. There is some evidence of positive shifts, for example in R and D activities (INZELT, 1998; SZALAVETZ, 1999). Furthermore, the share of local value added in OPT has increased substantially, partly as a result of an increasing share of activity conducted in Hungary, the increasing sophistication of the activity, and the change in the commodity structure of OPT. The role of traditional light industry declined, while that of the metal-forming and chemical industries, and electronics, increased (ANTALÓCZY and SASS, 1998).

OPT and subcontracting became a form of corporate networking worldwide, as the participation of Hungarian firms in this type of cooperation also reflects. They deliberately chose subcontracting as an opportunity to join global production networks and enjoy the benefits of global networking. Recent research has identified the positive spillover effects that subcontracting had on Hungarian firms.

3.3. Greenfield investments in industrial free-trade zones (IFTZs)

Of the various types of FIE, special attention has to be paid to assemblers and their traditional suppliers. In transition economies as elsewhere, assemblers have often induced partners to follow them and establish new facilities near them. Follow-up investments have been especially frequent in the car industry and electronics (SOMAI, 2000; ANTALÓCZY and SASS, 2000; UNCTAD, 2001). In most cases, these were greenfield investments. Even affiliates that were based on a privatization purchase were reshaped to such an extent that they can be regarded as greenfield (ANTALÓCZY and SASS, 2000). Since the primary motive in such cases is to utilize accessible cheap production inputs (labour), they are extremely sensitive to costs. This applies although they operate in capital-intensive industries, where the local input of labour represents only a tiny fraction of total costs. These firms operate with the lowest unit labour costs (ÉLTETŐ, 2001) and take advantage of various methods in Hungary of reducing their capital spending as well.

The IFTZ regime was introduced in 1982, with the aim of attracting export-oriented, high technology FDI to Hungary and of integrating firms operating in the zones into the host economy. It was recognized that there was a risk of creating a dual economy by this. It was therefore decided to allow any firm to set up a zone, without specifying any spatial restrictions in the licence from the customs and finance authorities. IFTZs are regarded as extra-territorial for duties, foreign exchange and other legislation. Otherwise dutiable machinery and production inputs are not subject to customs duties or VAT. A single company may set up several IFTZs. This is an extremely favourable regulation for assemblers whose only local input is labour, as it

allows them to import high-value equipment duty free.

The number of firms operating in IFTZs and the scope of their activities increased rapidly during the 1990s. Representatives of the automotive and electronics industries settled almost exclusively in IFTZs. Assemblers such as GM, Suzuki and Philips were followed into IFTZs by their competitors and suppliers (Ford, Audi, IBM, Nokia, LEAR Corporation, United Technologies, Sony, Zollner, *etc.*). In fact, Hungary's largest FDI investments with the highest turnover and export shares are almost all foreign assemblers in IFTZs. The economic impact of this group of FIEs is very significant. They were providing 6 per cent of manufacturing employment in 1999, while producing 42.8 per cent for export, with a positive trade balance of over USD 2 billion. Obviously, the weight of these companies was largely determinant in the changing commodity structure of trade (ANTALÓCZY and SASS, 2000).

Local supplies to the IFTZ-based assembly firms are very limited: a number of services (such as planning and construction of buildings and facilities), packaging and other materials, electric power and similar utilities. The limited number of Hungarian suppliers to the core activity usually follow the assemblers and move into an IFTZ. On the other hand, overseas investors oriented towards EU or CEFTA markets are usually more interested in developing local supply networks. Japanese Suzuki even gave up its IFTZ status to enable a larger number of Hungarian suppliers to join its supplier development programme. But clearly, IFTZ status is a major obstacle to local supplies development.

3.4. Questions of technology transfer and R and D

The spillover effects to receive most attention have been the transfer of knowledge

and technology and the development of R and D activity. The spectrum of opinion ranges from the emphasis on devastating effects (SEREGHYOVA, 1998; FARKAS, 1997) to optimistic views (INZELT 1998). The opinions of some authors have changed over time, which reflects some observable development in the area (FARKAS, 1997, as compared with FARKAS, 1999). Papers on the topic have usually concentrated on case-study evidence. Statistics were analysed by Inzelt (1998), Éltető (1998 and 2001) and Antalóczy and Sass (2000).

