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**INTERNATIONAL CO-OPERATIVE AGREEMENTS IN HUNGARY  
IN THE MID-1990S:**

**Evolution, Organisational Forms and Industry Characteristics**

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Blockaded Entry: International Co-operative agreements in the Central European  
economies in transition**

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## **1 INTRODUCTION**

The project proposal, entitled Technology Transfer or Blockaded Entry: International co-operative agreements in the Central European countries in transition (CEIT), sets out 5 basic questions to analyse, namely to:

- examine how far Western firms pursue equity or contractual forms of collaborations in the different countries;
- identify sectors where collaborative agreements are most frequent and whether there have been significant changes between the 1980s and 1990s;
- explore as far as possible the aims of agreements that have been concluded and the mechanisms whereby Western firms formalise control;
- identify factors which facilitate or hinder the entry of CEIT firms into new markets;
- examine the ways in which the governments of CEIT countries are regulating the investment activities of Western firms.

This paper is aimed at contributing to the analysis of the above research questions.

As the legislation on foreign direct investment (FDI) in Hungary has been probably the most liberal in Central and Eastern Europe since the mid-1980s, FDI is the primary form chosen by Western firms to enter the Hungarian market. The major channels of FDI include the privatisation of former state-owned enterprises (acquiring minority or majority stakes or 100 per cent ownership), and green-field investment projects (mostly in the form of 100 per cent owned subsidiaries). Portfolio investment and non-equity forms of co-operation can also be found in Hungary, yet, their significance is almost negligible compared to FDI.

A number of advantages, most importantly the highly skilled, experienced, yet, extremely cheap labour, and the geographical and cultural proximity to Western Europe give the Central European countries a certain competitive edge compared to other transition economies. On top of this, Hungary has opted for a unique approach to privatisation, i.e. sales of assets rather than voucher schemes, and offered a fairly liberal economic environment. Due to these factors, it has attracted roughly 45-50 per cent of the total amount of foreign capital invested in Central and Eastern Europe. These developments therefore require a more detailed analysis. Major characteristics of the privatisation process, strictly defined, and the expansion of the private sector, including green-field investment projects, are discussed in Section 2.

Sections 3-7 present the most important findings of sector studies, and identify major issues for further analysis.

## **2 PRIVATISATION IN HUNGARY, 1990-97**

Before the actual process of privatisation started, most economists had thought of privatisation as a process of searching for 'genuine' owners who would employ their assets in an efficient way, and thus contributing to the general well-being of a society through employment and taxation. Politicians, however, regardless of their ideological stance,

immediately conceived - and thus steered - privatisation, as an allocation of power, stemming from the underlying economic position. Economic rationale, therefore, can only play a limited role in the privatisation process in all the transition economies. In Hungary, for example, government ‘strategies’ on privatisation have been considerably changed almost every year since 1990. Yet, some basic economic laws are also at work. This chapter only discusses these fundamental principles and presents some basic figures of the Hungarian privatisation process.<sup>1</sup>

The private sector can principally expand in three ways in transition economies, formerly dominated by various forms of state ownership: *(i)* by the establishment and growth of private firms, including green-field investment projects by foreign investors, *(ii)* through the sales of state-owned assets, that is, privatisation, strictly defined, as well as *(iii)* through the contraction and liquidation of state-owned enterprises (SOEs).<sup>2</sup>

Besides all the political hassles, lack of favourable economic conditions has also constituted significant obstacles to privatisation, strictly defined. Accumulated (local) capital has not been sufficient to buy state-owned assets. Moreover, additional capital would also be needed for modernising machinery, and financing the costly process of innovation, broadly defined, i.e. a wide range of activities from R&D, purchasing licences and know-how, and launching new products (marketing). In the meantime, however, former markets of SOEs have been shrinking, or even collapsing, and mighty competitors have been entering both the domestic and export markets. Hence profit prospects have become less and less promising, leading to decreasing interests in buying these SOEs. Thus privatisation might be slowing down, and economic re-structuring and recovery, in turn, might be also at risk.

Surprisingly, though, privatisation has accelerated significantly in 1995, and the expansion of the private sector has been even more important to offset the seemingly not really promising general economic conditions, and thus contradict the above, somewhat gloomy observations. These developments are discussed in the following sub-sections.

## **2.1 Privatisation - strictly defined**

So far Hungary is the only transition economy where sale of formerly state-owned assets has been the predominant privatisation method, as opposed to various give-away (voucher) schemes. In that framework, however, a wide range of privatisation methods have been used in Hungary since 1990 (see Havas [1996b]).

Privatisation started fairly slowly in 1990, and then somewhat picked up in 1991-92. Although in the various government documents the emphasis has shifted towards the

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<sup>1</sup> The more politicised issues, included the frequent changes in the government privatisation ‘strategies’, are analysed in more detail in Havas [1996b] and the literature surveyed there.

<sup>2</sup> A number of industries illustrate that this way is rather significant. One of the most striking example is the case of precision (or, instrument) engineering, having shrunk by two thirds by 1994 compared to 1985 (Havas [1997b]).

techniques promoting Hungarian investors, the majority of the privatisation revenues stemmed from foreign investors. More cash was collected in Hungarian forint, too, than loans extended to facilitate the small, domestic investors in 1992.

1993, however, saw a marked change: privatisation loans more than doubled, and a much larger set of shares were offered in exchange for compensation notes (almost a 7-time increase compared to 1992). Yet, given a single transaction, namely the partial privatisation of MATÁV, the Hungarian telecom company (to a consortium consisted of Ameritech and Deutsche Telekom), hard currency revenues almost trebled.

In effect these trends continued in 1994, but the one-off case of the sales of MATÁV shares was not repeated. Moreover, political factors also slowed down the privatisation process. The out-going government did not make any major decision, while the incoming one was pre-occupied with yet another changes in legislation on privatisation. Moreover, some individual cases, such as the widely cited HungarHotels case, also discouraged potential investors. Thus revenues in cash were even below the 1992 level, while transactions conducted in compensation notes soared.

1995 brought an unexpected major boom: although hardly any observer believed in September or October, quite a few energy companies were partially privatised by foreign investors in December 1995 (six electricity distributors and two power stations, and all the gas distributor companies, together with MOL Rt, the Hungarian oil company.). Hence cash revenues collected in hard currencies were more than twice as much as those in the previous 5 years combined. On the other hand, favourable loans, as well as the volume of transactions conducted in compensation notes, were significantly cut back.

Cash revenues dominated the period of 1996-97, too. Although the outstanding proceeds of 1995 were not repeated in 1996, more money was collected than in any year before 1995. Then 1997 witnessed even better results: it was by far the second most successful year, coming rather close to the 1995 record revenues. All the major commercial banks were privatised in these two years, mainly to foreign professional investors (and through international public offerings in two cases).

**Table 1: Privatisation revenues, 1990-1997 (bn HUF)**

	1990	1991	1992	1993	1994	1995	1996	1997*	1990-97
Cash									
in hard currencies	0.53	24.61	40.98	110.67	10.95	411.5	92.9	171.0	863.14
in Hungarian forint	0.14	5.74	24.92	22.96	35.41	35.4	40.0	146.0	310.57
<i>of which</i> dividends		0.93	7.41	5.41	7.80	5.07	7.1	6.0	39.72
Privatisation loans									
extended in HUF	0	1.01	9.07	21.72	29.27	3.99	2.5	4.0	71.56
Compensation notes	0	0	2.26	14.56	64.20	30.15	40.7	17.0	168.87
Priv. loans extended in hard currencies	0	0	0	0	16.84	0	0	0	16.84
<b>Total</b>	<b>0.67</b>	<b>31.36</b>	<b>77.23</b>	<b>169.91</b>	<b>156.67</b>	<b>481.04</b>	<b>176.1</b>	<b>338.0</b>	<b>1,430.98</b>

Source: ÁPV Rt

\* preliminary

As foreign investment has played a leading role in privatisation, strictly defined, too - let alone green-field FDI projects - it is worth looking at the details. (Table 2) Not surprisingly Austrian investors have been involved in the most cases, and Germany takes the lead by far in terms of the capital invested through privatisation projects. The US comes second in that respect - largely due to the GE-Tungsram deal - but the US firms have been involved in a surprisingly large number of privatisation transactions, too. Among the European countries (other than the aforementioned Austria and Germany) in fact only France scores better in that respect. (One should keep in mind that green-field investment projects are not included in Table 2. Together with those, the US ratio in FDI is even higher.)

**Table 2: Foreign investment through privatisation:  
cumulative sales in 1990-1997 at contract value**

	Number of companies involved	Investment (bn HUF)	Percentage distribution
Germany	106	292.4	27.92%
USA	42	168.8	16.12%
France	43	103.2	9.86%
Austria	115	53.1	5.07%
The Netherlands	20	50.4	4.81%
Italy	28	34.8	3.32%
Belgium	9	33.9	3.24%
UK	34	19.8	1.89%
Switzerland	18	18.4	1.76%
CIS	16	10.5	1.00%
Sweden	12	5.7	0.54%
Finland	2	4.6	0.44%
Israel	3	2.3	0.22%
Others	29	7.1	0.68%
International Public Offerings	25	242.1	23.12%
<b>Total</b>	<b>502</b>	<b>1047.1</b>	<b>100%</b>

Source: ÁPV Rt

Note: Green-field investment is *not* included

Since January 1990 slightly less than one sixth of the state-owned enterprises (SOEs) has remained in the hands of the state by December 1997 (in terms of the number of companies). Some 60 per cent of the SOEs has been privatised since 1990, the others have been dissolved in one way or other or likely to be dissolved. Table 3 provides a detailed overview about these developments.

**Table 3: Changes in the number of state-owned companies**

Types of companies/changes	number
<b>'Traditional' State-owned Enterprises as of January 1, 1990</b>	<b>1,859</b>
<b>Changes since January 1, 1990</b>	
Transferred to other state asset managing organisation	85
Transferred from other state asset managing organisation	1
Under liquidation	357
Dissolved	101
Closed down	14
Incorporated	1,300
<i>Subtotal</i>	<i>1,858</i>
<b>'Traditional' State-owned Enterprises as of December 1997</b>	<b>3</b>
Disagreement on ownership rights	2
<b>State-Owned Corporations</b>	
Established by incorporation (transformation)	1,300
Establishment, acquisition	373
Transferred from other state asset managing organisation	30
<b>Total</b>	<b>1,703</b>
<i>Changes</i>	
Transferred to other state asset managing organisation	73
Under liquidation	157
Dissolved	37
Closed down	22
100% of state-owned assets sold	1,110
Transferred to trustee companies for asset management	7
<i>Subtotal</i>	<i>1,406</i>
<b>State-owned Corporations as of December 1997*</b>	<b>297</b>
of which:	
Majority state ownership	151
Minority state ownership	146

Source: ÁPV Rt

\*Note: 116 companies will only be partially privatised, i.e. the state retains at least a minority stake in these cases.

As for privatised assets, detailed data have only been published for the 1990-95 period. Until 1995 half of the state-owned assets has been privatised in terms of their book value. The value of state-owned assets has been further decreased by liquidation and losses. However, incorporation has usually resulted in substantial increase in the book value of SOEs, thus their total book value has decreased even less than by the value of privatised assets. (Table 4)

**Table 4: Changes in the book value of the state-owned assets (bn HUF)**

<b>State-owned assets in 1990</b>	<b>1,630.56</b>
<i>Changes</i>	
Establishment, transfer from other state asset management organisation	128.08
Transfer to other state asset management organisation	-323.72
Losses	-344.78
Liquidation	-162.97
Increase in equity (re-valuation of assets at incorporation)	1,142.59
Sales of assets	-880.27
<b>State-owned assets at the end of 1995</b>	<b>1,189.49</b>

*Source:* ÁPV Rt

As of December 1997 the book-value of the state-owned assets, held by the State Property Agency, was some 700 billion forints, of which 396.6 billion should be privatised, while assets not to be privatised worth 283.3 billion forints. Thus the value of state-owned assets has been almost halved since 1995. (Table 4)

## 2.2 The expansion of the private sector

As already mentioned, the contraction of the state sector is an important factor behind the relative growth of the private sector. Tables 3 and 4 clearly show that this contraction, primarily due the loss of former markets, is substantial indeed, either in terms of the number of SOEs liquidated, or the 'lost' value of state-owned assets. Thus the share of SOEs in production (contribution to GDP) and employment is also decreasing.

It is an often and widely cited fact that - in spite of some former forecasts claiming the contrary - Hungary still accounts for a large chunk - some 40% - of the total FDI inflow into Central and Eastern Europe. Given the relatively small population of Hungary, there is a wide gap between her and the other transition countries in terms of the per capita FDI inflow.

Some \$18bn has been invested in Hungary by the end of 1997 (of which around \$6bn through privatisation and the remaining \$12bn via green-field investment projects).<sup>3</sup> Thus the weight of the roughly 25,000 companies owned (partially or totally) by foreign investors is far from negligible. On the contrary, their share in exports is estimated to be 70 per cent.<sup>4</sup> Therefore their absolute and relative growth also reduces the state sector's size.

As a result of these factors, the ratio of the Hungarian private sector in the production of GDP and employment has sharply increased since 1990, and its contribution to the GDP reached 75 per cent by 1997 according to a recent EBRD estimate.

<sup>3</sup> The US companies have invested the most until 1995, \$5.2bn, followed closely by German ones with their total investment amounting to \$4bn, and Austrian companies come third with \$1.7bn. Interestingly enough these three countries lead the 'privatisation league', too, as already shown in Table 2.

<sup>4</sup> Ministry of Industry, Trade and Tourism

**Table 5: Contribution of the private sector to GDP in 1997**

	Contribution of the private sector to GDP (per cent)
Bulgaria	50
Croatia	55
Czech Republic	75
Estonia	70
Hungary	75
Latvia	60
Lithuania	70
Poland	65
Romania	60
Russia	70
Slovakia	50
Slovenia	75
Ukraine	50

*Source:* EBRD (data published in *HVG*, February 7, 1998)

As far as the sectoral distribution of the private economy is concerned, statistics are not readily available.

### **3 INTERNATIONAL CO-OPERATIVE AGREEMENTS IN TELECOM EQUIPMENT MANUFACTURING**

#### **3.1 Structural, organisational and technological changes: a brief history**

Hungarian telecom equipment manufacturing was integrated into the international R&D, production and marketing networks before its nationalisation, i.e. until the 1940s: all the major product and process innovations were introduced in line with the leading companies, moreover, Hungarian firms also contributed to these innovations.<sup>5</sup> Links between major foreign and Hungarian firms were cemented by cartel agreements, and/or ownership tights, too. These close relationships were cut by the nationalisation of the Hungarian partners in the late 1940s. Some form of co-operation, however, was revived in the 1960s, especially by the way of licences. Most of the major Hungarian telecom equipment products were based on Western licences, both for the domestic and for the CMEA markets. In other words, products, and hence the telecom infrastructure, were more or less kept up to a reasonable technological level for a while.

Although the monopoly of the service providers and their favoured suppliers was a commonplace even in the market economies in those days, this institutional set up, further

<sup>5</sup> To begin with, the core product of the industry, the switchboard, was invented by a Hungarian engineer, Tivadar Puskás, indeed - in close co-operation with Edison and his colleagues. Then the first switchboard was installed in Paris in 1879 under his management. The first Hungarian switchboard - the fourth one in Europe - was opened in Budapest in 1880, due to the other Puskás brother, Ferenc Puskás. Hungarian engineers - sometimes employed by foreign-owned firms in Budapest - achieved remarkable technological results in the following decades, too.

distorted given the lack of ‘sticks and carrots’ of market mechanism, was really devastating for the telecom infrastructure and services. Since the 1970s investment was simply not sufficient to extend and modernise the Hungarian telecom network. Moreover, product innovations did not counterbalance the lack of financial resources as the major public switch manufacturer missed the electronics revolution.<sup>6</sup> Thus there was an ever increasing gap between the needs of the economy and the population on the one hand, and the quantity and quality of telephone lines and telecom services, on the other. By the late 1980s it became a really severe obstacle to modernisation, in particular due to the advent - and the dominance, indeed, by that time in the advanced countries - of new, electronics based technologies in this field, too. Hence it was inevitable to significantly extend and modernise the telecom network<sup>7</sup> in the early 1990s, first of all to ‘switch’ from obsolete electro-mechanic switches to up-to-date digital ones.

A new method of procurement was introduced in 1990 to facilitate the simultaneous extension and modernisation of the telecom infrastructure: instead of the usual ‘bilateral’ negotiations between the two state-owned monopolies, i.e. the service provider and its ‘appointed’ supplier, a so-called system selection tender was called for. Significant organisational changes also occurred: telecom and postal services, used to be operated by a mighty state-owned monopoly - like in most countries -, the Hungarian Post, were separated by the establishment of MATÁV, the telephone service provider, and Antenna Hungária, responsible for radio and television broadcasting, leaving the Hungarian Post with the traditional postal services.

Major foreign equipment manufacturers immediately realised this market opportunity and set up their manufacturing operations in Hungary in co-operation with local companies: Siemens with Telefongyár, a long-established telecom equipment producer, while Ericsson with Műszertechnika, a private electronics company, established in the mid-1980s. Three other foreign telecom equipment manufacturing firms, namely Northern Telecom, Alcatel-SEL and Italtel also submitted their tenders in 1990.<sup>8</sup> Since then there has been a fierce competition for major orders put by MATÁV. It must be added, however, that it is a special competition. It is not an on-going, continuous ‘race’, but a discrete one: the first phase was ‘run’ in 1990, and the second one in 1995. Both times Siemens and Ericsson won, orders are shared among them according to rules set in advance.

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<sup>6</sup> Obviously it would have been too costly for a single company in a small country to develop digital public switches on its own. International co-operation could have paved a way out of this trap. Soviet-led efforts, however, failed to come up with an effective and efficient solution, while the imports of advanced electronics were hardly possible given the COCOM-restrictions.

<sup>7</sup> UNECE[1996] data suggest that usually countries go either for modernisation or extension. OECD member countries invested \$100bn in their telecom infrastructure in 1993, of which 68% was spent on modernisation, while other countries invested \$30bn, spending 62% on extension.

<sup>8</sup> For further details on entry strategies see Tóth G. [1994].

A few years after its separation from the Hungarian Post, MATÁV was also privatised by foreign investors, namely a US-German consortium, formed between Ameritech and Deutsche Telekom, and called MagyarCom. MagyarCom first acquired a 30.2 per cent stake in MATÁV and a service concession for 25 years in December 1993, in exchange for \$875m.<sup>9</sup> Thus MATÁV was the first telecom company privatised in the Central European transition economies. MagyarCom acquired a further 36.58 per cent stake in December 1995 for \$852m, thus raising its holding to 67 per cent.

A further crucial structural change coincides with the above ones. In line with the international trends, telecom services are gradually liberalised in Hungary, too. First some regions have been put for tenders, i.e. MATÁV is not a monopoly any more at that level. Moreover, from 2002 competition is allowed in the market of the national and international calls, too. In fact, some form of competition already started a few years ago, when service providers of mobile telephony entered the market.

To sum up, literally all elements of the Hungarian telecom sector altered in the last couple of years. The cosy, friendly cohabitation of the 'twin' monopolies, that is, the service provider and the principal public switch manufacturer, suddenly ended in the early 1990s with the privatisation of MATÁV, the gradual liberalisation of telecom services and by the so-called system selection tender, which introduced fierce competition in the market of telecom equipment, i.e. induced major foreign companies to enter. The severe need for the extension and modernisation of the fixed telecom network was a decisive factor behind this sweeping transformation, calling for - and also strengthened by - the abrupt change of technological regime (from electro-mechanical to digital switches). These factors, together with the further needs of modernisation and the introduction of new services - e.g. the so-called value-added services - continue to reshape the sector and shape its fate, with the major foreign firms playing a decisive role.

Large state-owned Hungarian companies have lost most of their former markets. CMEA-markets have been flooded with US, West European and Asian firms offering advanced technologies and favourable loans, and thus Hungarian firms can only retain a tiny part of their former sales, when 'switching costs' (from one supplier) are prohibitive, given network externalities. The local market, on the other hand, are seized by two major entrants: one of them privatised a former major equipment manufacturer, and changed its product lines completely, the other one set up a joint venture with a private electronics firm, but practically used it only as an 'entry ticket', i.e. it was a special form of a green-field investment.

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<sup>9</sup> Other bidders included a consortium formed by France Telecom and US West, the Italian STET and the Spanish Telefonica.

### 3.2 Performance of telecom equipment manufacturing firms

Table 6 shows that given the major modernisation project undertaken in the telecom services, sales of the Hungarian telecom equipment manufacturers almost trebled in 1992-96.<sup>10</sup> A caveat must be added, however. Ericsson Kft, as already mentioned, one of the winners of the system selection tender, and hence a major firm in this industry, is *not* classified as a telecom equipment manufacturer, but as an electronics firm. In other words, its 15-20 billion forints turnover is ‘missing’ from the 52 billion forints sales reported in official statistics. Hence the following, fairly simple, statistical analysis should be taken with a pinch of salt.

The sector has shown a remarkable growth: sales increased by some 260% by 1996 compared to 1992. It is especially spectacular if we consider the aforementioned ‘statistical exclusion’, and more importantly, the loss of former CMEA markets, hence the shrinking number of companies and contracting employment. Growth is clearly due the expanding local market - the modernisation and extension of the telecom infrastructure -, the ratio of exports fell from 18% in 1992 - after a slight and temporary increase in 1993 - to 11% in 1996.