The statistics indicate that there has been a steep decline in R and D spending in Hungary, in both state-*cum*-university outlay and industrial sponsorship. The overall level of expenditure was a mere 0.5 per cent of GDP in 1998, as opposed to 2.3 per cent in 1988 (FARKAS, 1999). Strong critics of FDI argue that the new type of integration for CEE companies involves a complete elimination of R and D activity. Laboratories are shut down and experts fired in Hungary, while R and D is performed at corporate headquarters, not at local affiliates. Early empirical evidence already showed that this account was not entirely accurate. There was a reduction in R and D, but also a change in the activity that remained in the transition economies (SZANYI and TARI, 2000). The previously widespread, but inefficient R and D structure was reduced to a few areas. Basic research was usually replaced by more activity associated with product development. However, Szalavetz (1999) characterized the process as one in which the integration of subsidiaries into global R and D networks occurred at levels 'below their technological capability threshold'.

Statistics indicate that FIEs spent 45 per cent of the total industrial R and D in Hungary in 1997 and that the share was increasing (ÉLTETŐ, 2001). The R and D intensity of FIEs was much higher than that of domestic companies (INZELT, 1998; HABUDA and SZALAVETZ, 1999). Antalóczy and Sass (2000) reported on several companies that were moving R and D capacities into Hungary, including Audi, Nokia, Philips,

Siemens, GE, Knorr Bremse, ABB and Ericsson. There are even foreign firms in Hungary that had no production facility here, simply an R and D centre (for example, Tateyama of Japan). Moreover, the firms most active in R and D included some assemblers. Inzelt (1998) differentiated between two periods in FIE behaviour towards local R and D. The first period of 'acquaintance' was spent in taking over or establishing capacities, and with a first confrontation with the R and D potentials in Hungary. The second period, which began in the mid-1990s, was one of 'feeling at home', in which FIEs started to make use of the capacities.

Habuda and Szalavetz (1999) also dealt with the level and efficiency of technology transfer. They emphasized the strong absorption capacity of CEE countries, based on a high inherited level of human capital. The good performance of local technical staff was the feature that attracted the interest of FIEs in local R and D potential. FIEs themselves participate actively in human resource development. Besides training staff, many have active contacts with universities. Creating links between FIEs, domestic firms and universities to improve R and D capacities is an important plank of Hungarian industrial policy, with FIEs as the usual direct beneficiaries from the programmes.

The technology level of Hungarian manufacturing undoubtedly increased after the transition. The most important component of investment in the 1998 statistics was still 'imported machinery'. FIEs purchased 81 per cent of all the machinery and equipment imported, so that they were the main force behind the spread of modern technology. Éltető (2001) quotes a government survey that concludes, 'The level of technology is higher and the machinery and equipment better if (a) the company size is larger, (b) the firm has a foreign owner, (c) the firm is in certain sectors like telecommunications and innovative segment of engineering industry.' Domestic firms, notably suppliers to FIEs, also benefit from technology spillovers. All major empirical contri-

butions have reported such effects. In fact, this is a necessity if regular cooperation is to be maintained. Szalavetz (1999) argues that the depressing picture presented by the R and D statistics is misleading because it underestimates spillover effects and the volume of technology transfer.

FIEs are technologically more developed than domestic firms, which enhances their competitiveness. There is empirical evidence of technology spillover effects: a technological match between an FIE and local suppliers is a precondition for cooperation. FIEs have streamlined the R and D activity of local affiliates. The tasks and operation of R and D personnel have changed and their scope has been reduced. After an initial learning phase, many FIEs started to increase their R and D efforts in Hungary, after grasping the opportunities for using highly trained local staff with active support from the state.

4) LINKAGE PROMOTION

In 1997, the Hungarian government decided to launch a programme aimed at promoting the establishment of local supplier ties, as the most promising way of encouraging positive spillover effects from FDI. The Supplier Target Programme was launched in 1998. After two years of operation, some basic principles were reconsidered and the programme relaunched in 2000.