**Table 6: Manufacture of industrial telecom products (322): Size of the sector**  
(data in million Hungarian forint, unless otherwise indicated)

	1992	1993	1994	1995	1996	96/92
Sales	20,266.3	21,834.1	37,250.6	41,092.8	52,475.6	258.93%
<i>of which</i> exports	3,680.8	4,836.5	5,352.0	5,318.2	5,770.3	156.77%
Exports/sales	18.16%	22.15%	14.37%	12.94%	11.00%	60.55%
Average statistical employment (heads)	15,280	12,399	10,621	10,462	10,431	68.27%
Number of companies	389	410	215	239	277.0	71.21%

*Source:* Ministry of Industry and Trade and author’s calculation

*Note:* Only double-book-keeping companies are included

As for ownership structure, lack of readily available statistics prevents one from precisely establishing the ratio of private and state ownership. While seven distinct types of owners are recognised in the Hungarian statistical system, namely the state, the municipalities, domestic individuals, domestic corporations, ESOP, foreigners and co-operatives, published statistics only provide figures on state-owned and foreign-owned equity. Bearing in mind this methodological limitation, available statistics suggest a rapidly increasing share of private ownership - especially foreign ownership - in this sector.

<sup>10</sup> Data are not available prior to 1992 as telecom equipment manufacturing was subsumed in the ‘manufacturing of vacuum technology products’, i.e. rather different products - e.g. telecom equipment, bulbs, radio tubes, semiconductors and all other products of Tungstam, the major vacuum technology firm - came under the same heading. Needless to explain at length that this ‘industry’ cannot be analysed in a meaningful way. It would be even more silly to draw conclusions on the development of telecom equipment manufacturing relying on these data, let alone to attempt any comparative analysis between the pre-transition and transition period.

**Table 7: Manufacture of industrial telecom products (322): Ownership changes**  
(data in million Hungarian forint, unless otherwise indicated)

	1992	1993	1994	1995	1996	96/92
Equity	19,396.1	15,451.1	17,077.8	18,942.0	19,908.0	102.64%
<i>of which:</i> foreign ownership	1,329.9	1,512.3	1,923.1	3,487.2	5,237.8	393.85%
state ownership	7,222.0	3,588.1	4,205.3	3,874.1	3,285.3	45.49%
Share of foreign ownership	6.86%	9.79%	11.26%	18.41%	26.31%	383.52%

*Source:* Ministry of Industry and Trade and author's calculation

*Note:* Only double-book-keeping companies are included

Financial data suggest some significant shake up: there has been an increasing gap between viable and loss-making companies until 1995, when losses reached their peak. 1996 saw a significant increase in profits and a marked decrease of losses, and hence a remarkable improvement in the net profits/sales ratio.

Although employment has shrunk by one third, labour costs almost doubled suggesting a shift in the employment structure towards more highly skilled, and hence better paid, workers. Productivity, measured by sales/employee, however, has almost quadrupled by 1996, and thus this hypothetical shift in skill structure - or simply higher powered incentives - paid off. Assets have almost doubled in 1993-96: most likely machinery has been modernised in a quite a few firms, also contributing to higher productivity.

**Table 8: Manufacture of industrial telecom products (322): Performance**  
(data in million Hungarian forint, unless otherwise indicated)

	1992	1993	1994	1995	1996	96/92
Pre-tax profits	-1,054.4	506.8	185.2	-897.2	3,986.6	-378.09%
<i>of which:</i> profits	1,003.6	1,121.60	1,457.30	2,531.80	5,626.2	560.60%
losses	-2,057.9	-615.1	-1,272.10	-3,429.0	-1,639.6	79.68%
Net profits	n.a.	349.6	4.7	-1,112.6	3,597.4	n.a.
<i>of which:</i> profits	n.a.	n.a.	1,299.10	2,316.9	n.a.	n.a.
losses	n.a.	n.a.	-1,294.4	-3,429.5	n.a.	n.a.
Labour costs	5,764.3	4,995.6	6,527.4	7,206.6	9,260.5	160.65%
Assets	n.a.	39,449.6	47,832.6	53,837.4	75,480.1	n.a.
Value added	n.a.	6,882.4	8,958.6	11,081.7	16,733.4	n.a.
Productivity (sales/employee)	1.33	1.76	3.51	3.93	5.03	378.25%
Net profits/sales	n.a.	1.60%	0.01%	-2.71%	6.86%	n.a.

*Source:* Ministry of Industry and Trade and author's calculation

*Note:* Only double-book-keeping companies are included

### 3.3 Lessons from case studies

Interviews conducted at equipment manufacturers underline the importance of MATÁV as a dominant - one might even say, decisive - client. One company (T1), formerly a significant

player in the Hungarian telecom equipment sector, was bidding both times in the early 1990s for MATÁV orders together with a major Western manufacturer.<sup>11</sup> Although before the first MATÁV tender T1 was the first and only Hungarian telecom equipment manufacturer producing digital public switchboards, based on its Western partner licence, it has not won any business. Moreover, it has lost its former CMEA markets, too, given the entry of US and Western European competitors, offering new technologies and favourable loans. Thus T1 is severely shrinking in terms of sales, employment and the number of plants. It is trying to find new markets via new partners - either in joint ventures, subcontracting agreements or marketing alliances - and launching new products, e.g. printed circuit boards, or services, e.g. digitalisation of electromechanical public switchboards and software development. T1 is also experimenting with setting up new - 100 per cent owned - subsidiaries for its new activities. These new entities and partnerships are highly volatile, e.g. basically in all cases the former JV partners have acquired a 100 per cent stake in 2-3 years. Therefore it seems too early to draw further conclusions - let alone to predict T1's fate - on the basis of the currently available information.

The other interviewed firm (T2) is one of the winners of MATÁV 'system selection tenders'. For the first tender in 1990 it was bidding together with a major Western European company. Having won the tender, the Western partner acquired a 65 per cent stake through its subsidiary in another Western country - because of tax holiday provided in that country for capital investment - and 35 per cent via its Hungarian headquarters. Now T2 is completely integrated into the European operations of the giant parent company, its activities and performance can hardly be analysed without taking into account this fact. For instance there is a significant gap between T2's production and sales, as it is also distributing all the related products of its parent in the Hungarian market. In other words, it has been transformed from a 'stand alone' manufacturing firm with its well-defined ('easy-to-identify'), own R&D, production, sales and service activities into a service and sales unit of a giant international firm, with some R&D and manufacturing tasks, inseparably merged with its parent's truly international activities, organised on a European-wide base. Therefore it is hardly possible to observe and assess either manufacturing or R&D activities from T2's standpoint: the basic model of public switchboards are developed by the parent company, and then it is continuously upgraded to exploit technological changes and modified to meet local needs. The R&D costs of the basic model are in the order of \$1 billion, and thus only a few really large companies can afford to run such projects. Moreover, a further a few hundred millions of dollars are spent annually to improve and modify this basic model. T2 and other regional subsidiaries are usually involved in this second phase of R&D, but even then certain tasks are allocated among various subsidiaries, i.e. it is still hardly possible to identify 'products' or 'processes' developed by a given subsidiary. Rather, the so-called feature list of the basic

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<sup>11</sup> For Western bidders it was a must to team up with Hungarian companies.

model is extended and modified in this second phase, and the completion of the hundreds of tasks required for these jobs are closely co-ordinated and partly conducted by the parent firm's central R&D unit, while some other tasks are performed by the subsidiaries' R&D units. Manufacturing is also planned, co-ordinated and performed in a similar way. The principle reasons behind this close co-ordinations include cost-cutting, exploitation of synergy and elimination of any competition among subsidiaries.<sup>12</sup>

The other winner of MATÁV's tenders was set up as a joint venture of a Hungarian and a major Western company, and then the foreign partner acquired the Hungarian stake. The Hungarian partner had no experience in telecom equipment manufacturing, but - as already mentioned - foreign firms alone were not allowed to submit their bids at MATÁV's 'system selection tenders'. In other words, this joint venture was established given the specific rules of the tender, and was not set up because of foreseen strategic advantages (e.g. accumulated special knowledge and skills, market share or low-cost manufacturing base).

These firms are - or used to be - the major players in this sector,<sup>13</sup> and hence their cases had to be discussed here too as to give an appropriate overview, although two of them are basically 100 per cent owned by foreign investors by now.

Elektronika ... Other firms - with Hungarian owners and foreign co-operation partners and/or minority stake holders, yet, producing other types of telecom equipment, i.e. being active in different market segments - should be involved in our sample.

As Table 8 includes data of hundreds of companies, the dominance of foreign companies in the case of the major players cannot be clearly seen from that source. Yet, foreign investors do hold either majority, or 100 per cent stakes in these cases. This sector is dominated by major Western European manufacturers for a number of reasons.

In other words, if companies with majority foreign ownership are excluded from our analysis, then all the major players are excluded.

Interviews do suggest that developing digital public switches is a very costly project, and thus the risk involved practically excludes small and medium-sized companies. Further, producing these switches is basically a process of putting together 'usual', mass-produced hardware elements and tailor-made software packages. Hence there is hardly any room for local suppliers. As for hardware elements, these parts are either produced in-house by the major telecom equipment manufacturers, especially when they themselves are 'just' a division of a giant electronics firm, or by large, multinational electronics suppliers. As for software elements, they are increasingly responsible for the performance of a public switch, that is, they constitute the core competence of a telecom equipment manufacturer, and hence

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<sup>12</sup> As far as the completion a given job, say the development of a certain software package, is concerned, there is, of course, an on-going internal competition among subsidiaries. Yet, only the actual representative unit of the parent is allowed to bid, e.g. the Hungarian subsidiary can only bid in Hungary, but in the event it might perform a task won at a tender by another subsidiary in another country.

<sup>13</sup> T2 alone, for instance, accounts for some 25-30 per cent of total sales.

developed in-house. Therefore local suppliers are not likely to be incorporated into the production network of these major foreign companies to a significant extent. In other words, foreign companies' primary strategic aim is to service the domestic market, and want to use their Hungarian subsidiaries for exports to a significantly lesser extent.

Manufacturers of specialised telecom instruments and equipment, however, are getting more and more incorporated into the global network of major companies. Hence exports account for a decisive share of their sales. However, even their combined sales data are dwarfed by the two Hungarian subsidiaries of major foreign telecom equipment manufacturing firms. Thus Table 8 indicates a falling relative share of exports, or a somewhat moderate growth of exports in absolute terms, compared to total sales.

#### **4 INTERNATIONAL CO-OPERATIVE AGREEMENTS IN THE AUTOMOTIVE COMPONENTS INDUSTRY<sup>14</sup>**

##### **4.1 Global trends, structural changes in the supply chain**

The automotive components industry includes a wide range of products and companies. Some companies are only supplying car manufacturers, others only commercial vehicle makers, some both car and commercial vehicle assemblers, and yet another group other buyers (outside the automotive industry), too. Therefore it is hardly possible to provide a comprehensive statistical analysis as the boundaries of the industry are difficult to draw.

With the advent of the so-called Toyota Production System (or, lean production) far-reaching changes are occurring as far as the relationship between the suppliers and buyers is concerned. These changes are more pronounced and visible in the car and car parts industries, therefore the following qualitative analysis would concentrate on these sectors. Yet, the other segments of automotive industry, namely the commercial vehicle assemblers and their suppliers do not constitute a different 'world', more or less the same basic rules hold in their cases, too, with some minor alterations.

Developments of car parts industry can only be explained together with those of automobile industry. This may seem an elementary point - even superfluous - but it is vital to establish a sound understanding of the importance of this relationship.

Following Drucker [1946], car manufacturing is often regarded as the 'industry of industries'. It does not seem to be an overstatement if one considers its implications for other sectors (substantial demand for other industries, such as metal, glass, rubber, chemical, petrochemical, electric, electronics, textile and leather industries, as well as road construction with all the additional infrastructure requirements; and radically new opportunities in transportation), impacts on work organisation (mass production has diffused in other industries as well since it has been developed by Ford in the 1920s, and nowadays lean

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<sup>14</sup> This sub-section heavily draws on Havas [1994a], [1994b], [1995a], [1995d], [1996a], [1997]), besides interviews and statistical analyses conducted for this project.

production is also gaining importance in other sectors), on employment, vocational training, consumption and life style.

For these reasons car manufacturing has long attracted the attention of observers, and car sales and projected demand are basic elements of any macroeconomic analysis and forecast. Moreover, this sector is one of the biggest employers, and hence car plants crucially influence the well-being of their regions through employment, profit and personal taxation, direct and indirect demand for goods and services.

Auto parts industry, on the other hand, used to be somewhat neglected by analysts. It has not been deemed as an autonomous branch in international statistics, either, until the 1980s. Thus information on it used to be subsumed under the automobile or motor vehicle industry. This structure of collecting and providing data has not been a misinterpretation, on the contrary, it has been in accordance with economic reality, indeed.<sup>15</sup> In the 1980s, however, automotive component sector has emerged as an important industry in its own right due to momentous changes in technology, organisation and trade. The role of component suppliers has significantly increased not only in production but in design as well; their technical and economic performance has become a key factor in the fatal competition fought by major car manufacturers.

Hence car parts sector now is a new 'entry' in statistics due to its economic significance. A simple reason is that on average 10000-12000 parts are built into a car accounting for some 50-70% of the manufacturing cost of an automobile. Other factors, however, seem to be even more important in explaining the sector's economic significance. One is the increasing trend in the trade of parts and components for several reasons, the other one is the importance of technological improvement, due to the extremely fierce competition, and the new role of suppliers in it. (OECD [1992])

*A) Increasing trade in parts and components, since*

- there is hardly any vertical integration in lean firms, and the growing pressure from lean competitors has led to a decreasing vertical integration in 'Fordist' firms (increasing outsourcing);
- competition and changing demand patterns require to locate production close to actual markets, and hence parts, subassemblies and kits have emerged as substitutes for fully assembled vehicles;
- technological changes, in particular the increasing use of 'platforms', have reduced the minimum efficient scale of assembly plants (i.e. decisive factors of scale economies have changed), and smaller assembly plants can be supplied with parts from outside sources.

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<sup>15</sup> In the first decades of car manufacturing parts were supplied by independent companies for whom car parts did not represent a major line of business: their main products were various machines, instruments, etc. and/or parts for other transport equipment, such as bicycles and carriages. Therefore car parts industry was not an independent sector. Neither was it in the mass production era when car manufacturers either acquired their suppliers or established in-house facilities to produce parts and components for themselves.

### *B) Importance of technological improvement of suppliers*

- lean production requires from suppliers the introduction of just-in-time delivery, total quality control, low-cost production, and, in most cases, increased responsibility for product development, i.e. substantially improved and different technological capabilities compared to the requirements of the Fordist mass production;
- product technology is deemed to be the future competitive ‘battlefield’ by industry analysts, and suppliers are supposed to play a significant role in this battle. Car manufacturing is one of the most competitive industry nowadays basically for two reasons. Lean producers apply a tremendous pressure on established mass producers offering cheaper cars of better quality, wider choice of model variations, more frequent model changes, faster delivery, etc. This development coupled with slow (or hardly any) growth in demand has resulted in a really severe competition. As no further possibilities for organisational breakthrough to reduce costs and/or increase efficiency can be envisaged since lean production is already introduced, product development is of vital importance to improve safety, fuel economy and comfort, and to develop ‘intelligent cars’, etc. Due to again the introduction of lean production, component suppliers have an increasing responsibility in product development.

## **4.2 Central European developments**

Automotive industry is among the leading sectors in terms of FDI in all the three countries to be analysed, due to major investments by Audi, Daewoo, Fiat, Ford, GM Opel, Suzuki, Volkswagen, Volvo and their long-established suppliers, as well by other leading automotive component companies establishing their operations in Central Europe to serve their clients in ‘third’ countries, i.e. not the above vehicle makers.<sup>16</sup>

Both vehicle assemblers, privatised by foreign investors by now in most cases, and their local suppliers have to find new markets as the former severe shortage of vehicles disappeared due to the opening up of these markets,<sup>17</sup> and the collapse of CMEA. Indeed, certain Fiat and Suzuki models are only produced in Poland and Hungary, respectively, but shipped to all the other European markets. Privatisation of vehicle assemblers, coupled with the entry of the foreign investors’ long-established Western European suppliers through brown-field and green-field investments, in turn, require radical re-structuring and adjustment from their local suppliers, too. In brief, they have to introduce new products, processes and management techniques, if they are to survive. Foreign entrants can be either competitors or partners of the local suppliers. They can either fight fiercely for orders from the privatised vehicle makers, and/or they can form joint ventures or establish close customer-supplier relationships, i.e. the long-established first-tier suppliers are often looking for local second-tier suppliers when they follow their client (the vehicle maker). In either case there are particularly strong incentives to innovate on the local suppliers’ side, and in the case of co-

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<sup>16</sup> For a detailed account see, e.g. Havas [1995d], [1997].

<sup>17</sup> Space limits and the different main thrust of this paper prevent a more detailed analysis of the current tariffs and their impacts.

operation (through joint ventures or customer-supplier relationship) the foreign entrants are significant sources of technical and organisational innovations.<sup>18</sup>

Given all the above features it is of primary theoretical and practical (i.e. policy) importance to study thoroughly these various forms of competition and co-operation in this industry for a number of reasons. First, the performance of automotive components suppliers can be regarded as a sort of proxy variable to gauge the success of transition to market economy in these countries. Most automotive components suppliers have lost their former 'safe' markets with the privatisation of the vehicle manufacturers and the collapse of CMEA but just then major foreign investors have entered these markets. Thus the new market opportunities are there for the local suppliers - in fact no planning office on earth could have ever planned such a timely structural change -, and it is now their task to seize this chance for re-structuring and survival.

A second important, and closely related, question is the speed and extent of the diffusion of product, process, management and organisational innovations, e.g. just-in-time, total quality control, required by the foreign investors. Will an archipelago of relatively advanced suppliers emerge, with these new developments being locked into an enclave, or can these new products, processes and management techniques diffuse in a wider circle through second and third tier suppliers? Can the local suppliers also become competitive in other markets, given that they are able to meet the exacting demand of Audi, Daewoo, Fiat, Ford, GM Opel, Suzuki, Volkswagen and the other foreign investors?

Third, more generally, can this 'on-the-job training' accelerate the badly needed market re-orientation and transition? What is, and, should be, the role of the respective governments to facilitate this process?

### **4.3 Major characteristics of the Hungarian automotive components industry**

Car parts industry has a long-established tradition in Hungary. Although its former single most important market, that is, the ex-CMEA has collapsed, new market opportunities have emerged in the domestic market as Suzuki and GM Opel have opened car assembly plants, and the latter one an engine plant as well. Audi has also invested in an engine plant in Hungary. New export markets can also be found as Western European car manufacturers, working under tremendous competitive pressure due to the still depressed demand in their home markets and the aggressive growth strategy of the far more efficient lean producers, are also seeking low-cost parts suppliers.

Hungarian suppliers try to adjust to this rapidly changing environment via introduction of new products and processes. In most cases they rely upon licences, know-how, up-to-date

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<sup>18</sup> To a lesser extent they might also be regarded as sources of the local suppliers' innovative efforts even in the case of competition: subject to various constraints, their products, processes and management techniques might diffuse through imitation as well as by inter-firm migration of skilled personnel.

management techniques and training provided by their clients and/or their first tier supplier as well as by parent companies in the case of firms privatised by foreign investors. Their in-house R&D capabilities are also used whenever these new technologies need to be modified to their existing production facilities.

#### *4.3.1 Performance of the Hungarian automotive components suppliers*

Due to the aforementioned characteristics of the industry, quite a few automotive suppliers can be classified as leather, rubber, plastics, paint, glass, cable or metal producer and processor companies, foundries, electric and electronics companies, etc. Therefore it is hardly possible to provide comprehensive statistics on the automotive suppliers' performance.

The current Hungarian statistical classification system identifies four automotive sub-sectors:

- manufacture of electric automotive components (3161);
- manufacture of vehicles (3410);
- manufacture of bodies for vehicles (3420), and
- manufacture of automotive components (3430).

Two of these sectors are relevant for this study: manufacture of electric automotive components and manufacture of automotive components. Although these names might suggest that these two sectors cover at least the majority of the automotive suppliers, let me stress again that this is not necessarily the case: just as in the EU statistics on the automotive component sector, a wide range of products are excluded.

These two sectors significantly increased their sales: the 1996 output of electric automotive components was almost 37 times as much as in 1992, and the other sector - from a much higher absolute level - nearly trebled in the 1992-96 period. The export intensity of these sectors is also worth noting, particularly in the case of the electrical automotive components, where the ratio of exports to sales further increased from an already high level, i.e. from 69.5 per cent in 1992 to 98 per cent in 1996. Thus it can be established beyond doubt that these companies face a fierce competition: given the globalised nature of the automotive industry and the liberal import regime there is a strong rivalry in their domestic market, and they also face harsh competition in their export markets, where the bulk of their output is shipped. Moreover, their financial performance has significantly improved, too, i.e. they are not 'buying' export markets at the expense of their profits.<sup>19</sup> Thus their significant growth in the 1992-96 period is even more impressive. Figures indicate that the underlying factor of their success is improved productivity (14-fold increase! in the case of electrical automotive equipment, and a 3-fold increase in the case of automotive components), thanks to the

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<sup>19</sup> Yet, the profitability of the components sector (3430) was still very low in 1994, that is, below 2 per cent. The other sector (3136) fares much better in this respect, too, most likely because it produces higher value added goods.

introduction of new processes and management techniques, and to a certain extent due to the modernisation of equipment, reflected in the increase of assets. (Tables 9-10)

**Table 9: Manufacture of electrical automotive components (3161)**  
(data in million Hungarian forint, unless otherwise indicated)

	1992	1993	1994	1995	1996	96/92
Sales	2,454.2	3,013.6	7,766.2	13,010.2	89,919.3	3663.85%
<i>of which: exports</i>	1,705.2	2,290.1	6,610.1	11,239.9	88,090.5	5165.92%
Exports/sales	69.48%	75.99%	85.11%	86.39%	97.97%	141.00%
Average statistical employment (heads)	1,852	2,267	2,545	3,199	4,813	259.88%
Number of companies	19	23	25	25	32	168.42%
Pre-tax profits	-175.4	64.0	671.4	1,280.3	20,116.2	-11469.02%
<i>of which: profits</i>	160.3	159.8	703.6	1,301.8	20,130.6	12559.20%
losses	-335.7	-95.8	-32.2	-21.5	-14.4	4.30%
Net profits	n.a.	55.3	642.9	1,204.6	20,034.0	n.a.
Labour costs	624.7	703.0	1,456.0	2,203.0	12,502.8	2001.32%
Labour costs/employee (000 HUF)	337.3	310.1	572.1	688.7	2,597.7	770.09%
Assets	3,534.2	5,408.2	6,496.1	6,789.5	56,359.6	1594.68%
Value added	n.a.	1,118.5	2,590.2	3,684.1	35,774.1	n.a.
Productivity (sales/employee)	1.3	1.3	3.1	4.1	18.7	1409.82%
Net profits/sales	n.a.	1.84%	8.28%	9.26%	22.28%	n.a.