The supplier links of FIEs started to develop as soon as they commenced operations in Hungary. Thus, their interest in developing local roots was already clear. Empirical evidence has shown that some FIEs outsourced only a few services, while others tried to outsource as much of the production as they could. A comparison of Suzuki and GM-Opel, for example, made it clear that substantial local delivery became beneficial to the FIE and its local suppliers once the level of production had exceeded a

minimal threshold. GM-Opel's production of 15,000 cars a year was below that threshold: it was not economical to start producing components for the car in Hungary. Apart from some auxiliary services, only the battery and the motor oil were sourced in Hungary. At the same time, local content requirements and the absence of a traditional background industry led Suzuki to seek actively for local suppliers from the outset. This activity was also supported by the Hungarian government (SOMAI, 2000).

The demand of FIEs for local supplies depends very much on their status in the global network. Local affiliates of huge TNCs may play a rather marginal role, or their role and the scope and nature of their activity may change over time (SZANYI, 1999). In some periods, local TNC affiliates may also perform very simple activities of a subcontracting type. In fact, many do either assembly or simple labour-intensive processing, which do not provide much room for local suppliers. Further investment can develop these activities towards greater added value and sophistication, but this may be influenced primarily by FDI and investment policy, rather than by linkage promotion. MVAKHT (2000) provides some estimates of the proportion of local supplies to some important TNC affiliates in Hungary:

Audi	< 10%
Ford	> 20%
GM	10–20%
Philips	c. 10%
Suzuki	c. 10%
GE-Tungstram	60–70%
Electrolux	40–50%
Sony	< 5%
Opel cars	7%
Opel gears	40–45%
Rába	40–45%
United Technologies Automotive	c. 10%

Another interesting lesson from the early experiences was that FIEs tended to establish domestic business links with me-

dium-sized Hungarian companies, apart from other FIEs. Some of them supplied several FIEs in Hungary and also abroad. Companies like Rába, Ganz, Transelektro, Videoton and Bakony Művek were all traditional medium-sized companies in the automotive and electronics industries that were not sold to foreigners. They maintained independent production and had even own products and brands, but the bulk of their turnover consisted of sub-deliveries and components shipped to TNCs. These medium-size Hungarian companies had similar sourcing policies to those of the FIEs, with much the same requirements of would-be suppliers (SZANYI and TARI, 2000). The early empirical evidence showed that second and third-tier suppliers in Hungary, *i.e.* SMEs, could hardly meet these requirements. There was much room for development.

4.1. The Supplier Target Programme

The Supplier Target Programme (STP) recognized this need for SME development. It aimed to create direct links between FIEs and Hungarian firms in selected industries: automobiles, electronics, and rubber and plastics. In doing so, it focused on providing information and on matchmaking, as well as training and consultancy for would-be suppliers among SMEs. Hungarian firms, especially SMEs, were placed in the centre of the programme, to support their preparations to meet quality requirements and to help in matchmaking and contracting. However, the programme failed to take account of two facts mentioned earlier: the variety of interests found in FIEs, and the previous existence of Hungarian mediators (first-tier suppliers) on the market.

The main partners in the programme were local chambers of commerce, ITD Hungary, the Hungarian Foundation for Enterprise Development (HFED) with its regional network, and the STP Programme Office. The HFED and the chambers organ-

ized training programmes for SMEs, to impart what TNCs were looking for in general and what techniques to use in cooperating with them. They also provided advisory support and support for the auditing of SMEs' books. ITD Hungary managed a large database with files of on some 250,000 entrepreneurs (many of them part-time entrepreneurs) and provided information for matchmaking. For the latter, the main forum was a series of meetings for business people and suppliers' fairs, where the two sides were to meet and the SMEs were expected to receive concrete, specific information about requirements. State mediators of the programme wished to support the specific needs of SMEs during the process of preparing to qualify as suppliers.