*Source:* Ministry of Industry and Trade and author's calculation

*Note:* Only double-book-keeping companies are included

**Table 10: Manufacture of parts and components for motor vehicles (3430)**  
(data in million Hungarian forint, unless otherwise indicated)

	1992	1993	1994	1995	1996	96/92
Sales	26,443.9	35,495.3	44,031.9	60,117.5	75,259.4	284.60%
<i>of which:</i> exports	13,950.9	17,870.1	23,016.8	36,517.1	47,436.9	340.03%
Exports/sales	52.76%	50.34%	52.27%	60.74%	63.03%	119.48%
Average statistical employment (heads)	17,348	17,781	16,592	15,502	15,730	90.67%
Number of companies	102	112	117	124	131	128.43%
Pre-tax profits	-17.9	708.3	989.5	2,502.2	2,612.6	-14621.67%
<i>of which:</i> profits	613.6	1,117.6	1,919.4	3,708.3	4,839.1	788.59%
losses	-631.5	-409.1	-929.8	-1,206.1	-2,226.5	352.57%
Net profits	n.a.	341.0	849.4	2,230.0	2,294.9	n.a.
Labour costs	6,758.8	8,462.0	10,475.6	12,197.1	15,509.7	229.47%
Labour costs/employee (000 HUF)	389.6	475.9	631.4	786.8	986.0	253.08%
Assets	41,622.1	45,872.7	49,959.9	54,626.7	70,586.0	169.59%
Value added	n.a.	12,876.5	15,746.6	19,322.2	23,480.0	n.a.
Productivity (sales/employee)	1.5	2.0	2.7	3.9	4.8	313.87%
Net profit/sales	n.a.	0.96%	1.93%	3.71%	3.05%	n.a.

*Source:* Ministry of Industry and Trade and author's calculation

*Note:* Only double-book-keeping companies are included

Finally, Table 11 reports the developments of the whole automotive sector in the 1992-96 period, to provide a more general overview. These aggregate figures suggest a fairly similar story described above, and thus there is no need to repeat those observations.

**Table 11: Automotive industry (34, includes 3410, 3420 and 3430)**  
(data in million Hungarian forint, unless otherwise indicated)

	1992	1993	1994	1995	1996	96/92
Sales	62,638.4	92,186.9	124,349.5	222,640.4	271,939.8	434.14%
<i>of which:</i> exports	35,551.4	47,055.8	66,157.0	164,959.9	206,225.0	580.08%
Exports/sales	56.76%	51.04%	53.20%	74.09%	75.83%	133.61%
Average statistical employment (heads)	28,000	26,874	24,318	23,047	22,478	80.28%
Number of companies	137	154	158	173	179	130.66%
Pre-tax profits	-4,837.8	-5,740.5	3,667.1	12,752.1	20,809.5	-430.14%
<i>of which:</i> profits	1,247.5	3,244.8	8,166.1	18,688.8	27,452.8	2200.63%
losses	-6,085.3	-8,983.0	-4,499.0	-5,936.7	-6,643.3	109.17%
Net profits	n.a.	-6,146.0	3,506.2	11,743.5	20,461.9	n.a.
Labour costs	11,911.3	14,622.7	16,560.6	19,643.1	23,995.9	201.46%
Labour costs/employee (000 HUF)	425.4	544.1	681.0	852.3	1,067.5	250.95%
Assets	120,334.5	129,823.0	149,397.9	184,847.7	206,240.5	171.39%
Value added	n.a.	24,808.9	31,688.4	47,898.6	65,744.9	n.a.
Productivity (sales/employee)	2.2	3.4	5.1	9.7	12.1	540.79%
Net profit/sales	n.a.	-6.67%	2.82%	5.27%	7.52%	n.a.

*Source:* Ministry of Industry and Trade and author's calculation

*Note:* Only double-book-keeping companies are included

#### 4.3.2 Privatisation

As far as ownership is concerned, a wide variety of forms can be observed. Moreover, ownership changes are going on literally month by month at a firm level, and hence the overall picture, i.e. the ratio of different ownership forms, is constantly changing. Thus, from the point of view of empirical research, it is a 'moving target'. Given the lack of readily available statistics, it is not possible to precisely establish the ratio of private and state ownership at this stage. While seven distinct types of owners are recognised in the Hungarian statistics, namely the state, the municipalities, domestic individuals, domestic corporations, ESOP, foreigners and co-operatives, published statistics only provide figures on state-owned and foreign-owned equity. Moreover, one category of ownership - namely 'domestic corporations' (basically share holding and limited liability companies) - does not distinguish private and state ownership. Therefore one cannot simply estimate the extent of private ownership as the 'remainder'. In other words, an apparently legitimate formula, assuming that the municipality-owned assets are almost negligible, and thus the ratio of private ownership equals 100% minus state ownership minus 2-6% for municipality stakes, would lead to deceptive results.<sup>20</sup>

<sup>20</sup> Relying on case study evidence, a rather rudimentary assumption can be formed: 'domestic corporations' are usually state-owned units, and thus their stakes should be regarded as state holdings.

Bearing in mind these methodological limitations, available statistics suggest a rapidly increasing share of private ownership in both sectors.

**Table 12: Ownership changes in the manufacture of electrical automotive components (3161)**

(data in million Hungarian forint, unless otherwise indicated)

	1992	1993	1994	1995	1996	96/92
Equity	2,065.8	832.6	842.7	918.4	9,613.0	465.33%
<i>of which:</i> foreign ownership	121.1	166.5	276.2	505.4	9,272.0	7657.22%
state ownership	1,537.2	154.0	154.0	15.0	15.1	0.98%
Share of foreign ownership	5.86%	19.99%	32.78%	55.03%	96.45%	1645.53%

*Source:* Ministry of Industry and Trade and author's calculation

*Note:* Only double-book-keeping companies are included

**Table 13: Ownership changes in the manufacture of parts and components for motor vehicles (3430)**

(data in million Hungarian forint, unless otherwise indicated)

	1992	1993	1994	1995	1996	96/92
Equity	19,657.8	21,831.8	22,400.9	23,598.9	27,481.8	139.80%
<i>of which:</i> foreign ownership	2,517.8	3,348.1	4,029.3	6,080.8	8,670.7	344.37%
state ownership	9,130.3	9,051.4	7,190.5	5,434.6	4,410.8	48.31%
Share of foreign ownership	12.81%	15.34%	17.99%	25.77%	31.55%	246.33%

*Source:* Ministry of Industry and Trade and author's calculation

*Note:* Only double-book-keeping companies are included

Again, Table 14 reports the developments of ownership changes in the whole automotive sector in the 1992-96 period, to provide a more general overview.

**Table 14: Ownership changes in the automotive industry (34)**

(data in million Hungarian forint, unless otherwise indicated)

	1992	1993	1994	1995	1996	96/92
Equity	56,848.3	68,327.1	66,984.0	71,255.0	76,804.2	135.10%
<i>of which:</i> foreign ownership	14,838.7	22,901.3	29,128.7	39,622.6	47,493.1	320.06%
state ownership	25,280.5	24,361.2	15,338.1	13,582.2	12,558.5	49.68%
Share of foreign ownership	26.10%	33.52%	43.49%	55.61%	61.84%	236.90%

*Source:* Ministry of Industry and Trade and author's calculation

*Note:* Only double-book-keeping companies are included

For qualitative analytical purposes it is worth listing the actual ownership forms, again based on interviews and, to a lesser extent, on press reports.

#### A) DOMINANT FOREIGN OWNERSHIP

A.1 Green-field investments with 100 per cent foreign ownership. For the purpose of further analysis, it is useful to identify two sub-sets in this group:

- A.1.1 Subsidiaries of car manufacturers: Ford Hungária, the engine plant of Opel Hungary and AUDI Hungária Motor Kft.
  - A.1.2 Subsidiaries of component manufacturers, e.g. ITT Automotive Hungary, United Technologies Automotive Hungary, Michels Kabel, Keiper-Recaro.
  - A.2 ‘Brown-field’ investments: former state-owned companies privatised by foreign investors via setting up a joint venture with Hungarian partners, either with private investors or state-owned companies - including ÁPV Rt (Hungarian Privatisation and State Holding Company) - and local governments.
- B) DOMINANT HUNGARIAN OWNERSHIP**
- B.1 State-owned companies
  - B.2 Privatised former state-owned companies: in most cases privatisation has only been partial so far, usually as a combination of ESOP and MBO projects; e.g. Bakony Művek Rt., MMG Automatika Rt., Perion Akkumulátorgyár Rt.
  - B.3 Private companies, i.e. firms established by Hungarian entrepreneurs either in the 1960s or more recently
  - B.4 Joint ventures with dominant Hungarian private ownership, e.g. RATIPUR Car Equipment Co.

#### 4.3.3 *Market changes*

Market re-orientation cannot be analysed in a methodologically satisfactory manner given the lack of statistics.<sup>21</sup> Interviews, indirect evidence - e.g. shrinking Lada sales - and press reports do suggest, however, that most companies have lost at least a large chunk of their former markets, i.e. the ex-Soviet and other CMEA markets. Thus they have been forced either to find new buyers - the new car assembly plants in Hungary and/or Western car parts companies operating in Hungary as producers or buyers - or to significantly cut their staff because of shrinking revenues. Most cases the new market opportunities have not compensated for the lost former ones, and thus even those companies who became Magyar Suzuki and/or Opel Hungary suppliers, or found export markets, also had to dismiss some of their personnel.<sup>22</sup> Some companies have not survived this ‘test’: they have been - or are being - dissolved.

#### 4.3.4 *Technological changes*

Havas [1994a] analysed a sample of 16 Hungarian car parts suppliers from the point of view of technological changes. These were either Magyar Suzuki or Opel Hungary suppliers already in 1992 or 1993, i.e. the new entrants, especially foreign-owned green-field

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<sup>21</sup> The current industrial classification system was introduced in 1992, and none of the sub-sectors analysed here existed in the former one. Hence the first year of time series is 1992, that is, well into the transition period.

<sup>22</sup> Tables 9-10 clearly show that this form of adjustment is still going on.

investments were not covered as most of them started commercial production after 1992, and thus were not Magyar Suzuki or Opel Hungary suppliers that time. Some of them, e.g. ITT Automotive, have become Opel Hungary suppliers since then, yet, their shipments to Szentgotthárd (i.e. to the Opel Hungary plant) is negligible compared to their total output. (The bulk of their production is exported to Western European or even North and South American car assembly plants.) In other words, Audi, Ford and other foreign investment projects, representing high-tech, high value added products, were not included. Thus the following subsections, based on that study, provide only one part of the entire picture.

Although only 7 firms in the sample spent more than 3% of their sales on technology related activities<sup>23</sup> in 1992 (moreover, 5 spent less than 1%), basically all of them have introduced new product and/or process technologies.

### **Product innovations**

Nine companies have introduced altogether 12 *major* product changes whereas 8 companies have introduced 11 *minor* ones in 1987-1992.<sup>24</sup> Another company, a new entrant to the sector, began producing electric car parts in late 1993, and thus these major product changes have not counted in the questionnaire. In addition, a joint venture was set up in 1991 to produce plastic car parts, never manufactured in Hungary before. Although it has not been reported as a major product change by this company, as there has not been any product change since its establishment, it does represent a significant product innovation in the sector. Similarly, most of these product innovations can be regarded as new products not only for the firms introduced them but for the Hungarian economy as well. Thus it is really a favourable development.

Table 15 clearly indicates that car producers (or their suppliers) and in-house development have played a significant role in introducing these new products. Other sources have included parent companies, commissioned research, other firms (partner in innovation with no other links), and licences. All these innovations came from the sector itself or related industries.

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<sup>23</sup> It includes expenditures on (a) R&D and related work, (b) technical training and (c) other engineering and technical services.

<sup>24</sup> As for counting it is worth clarifying that the harmonised questionnaire has not allowed to include more than 2 cases in either category, i.e. in major and minor product changes as well as in major and minor process changes. Some companies, however, have introduced more than two, for instance, major product changes.

**Table 15: Sources of product innovations**

	major product change	minor product change
car producer/its supplier	7	3
in-house R&D, design	4	3
parent company	2	1
R&D institute	nil	1
other firm	1	nil
licence	1	1

*Notes:* The case of the aforementioned joint venture, established to produce new car parts, is also included as a major product change alike the new entrant producing new electric parts since 1993. A given product change might have more than one source.

### Process innovations

Eleven firms have introduced all in all 14 *major* process changes and 15 companies 21 *minor* ones in 1987-1992.<sup>25</sup> To see from a different angle, every single firm in our sample has introduced at least one major or minor process change. As opposed to the aforementioned product innovations, however, most of these changes have only been new to companies introducing them. As car manufacturers require total quality management and just-in-time delivery, the introduction of these techniques has been the most frequent process change. Modernisation of machinery has been the other dominant form of process innovations.

Car producers (or their suppliers) have again played a significant role like in the case of product innovations discussed above. A marked, and in fact a self-explanatory, difference is, though, that material and machine suppliers have also been instrumental. In other words, the diffusion of embodied technologies has considerably contributed to technological improvements. Other sources of process innovations have included in-house development, consulting services, parent companies and R&D institutes, including university departments. (Table 16)

**Table 16: Sources of process innovations**

	major process change	minor process change
car producer/its supplier	5	11
material/machine supplier	10	6
in-house R&D, design	1	4
consulting firm	nil	4
parent company	2	3
R&D institute	3	nil

*Note:* A given process change might have more than one source.

Similar to product changes, most process improvements also have come from the sector itself, e.g. know-how to produce various parts, as well as TQM methods, or from related

<sup>25</sup> The aforementioned joint venture, set up in 1991, is counted here because some process changes do have been introduced since its establishment.

industries, primarily from capital goods, glass and plastic industries. Various services, however, have played a more important role than in the case of product innovations. The most important ones have been software firms and consultants specialising in quality assurance.

To conclude, two major lessons can be drawn as guidelines, or points of departure, for our research on technological co-operative agreements. First, some buyers, or their first tier foreign suppliers, provide licences and know-how free of charge. The most important example is Magyar Suzuki, also offering various forms of financial assistance for tooling-up. This is the major element of explanation to reconcile the apparent contradiction between the low level of expenditures on technology related activities and the introduction of relatively large number of new products and processes.<sup>26</sup> In other cases, however, it is a prerequisite to buy certain licences or know-how, otherwise there is no business.

Second, hardly any major difference can be observed comparing different companies, i.e. small and larger ones, private, privatised and state-owned ones, new entrants and long-established, more experienced ones.<sup>27</sup> The explanation is rather straightforward for this apparently surprising phenomenon. These different types of companies are fairly similar to each other in one crucial respect: they have had neither sufficient funds nor market opportunity to launch high risk, high gain R&D projects in leading edge technologies. On the contrary, most of them are producing low-tech products, or mid-tech ones, at best. The other reason to explain this surprising lack of difference is that most of them are supplying assemblers with fairly similar demand, i.e. regardless of the size, ownership or experience of their suppliers. Assemblers 'simply' want reliable, inexpensive parts supplied in time.

A caveat should also be added to this reasoning. Our sample, in fact, has been rather small, and thus one should be cautious in interpreting data obtained from it. Further, it also worth checking whether some changes have occurred in the last 2-3 years in this respect. In particular, the role and impacts of various forms of international technological co-operative agreements should be looked at thoroughly during our project. It seems to be a quite plausible hypothesis that firms with access to foreign technologies and innovations, broadly defined, i.e. including best practice and managerial innovations, too, fare better, than those relying exclusively on local sources of innovation.

#### 4.3.5 *Managerial innovations*

As already mentioned, Hungarian automotive suppliers have to adjust to a radically altered international and domestic environment (import liberalisation, loss of former markets, new

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<sup>26</sup> Another major factor is that these innovations represent low- or mid-tech technologies, rather than high-tech ones, and hence financially are less demanding.

<sup>27</sup> This is not to claim that skills and experience accumulated while supplying the former CMEA buyers have not been useful assets. Quite the opposite, these companies have been able to rely on them working for their new clients. New entrants, however, also have accumulated skills and experience in adequate, closely related technologies. In other words they have not been hampered by any technological handicap.

players in Hungary, etc.). Thus those who want to survive have also introduced new management techniques. The most important types of these innovations are total quality management and reliable cost accounting. Foreign partners usually provide technical assistance and training courses to facilitate the introduction of these techniques.

Again, it is important to observe the most recent changes in this respect, too, and the role of the various forms of international co-operative agreements in these changes.

Managerial innovations can be analysed at a sectoral level, too, as opposed to individual company level. In lean production first-tier suppliers assume a considerable part of responsibility for product development as well as for organisation of the supply chain (logistics) as they build and supply sub-systems, rather than individual components. In other words they are responsible for second-tier - and indirectly - for third-tier suppliers' performance, too. Thus they also provide training, technical assistance to their suppliers to facilitate the introduction of an appropriate quality management, cost accounting, production and delivery systems, etc.. More recently Western carmakers follow this way, i.e. they cut the number of their first-tier (direct) suppliers and give them more responsibility.

Findings of previous research projects suggest that this 'tiering' has hardly occurred in Hungary until the early 1990s. One should not be surprised, however, as most Hungarian companies have supplied fairly simple, individual parts, rather than complex sub-systems to their customers. Moreover, they have not been involved in product development, either, as the car models currently produced by Magyar Suzuki and Opel Hungary had been designed before their assembly started in Hungary.

One should take into account that it is a fairly new concept even for the Western European managers, who are accustomed to, at least, the 'normal' mechanisms and requirements of a market economy. Even so, they are far from reaching the full potential of lean production. As a recent analysis of the British automotive industry claims, British managers have a long way to go, too, on the road leading towards 'tiering':

"By collaboration, the first tier of suppliers may help to develop the value chain of vehicle manufacturer or the progress and competitiveness of a national or regional industry. There has been little such activity so far: indeed the major UK suppliers could more accurately be called an unconnected group, rather than a first tier." (DTI and SMMT [1994], p. 11)

Their Hungarian counter-parts, however, have to learn even the 'simple' techniques of market economy, too, not only these new principles of lean supply. Moreover, in the meantime they also have to struggle for survival.

More recently, however, some preliminary signs of the emerging new supply system can be observed in certain cases. Suppliers facing the exacting demand of their customers try to apply some principles of total quality management at least, i.e. they assume some sort of responsibility in organising the supply chain. Again, this issue should be analysed from the point of view of international co-operative agreements in our project.

#### 4.4 Prospects for Hungarian automotive suppliers

This part analyses the major characteristics of different types of companies in the framework of a tentative taxonomy. It also considers the most likely prospects for each group of companies. Of course not every single case can be captured by this taxonomy, e.g. a few major state-owned companies are still in the preparation phase for privatisation, and thus they are somewhat 'on the road' to become A2 or B2 companies. In other words, their characteristics are rather different compared to a representative B1 firm.

##### A) DOMINANT FOREIGN OWNERSHIP

##### A.1. Green-field investments with 100 per cent foreign ownership

###### A.1.1 *Subsidiaries of car manufacturers*

**Products:** mid- or high tech (e.g. Audi's five-valve engine: first commercial production), high value-added

**Processes:** state-of-the-art, capital and skill-intensive, but not labour-intensive

**Size:** a few hundred employees at present, significant growth is expected as further stages of investment projects are completed and capacity is built up, yet employment is not going to exceed 1000 in the 1990s in most cases, except Audi, where the expected employment is 1800-2000 by 1998

**Portfolio of activities:** specialised in automotive components

**Markets:** a *single customer*, but geographically spread markets, including e.g. South-America in the case of Ford Hungária, i.e. assembly plants of their parent company. Thus basically 100 per cent of output is exported (except a few thousands Opel engines, what is a very small fraction, some 5-6 per cent, of total production)

**Outlook:** rather stable markets as these investments require substantial capital, i.e. these projects present a fairly strong commitment from the respective parent companies, yet depend on overall automotive trends (global and regional demand, competitiveness of parent companies, environmental regulation, technological trends, etc.) and strategic moves of parent companies (sourcing, location, re-location, investment, R&D, etc.)

**Impacts on R&D:** the most important R&D projects are likely be conducted by their parent companies in their home countries, some minor product development (modification) can be envisaged, especially if they are to supply car assemblers in the region other than their parent companies. As Audi is going to assemble its new sports vehicles, too, in Hungary from 1998, an R&D unit, especially for process development and continuous minor product modifications, seems inevitable as well as a strong engineering unit to select, assess and upgrade local and regional suppliers.

###### A.1.2 *Subsidiaries of component manufacturers* and

###### A.2 *'Brown-field' investments*

**Products:** typically mid-tech, some high-tech, mid- or high value-added

**Processes:** state-of-the-art or fairly up-to-date, skill-intensive, less capital and more labour-intensive than in the case of car manufacturers' subsidiaries

**Size:** a few hundred employees at present, further growth is expected as further stages of investment projects are completed and capacity is built up, employment might exceed 1000 in the 1990s in some cases

**Portfolio of activities:** specialised in automotive components

**Markets:** *a number of customers*, usually at least 3-5 leading Western European car manufacturers (Volkswagen, Ford Europe, GM Europe, BMW, Mercedes, etc.) and in some cases Magyar Suzuki, too. Hence the vast majority of output is exported in these cases, as well.