These efforts proved to be inefficient and the programme was described as a failure in a very critical report on its activity. Almost all the activities carried out failed to bring the expected results. Most striking was the fact that a full-size questionnaire survey reported only a couple of dozen new contracts resulting from the programme. Nor did the potential pool of suppliers develop. There were only some 1500 entrepreneurs qualifying for the programme (with accounts audited through the programme). Estimates put the number of potential suppliers at 5000–7000 (MVKHT, 2000), so that even the prime-target SME population resisted entry into the programme. (They were approached by ordinary mail, which was a technical mistake.)

The primary tools of the programme were training and education, advisory services, support for quality-control programmes, and preparation for credit applications. The financial support was separated from general purposes, and tended, in line with a management decision, to prefer single-supplier arrangements. Financial support for general programme purposes was only provided for the auditing of the books of participating SMEs. The programme funds were dispensed by its management in a fashion similar to venture capital, with the STP management evaluated projects and deciding on financing.

The local network of the programme was also inefficient. It was not able to attract the interest of FIEs, which did not send representatives to local STP offices or to meetings they organized. The reasons for this failure were twofold. Sourcing by FIEs is not carried out locally, so that contacts with FIE sourcing personnel need higher-level involvement. In this regard, STP officials were not adequate as partners for FIE representatives. Secondly, contacts with potential local suppliers were already established through the signing of local Supplier Charts (another initiative of the Hungarian government) by both parties. Thus, the most important contacts were already present. Local partners of FIEs (mainly medium-sized firms) did not enter the programme because they were not approached and invited. It was SME-related instead.

MVKHT (2000) puts the matter plainly: 'FIEs were in contact with suppliers without the STP, they knew about the suppliers' production and financial problems without the STP, and they sought new suppliers without the STP. On top of all that, their opinions were not canvassed during the preparation of the STP, either about the conditions of the supplier background or about their suggestions on what to do. Active FIE participation in the programme could not be expected when the STP did not contribute to the programme with matching own financing' (pp. 30–31).

4.2. The Supplier Integrator Target Programme

The Supplier Target Programme was reconsidered in 2000 and a new Supplier Integrator Target Programme (SITP) launched in the same year. The establishment of this new framework had not been completed when this paper was being prepared (in November 2001), so that only the new concept can be presented.

The new programme focuses on existing supplier networks. At the centre of these is the core company, the 'integrator', which is the primary partner of the state agent. The integrators already chosen are Suzuki, GE, Audi, Opel and Rába. The integrators actively contribute to planning and creating a cooperation network or business cluster, in which suppliers, the R and D centres of innovative companies and local development agencies work together. The development of such clusters is also supported by another government funding programme known as the Széchenyi Plan.

The state partner of the integrator is the local office of the Regional Development Corporation (RDC), a wholly-owned subsidiary of the State Property Management and Privatization Co. The RDC manages long-term state property and provides crisis management for some still-ailing SOEs. The RDC defines itself as a venture-capital firm, in the new sense of this term. However, it does not deal with the classic venture-capital activity of financing and promoting innovative and therefore high-risk start-ups. Its activity is now extended to managing the SITP funds and the cluster-development funds under the Széchenyi Plan. Apart from the RDC, other new supplier agencies will be established, based partly on the network of the Hungarian Enterprise Development Foundation. Other, local institutions (chambers, offices of ITD Hungary, *etc.*) may also apply for designation singly or jointly. These agencies will be responsible for the operative tasks. A new institution, the Supplier Employment Company, has also been set up, to train and educate labour to be employed in partner companies.

The basic idea behind the new programme is that existing supplier networks can be developed further as a nucleus for a greater and more colourful cooperation network, a local cluster. It has therefore reversed the direction of the promotion activity, by starting from the needs and requirements of FIEs and other integrator firms. The primary purpose of the programme is to increase the share of local supplies from

the current 10–20 per cent to 30–40 per cent. Matchmaking events are continuously organized. There are plans to update the established database and expand it to 4000–5000 records. Training and advising of SMEs remains on the agenda. Qualification and auditing of supplier members of the programme is foreseen (with financial support from the programme sources). Also planned is long-term finance for necessary investments by supplier firms, including both loans and equity participation (a venture-capital function). Support for quality-enhancement programmes also remains in place. The new state support agency regularly monitors the system and keeps in contact with participants.