**Outlook:** still fairly stable business opportunities due to the long-established contacts between parent companies and customers. Yet the future of these operations are less certain than for car manufacturers' subsidiaries for two basic reasons. First, their parents have to do business with a number of clients - who, in turn, operate in a highly competitive and volatile, in a way still evolving industry due to (a) new entrants, especially South-Korean ones, and (b) emerging markets, e.g. the Pacific Rim, South-America and to a lesser extent Central and Eastern Europe -, and thus risks are multiplied, future demand is more difficult to forecast. For the very same reason, however, risks can be spread more widely, i.e. among more customers, as their market opportunities vary. Second, these projects - so far, at least - represent a different magnitude of investment, i.e. tens - rather than hundreds - of millions of DM, and hence if future business opportunities become really gloomy, it would be relatively easy to leave, i.e. sunk costs are less significant.

**Impacts on R&D:** the most significant R&D projects are likely be conducted by their parent companies in their home countries. Yet, more recent interviews suggest that they are setting up various R&D and engineering units and Hungarian engineers are increasingly involved in their international R&D projects, conducted in various Western European countries, too.

## B) DOMINANT HUNGARIAN OWNERSHIP

### B.1 *State-owned companies*

**Products:** typically low-tech with some mid-tech, low value-added

**Processes:** usually simple material processing, ageing, general-purpose, machinery, installed in the late 1970s, early 1980s, at best, typically labour-intensive with some exception (i.e. there some capital-intensive companies, too, given technical requirements, e.g. ball-bearings)

**Size:** up to 1,500-2,000 employees at present, shrinking can be expected

**Portfolio of activities:** diversified, a wide range of products; automotive parts are of secondary importance in the case of large, multi-plant companies

**Markets:** *a number of customers*, in the case of car parts usually 1-2 leading Western car parts manufacturers (ITT, Rockwell, etc., i.e. no direct link with Western car manufacturers) and in most cases Magyar Suzuki, too. A considerable part of their automotive parts output is exported in these cases, as well.

**Outlook:** rather uncertain, their customers might find cheaper suppliers.

**Impacts on R&D:** hardly any in-house R&D projects or demand for extra-mural ones can be expected from them.

*B.2 Privatised former state-owned companies (MBO-ESOP)*

**Products:** typically mid-tech or low-tech, mid-value-added

**Processes:** similar to B.1. type companies, usually somewhat less obsolete

**Size:** medium or large

**Portfolio of activities:** medium-sized ones are usually specialised in automotive components, large ones are diversified, then car parts are often of secondary importance

**Markets:** similar to B.1. type companies.

**Outlook:** slightly more promising than for B.1. type companies (that is why their managers and employees acquired ownership stakes in these companies, as opposed to B.1. types). However, as privatisation has been financed through loans - although favourable ones - debt service might threaten their future since hardly any profits can be retained for badly needed investments (in machinery, product development and marketing).

**Impacts on R&D:** some in-house R&D projects or demand for extra-mural ones can be expected from them.

As for *private companies* and *joint ventures with dominant Hungarian private ownership*, it would not be sensible to continue the above analysis as they differ considerably from each other, i.e. their products, processes, market opportunities can vary on a very wide scale. Two distinctive features, however, can be pointed out. First, usually they are much smaller than the above companies. Second, the so-called aftermarket is usually much more significant for them than for the larger ones.

## 5 INTERNATIONAL CO-OPERATIVE AGREEMENTS IN SOFTWARE ENGINEERING

Statistics are only available on this sector for the period of 1993-94, hence one has to be cautious in an attempt to provide quantitative analysis. Figures do not suggest any major change in that short period. One striking development is the declining foreign ownership, yet it would be a mistake to conclude that foreign firms are leaving the sector. On the contrary, they are more and more active, like all over the world in this fast growing business.<sup>28</sup>

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<sup>28</sup> 1992 data are only available for all 'computer related activities' (72) in Hungary, which sector includes hardware consultancy (721), software consultancy and supply (722), data processing (723), data base activities (724), maintenance and repair of office and computing machinery (728) as well as other computer related activities (729). All these activities combined, sales rose from 5.0 billion forints in 1992 to 56.6 billion in 1994. Hence this is a fast growing business in Hungary, too.

**Table 17: Software consultancy and supply (722)**  
(data in million Hungarian forint, unless otherwise indicated)

	1992	1993	1994	1995
Sales	n.a.	18,382.1	22,297.5	n.a.
<i>of which</i> exports	n.a.	2,247.5	2,760.0	n.a.
Exports/sales	n.a.	12.2%	12.4%	n.a.
Average statistical employment (heads)	n.a.	3,785	4,251	n.a.
Number of companies (units)	n.a.	771	964	n.a.
Equity	n.a.	5,964.7	5,976.6	n.a.
<i>of which</i> : foreign ownership	n.a.	2,297.0	1,493.1	n.a.
state ownership	n.a.	551.9	640.2	n.a.
Share of foreign ownership	n.a.	38.5%	25.0%	n.a.
Pre-tax profits	n.a.	205.2	685.7	n.a.
<i>of which</i> : profits	n.a.	1,184.6	1,766.3	n.a.
losses	n.a.	-979.7	-1,080.6	n.a.
Net profits	n.a.	-6.8	253.0	n.a.
Labour costs	n.a.	4,321.0	4,688.3	n.a.
Assets	n.a.	15,536.3	18,628.0	n.a.
Value added	n.a.	5,735.5	6,664.7	n.a.
Productivity (sales/employee)	n.a.	4.9	5.2	n.a.
Net profit/sales	n.a.	-0.0%	1.1%	n.a.

*Source:* Ministry of Industry and Trade and author's calculation

*Note:* Only double-book-keeping companies are included

Interviews, case studies and press reports do suggest that international co-operative agreements are of primary importance in this sector.

Some Hungarian software firms, most notably Graphisoft, develop software packages in close co-operation with hardware firms, in this case with Apple, for world-wide distribution.

Graphisoft is a leading firm in the market of architectural CAD-CAM packages. It used to be owned by its founders, that is, Hungarian software engineers. More recently however, Japanese investors have acquired a certain stake. Details of this deal have not been disclosed, but industry analyst assume the Japanese share to be around 30-40 per cent.

Other companies are also developing original packages, e.g. Recognita for character recognition, and to be found, too, among the leaders in their particular market segments.

A sub-group of these companies can be regarded as 'subcontractors' of leading foreign software firms, i.e. they develop certain part of packages. In these cases the whole development project is financed, integrated and overseen by the foreign partner, who also distributes these packages under its brand name.

A second group of software firms provide application specific packages for large users, such as government agencies, banks, major companies, publishing houses, etc. Most of them are integrated into foreign firms either by equity or non-equity links.

A third group of software firms provide various services and packages related to Internet and other networks. Some of them have been set up by foreign investors, but manned primarily by Hungarian staff.

Yet another group of companies provide 'localised' versions of leading applications, e.g. Microsoft packages, and support services for the users. Obviously they are closely co-operating with these leading foreign software firms.

Obviously there is a strong competition in these markets, too.<sup>29</sup> On the whole, however, growth prospects are rather promising. International co-operative agreements are likely to have a crucial impact on the fate of the Hungarian companies involved.

Two case studies, based on our questionnaire, have been conducted in the first phase of the project. One firm, S1, is distributing touch screens imported from Western Europe and developing user-specific software packages for the imported hardware. Thus S1 relies on its Western partner in terms of the supply of hardware, and works closely together with its clients in order to develop tailor-made software packages.

The other firm, S2, is adapting complex, integrated control packages, supplied by its Western partner, to the individual needs of its clients. Thus in that case two software firms co-operate with each other and their users.

To sum up, hardly any systematic research has been done by other groups in this sector. Thus it provides both excellent opportunities to achieve original results, and constitutes significant difficulties given the lack of data and former findings, as well as because of the still evolving structures and patterns to be analysed in a coherent, systematic way.

## **6 INTERNATIONAL CO-OPERATIVE AGREEMENTS IN THE ELECTRONICS INDUSTRY**

### **6.1 FDI and export-led dynamic growth**

Consumer electronics (323) is one of the most dynamic industrial sectors in Hungary in terms of sales, productivity gains and the improvement of financial performance.

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<sup>29</sup> Given the highly differentiated needs of users, it is a set of quite distinct markets, rather than being a single one.

**Table 18: Manufacture of consumer electronics goods (323)**  
(data in million Hungarian forint, unless otherwise indicated)

	1992	1993	1994	1995
Sales	11,049.8	15,472.6	26,580.8	48,526.8
<i>of which</i> exports	3,304.9	4,318.4	8,645.5	18,601.1
Exports/sales	29.9%	27.9%	32.5%	38.3%
Average statistical employment (heads)	2,451	3,558.1	4,653	5,105
Number of companies (units)	64	61	60	63
Equity	3,246.0	3,325.6	4,332.2	5,157.1
<i>of which</i> : foreign ownership	1,516.6	1,731.2	2,752.6	3,458.6
state ownership	59.8	45.3	44.6	44.6
Share of foreign ownership	46.7%	52.1%	63.5%	67.1%
Pre-tax profits	-178.1	-73.8	580.4	1,571.9
<i>of which</i> : profits	214.5	679.5	1,031.5	2,350.6
losses	-3,926.6	-753.3	-451.1	-778.7
Net profits	n.a.	-105.0	527.0	1,526.4
Labour costs	1,363.1	2,038.2	3,301.6	4,539.3
Assets	n.a.	12,992.3	21,007.5	27,606.8
Value added	n.a.	3,330.4	5,980.8	10,023.1
Productivity (sales/employee)	4.5	4.3	5.7	9.5
Net profit/sales	n.a.	-0.7%	2.0%	3.1%

*Source*: Ministry of Industry and Trade and author's calculation

*Note*: Only double-book-keeping companies are included

Statistics, press reports and previous studies clearly suggest that FDI is the principal form of entry chosen by foreign companies in this sector, too. Quite a few major electronics companies have invested in Hungary - e.g. Grundig,<sup>30</sup> Philips,<sup>31</sup> Samsung<sup>32</sup>, Sony,<sup>33</sup> TDK - and obviously they are the dominant players. Some of them enjoy an off-shore status, and thus their imports and exports were not reported in statistics until 1995. Hence foreign trade data are expected to change considerably in 1996 given the introduction of a new statistical system which includes imports and exports of off-shore companies, too.

In these cases, again, the evolving characteristics of customer-supplier relationships are of primary importance from the point of view of our research.

Yet, other interesting ways of collaboration, partly interwoven with FDI, are also emerging, as illustrated by a short case study in the following sub-section.

<sup>30</sup> Grundig has invested in a joint venture with Philips, called IR3 in a green-field plant in Székesfehérvár producing components for video and combined tv-video sets, and assemble these so-called combi sets for the US market, too.