The new programme may prove to be more effective and meet its revised tasks better than the previous programme did. There are important new elements. One is better coordination of the operation and use of parallel institutions and funds. Another important element is incorporation in the programme of both the interested sides. Linkage promotion should obviously not be a simple SME-support scheme. The expansion of the horizon of the project to potential creation of business clusters also looks promising.

However, there are some problems with the new projects, of which the most serious, perhaps, concerns the role of the state as a venture capitalist. The RDC and other state-owned ‘venture-capital’ enterprises were established for the purpose of crisis management, not risk management, and may have troubles with their new role. Unfortunately, there are very few private venture-capital firms in the region, so that state-owned companies have to serve as a second best solution in crisis management as well. It is also questionable whether the new type of local ‘supplier agency’ will be much different or more active and efficient than the previous local network was. Much depends on defining and describing tasks accurately. One of the major reasons for the inefficiency of the previous project was inadequate staff knowledge of what was expected. In fact, the new concept was not

defined in detail, so that it is still unclear whether this mistake has been avoided this time. It may not be fair to ask a new institution to cope with all kinds of development preferences. Perhaps regional development issues should not be incorporated into this framework. However, the new institution is almost certain to increase further the spatial tensions in the country, by supporting the development of clusters in their present locations, which are relatively the most developed parts of Hungary.

5) THE LATEST EMPIRICAL AND CASE-STUDY EVIDENCE ON LINKAGES

The analysis of the Hungarian linkage promotion package in the last sub-section showed that the early years of operation did not bring a breakthrough and the new system is still under development. It was therefore difficult to find matching case-study evidence, *i.e.* case studies that contain some information about usage of this particular development programme. There is plenty of evidence about linkages, for example in Szanyi and Tari (2000) and Habuda and Szalavetz (2001), where the research is case-study based. This section includes an account of the findings of a new paper on linkages, ÚT-EUROCON Bt. (2001), which contains some interesting case studies. In addition, two interesting empirical surveys were conducted on the subject in 2001. Réthi (2001) interviewed 25 suppliers, while GM (2001) approached 40 TNCs about supplier linkages.

The two empirical surveys (RÉTHI, 2001; GM, 2001) focus on opposite ends of the linkages, but they agree that Hungarian suppliers play an appreciable, if fairly small role in FIE activity. The scale of the contribution lags far behind what is found in developed countries, especially if foreign-owned suppliers are ignored. On the other hand, it is markedly higher than in the developing countries. The two studies also

agree that there is an increasing tendency, although the barriers on the side of Hungarian would-be suppliers are considerable, especially for SMEs.

GM (2001) identified a number of problems with the 40 largest TNC affiliates. Only two of them had the power to decide independently on local purchases. Large-scale sourcing is organized at group headquarters, or at least, contracts have to be approved there, so that the possibly accessible share of procurement is currently below 20 per cent of turnover, and even lower (5–6 per cent on average) if services not tightly bound to the core business are excluded (cleaning, catering, *etc.*) There are some well known barriers to delivery on the side of the suppliers as well: quality, adequate technology, capacity constraints, reliable delivery, lack of capital for financing current expenses, and failure to share common management values with FIEs. This last barrier relates, for example, to the continuous search for improvements and cost cuts.

All these problems are identified also by Réthi (2001), who identifies the existence and strengthening of two supplier tiers, and concluded that they were in different position as regards potential supplies to FIEs. SMEs have practically no chance in their current status to directly join FIEs networks. Due to their small size, inadequate technology and know-how, and limited management capabilities, their operation tends to be concentrated on short-term decisions. They are simply not strong enough to afford longer-term cooperation links. Nonetheless, they are present and able to capture a share in deliveries, even through short-term strategies.

As far as medium-sized Hungarian companies are concerned (the integrators), the same problems hold, but their capabilities are significantly better and they can successfully overcome their shortcomings. Their position has stabilized during the transition process. They also have ambitious development plans to eliminate the problems, using funds from a range of sources, above all own resources and state assistance

(RÉTHI 2001, p. 78). Both studies mention positive examples of FIEs giving suppliers direct support (technology, finance and know-how), but the number of such companies is rather limited. More typical is a tendency to isolation. Réthi found that foreign-owned suppliers unilaterally depended on assembler FIEs and had almost no supplier contacts with other companies in Hungary.

ÚT-EUROCON (2001) describes the supplier programmes of three FIE integrators. Mátrai Erőmű Rt. is a foreign-owned power generator carrying out a big reconstruction programme with the help of Hungarian partners. Power-generation equipment was one of the large-scale COMECON cooperation products of the Hungarian electrical industry. After the transition, this cooperation network was largely destroyed, but there are recent tendencies to re-create the industry with Ganz and Transelektro as the integrators (SZANYI and TARI, 2000). The consortium organized for Mátrai Erőmű reconstruction includes traditional Hungarian suppliers and privatized ones – ABB, Siemens and a few other TNCs. Mátrai Erőmű prepared a detailed questionnaire for potential SME suppliers and circulated the conditions of delivery through the local SME promotion network. Matchmaking was further supported by a local Enterprise Development Fund conference on supply opportunities. These efforts yielded a list of 242 potential suppliers. Unfortunately, it is not yet clear how many of them were actually contracted.

The Japanese first-tier automotive supplier Denso also searched actively for Hungarian suppliers. The company already has a number of Hungarian and several EU suppliers. Because Denso is rather cost-sensitive, it continually seeks new, cheaper suppliers. This could bring opportunities for Hungarian SMEs. Denso has developed a strict, multi-level evaluation programme. It started recruitment by holding a meeting of some 100 nearby firms. There it presented its products and gave the technical parameters for the parts it wished to outsource locally. Next, potential suppliers made of-

fers that were evaluated, after which Denso staff visited promising companies. Where positive feedback is received, the company goes on to order a first batch of sample production. With more sophisticated components, this is followed by investigations at headquarters in Japan. The tests cover durability as well as quality, so that the testing procedures are lengthy. After a positive signal is received from its laboratories, Denso visits the supplier again and checks the equipment, management and financial conditions for ability to ensure regular, punctual delivery and constant quality. Where these conditions are met, the supplier may be contracted, if the parties can agree on sequencing, quantities, deadlines, and a usually not very high price. In fact, the low prices paid are offset by large batches, which make production profitable. Only a few firms have qualified, but Denso believes that through substantial investment in equipment, measuring devices and quality-control systems, the technology level of its suppliers can be upgraded to the required level. Unfortunately, no mention has been made if Denso actively supporting such efforts by potential partners.

Rába Rt. was the third case study in ÚT-EUROCON (2001). This majority Hungarian-owned integrator firm produces various components for trucks, including diesel engines and shafts, and works with over 1000 suppliers. The share of imports in its procurement is 25–30 per cent, and there are also FIEs delivering to Rába from Hungary. Some important sub-assemblies are produced by its own affiliates – former workshop divisions that became part of a holding-type network around Rába established during the privatization process. Rába puts much effort into supporting members of the group, but it is not strong enough to extend this activity beyond the group. Besides traditional Hungarian suppliers (with their problems) Rába has also sought new partners, especially in spatially more distant locations of Eastern Hungary, where it had no traditional supplier links. Rába faced difficulties similar to the ones encountered by the FIEs: only 5 per cent of

potential suppliers qualified technically and a mere 3 per cent could offer competitive prices and subsequently became suppliers to Rába. This case study also revealed a weakness in the Hungarian integrator firm. It seems that the position of the first-tier firm largely determines the chance of success for second-tier companies (SMEs). Rába frequently calls for flexible responses to market changes or sudden deliveries, or cancels orders. This makes production and capacity utilization difficult and caused even greater problems for second-tier suppliers highly dependent on Rába deliveries.

Because of the uncertainties, Rába also launched a supplier development programme like Suzuki's. An agreement and memorandum was signed, with the aim of supporting SMEs and other suppliers participating in the Rába supplier network. The support is to be provided by Rába and some local enterprise-development agencies. Funding comes partly from local and state sources. The services provided under the scheme include auditing of suppliers, financial support for continuous production and product changes, technological development, support for quality control, logistics and management, marketing, and establishment of a temporary employment association.

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