<sup>31</sup> Philips has invested \$78 million in Hungary by 1996, creating some six thousand jobs in 15 plants. A further \$63 million is planned to invest in Hungary in 1997-98. (*Magyar Hírlap*, May 6, 1997) The domestic sales of the Hungarian Philips plant amounted to \$50 million in 1995, and their exports were significantly higher, that is, \$127 million. (*Figyelő*, April 4, 1996) Philips has followed a mixed investment strategy: it has acquired some former Hungarian companies, also bought some idle buildings, and invested in green-field plants, too. Philips plants manufacture a wide range of consumer electronics and PC parts, components and products.

<sup>32</sup> Samsung manufactures colour television sets and PC monitors in Jászfényszaru.

<sup>33</sup> Sony initially invests \$40 million in the first stage.

## 6.2 Other forms of co-operation: a case study on Videoton Holding Co.

The predecessor of Videoton, called Vadásztölténygyár Rt (Hunting Cartridge and Hardware Factory Ltd.) was established in 1938 in a framework of a major military industry development project.<sup>34</sup> Like all other major companies, it was nationalised after World War II. Its fate - markets, product lines, revenues, investment projects, etc. - depended upon political and economic decisions often made at the highest level (Central Committee of the ruling party, Planning Office, ministries, National Bank, etc.) in the following 40-45 years. Due to these decisions Videoton has become one of the giant electronics firms of the CMEA (Council of Mutual Economic Assistance, the trading bloc of the Soviet empire) countries by the 1970s. Production of radio sets started in 1955, the first black-and-white tv sets were assembled in 1959, and colour tv sets have been produced since 1974. Computers were first manufactured in 1967. Besides, military electronics products were also assembled, and sold primarily for the Soviet military industry and in the Middle East. To sum up, Videoton enjoyed safe market for all the three major product lines: consumer electronics products (radio and tv sets, amplifiers, loudspeakers, etc.) were sold on the domestic market protected with harsh import restrictions and the also protected CMEA markets, civilian IT products (mid-sized mainframe computers) and military hardware (primarily communications systems) mainly on the CMEA markets, especially in the former Soviet Union, where orders were secured by government agreements and there was no import competition due to COCOM restrictions. Thus growth was not limited by competition: revenues exceeded 20 billion forints, and employment reached 20 thousand by the late 1980s.

Politically guaranteed markets collapsed practically overnight in 1990-91. Losses amounted to 2 billion forints in 1990, and Videoton went bankrupt in June 1991. As former privatisation efforts involving foreign investors have failed, primarily due to the lack of clear strategy whether to sell it as a whole or in part, the Hungarian government decided to liquidate Videoton and announced a tender for the sale of assets in the end of 1991. Thus the new owner(s) need not to be concerned with the massive non-performing loans, worth over 30 billion forints. A consortium consisting of the Hungarian Credit Bank, Euroinvest and three individuals, owner-managers of a successful private electronics firm, called Műszertechnika Ltd., won the tender, offering 4 billion forints. The Hungarian Credit Bank was one of the major creditors of Videoton with some 10-12 billion forints non-performing ('frozen') loans. The bank paid all the 4 billion forints, and acquired a 66 per cent stake, while the three individual investors a 27 per cent share. The remaining 5 per cent went to Euroinvest.

In January 1992 the new owners took over the company, and the three individual investors became top managers. In trying to secure access to new markets, they devised a strategy somewhat based on the successful South East Asian development model. Relying on highly skilled and experienced, but cheap labour, as well as on gradually upgraded and modernised

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<sup>34</sup> This section draws on Havas [1995b], [1995c], and [1996c].

infrastructure a series of subcontracting agreements have been made with major Western electronics and engineering firms. Thus Videoton has integrated into the global network of multinational electronics and engineering companies - without incurring huge costs of technological investment project in these particularly risky industries. In other words, their foreign partners have brought capital, know-how and access to markets into these co-operation programmes. (Table 19) Yet, Videoton is also involved in technological development, in particular process innovations, which include the development of task-specific machinery.

**Table 19: Videoton's major co-operation (subcontracting) agreements**

Foreign partners	Products
Alcoa Fujikura (US-Japanese)	electric and electronic car parts
Akai (Japanese)	loudspeaker boxes
GM Opel (German)	loudspeakers
IBM (US)	slider (writing-reading head of hard disk)
ITT Cannon (US)	machined metal parts
Mars Electronics (US)	printed circuit boards
Matsushita (Japanese)	consumer electronics parts and components
Philips (Dutch)	consumer electronics parts and components
Michels Kabel (German)	wiring harnesses
Samsung (South Korean)	tv boxes
Siemens (German)	printed circuit boards
SHW (German)	mechanical automotive parts
Wagner (German)	paint sprayers

*Source:* Videoton Holding

In some cases joint ventures have also been established with foreign partners, e.g. VT Fuba Ltd. with the German firm, Fuba Hans Kolbe, to manufacture printed circuit boards.

As a result of these co-operation agreements and joint ventures, both employment and revenues are increasing again, although employment is still far below the 'historical' peak at 20 thousand. (Tables 20-21) Further growth is expected both in terms of revenues and employment in 1996.

**Table 20: Major data of Videoton Holding Co., 1991-1995**

	1991	1992 <sup>a</sup>	1993	1994	1995
Number of employees	10134	5717	4958	6319	8515
Revenues (million Ft)	10671	9477	11195	14272	14746
Profits before taxation (million Ft)	-3000	-777	-151	-104	481

*Source:* Videoton Holding

<sup>a</sup> change of ownership

**Table 21: Ratio of employees working in subcontracting  
(total employment = 100)**

	1992	1993	1994	1995
Ratio	29.6	45.2	68.0	81.4

*Source:* Videoton Holding

Some buildings of the former Videoton are utilised as an industrial park, i.e. further foreign companies have set up their Hungarian operations in those - also renovated - buildings. These companies, e.g. Alcoa Closure Systems, Bericap, Emerson Electric, Fisher Rosemount, have created a further 500 jobs so far.

In some cases production co-operation leads to more significant foreign investment projects. IBM, for example has been working together with Videoton Mechatronics Kft since November 1994. The two companies jointly manufacture sliders for hard disks. The first phase of production is carried out in IBM's Mainz (Germany) factory, finishing and testing takes place in Székesfehérvár and the final stage again in Mainz. This close production co-operation has required a new software package to control the flow of information and goods, which has been developed jointly by German and Hungarian engineers. The complexity of this task is reflected by the sheer fact that it has taken 9 months to accomplish.

Having realised the advantages of this project, IBM decided to set up a Hungarian subsidiary of IBM Storage System Division. The new company, called IBM Storage Kft, began its pilot production in October 1995 and was officially opened a month later. The plant produces 512 Megabyte and 1 Gigabyte IBM Deskstar hard disks, to be shipped to other IBM plants in Asia and North America. IBM Storage Kft will employ some 1000 people by the second half of 1996. The importance of the investment is further underlined by the fact that this will be IBM's second manufacturing centre in Europe.

Videoton intends to extend the system of subcontracting in a number of ways. Both its foreign partners and Videoton managers want to involve more and more Hungarian suppliers in order to cut costs. Then Videoton would be responsible to co-ordinate the supply chain from the point of view of R&D, production, quality management and logistics. As a part of this effort, but partly beyond that, they also want to set up further industrial parks in Hungary, where they can 'host' both their suppliers, and new foreign investors. In addition, they plan to extend this subcontracting system, broadly defined, to other transition countries, too. Again, they would rely partly on their Western partners, partly on their own resources and experience to turn-around existing companies and to help setting up new ones in industrial parks, and would be responsible to co-ordinate the 'internationalised' supply chain.

Two detailed case studies, based on our joint questionnaire, have been conducted for the project so far, at two subsidiaries of Videoton. To highlight just two points, one of them is developing and producing purpose-built production equipment for Philips, and then use those equipment to produce various components for Philips. However, in its books is not regarded

as R&D, because Philips buys those machines once they are completed, and thus this deal is reported as usual sales. The other one is building very close co-operation with Matsushita (the owner of Panasonic and Technics brands, among others). More and more more components and products are being added quarter by quarter (e.g. electronic components of video recorders, CD players and music centres). As output for Matsushita is increasing, the former main product, namely colour tv-sets under VT brand, is transferred to another Videoton subsidiary.<sup>35</sup>

To sum up, consumer electronics seems to be a relevant sector for our project, too, where two major issues can be analysed: first, the evolving features of co-operation between the dominant foreign investors and their local suppliers, second, the other forms of international co-operation, represented e.g. by Videoton.

## **7 INTERNATIONAL CO-OPERATIVE AGREEMENTS IN THE PHARMACEUTICAL INDUSTRY**

The Hungarian pharmaceutical industry used to be a heavily concentrated one: six major firms accounted for 91% of total revenues and near 100% of total exports of the sector in 1989.<sup>36</sup> Further, imports were severely restricted.

The industry was regarded as the most advanced one in the CMEA, with considerable R&D capabilities. Some original products were even marketed in Western Europe, the USA and Japan. Yet, in most cases these were not medicines, as the huge costs of clinical research, of time-consuming administrative procedures required to obtain certificates and of marketing proved prohibitive for Hungarian companies. Hence 'only' chemical substances were exported in most cases, and thus it was a far less profitable business than selling finished products.

A significant part of R&D capacities, however, was exploited in search for new processes to produce well-known medicines as the Hungarian patent system - in line with the former international system, but in contrast to the new one introduced since the 1960s - used to be based on processes rather than on products. This way the Hungarian pharmaceutical firms, still excellent in the chemical research phase, were able to cut their R&D costs substantially as there was no need to conduct costly clinical research and to bear administrative costs. Their revenues stemming from the exports of these drugs in the CMEA markets, in turn, permitted their original research projects, too, leading to the aforementioned - somewhat limited - successes in the Western markets. They, however, had to pay a price for this strategy: in the

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<sup>35</sup> Another major reason for this shift is the declining market share of VT colour tv-sets: liberalisation of imports together with 'grey' or 'black' imports have undermined its former quasi-monopoly in the domestic market. Further, exports to the former CMEA countries are also declining for similar reasons (import liberalisation, 'grey' and 'black' imports).

<sup>36</sup> This brief account of the Hungarian pharmaceutical industry relies on Antalóczy [1996], György [1993], [1994] as well as György and Vincze [1993].

case of these 'me-too' drugs their market opportunities were restricted to the CMEA and the domestic market.<sup>37</sup> Thus they were only partially integrated into the global pharmaceutical industry.

Since the 1970s, nonetheless, more and more Hungarian pharmaceutical firms based their strategies partially on Western licences, and thus their behaviour was in accordance with the international practice. Moreover, the Hungarian patent system was completely changed in 1995, and now it is line with the international practice. Further, imports were also liberalised, and thus the market share of the Hungarian firms was constantly declining in the domestic market: from 75% in 1992 to 46% in 1995.

As Table 22 shows there has been a healthy growth, based on improved productivity, and thus coupled with remarkable financial performance in this sector, too.

**Table 22: Manufacture of pharmaceuticals, medicinal chemicals (2423)**  
(data in million Hungarian forint, unless otherwise indicated)

	1992	1993	1994	1995
Sales	63,064.1	85,133.6	106,256.9	127,483.1
<i>of which</i> exports	31,049.6	37,389.1	44,193.9	52,785.3
Exports/sales	49.2%	43.9%	41.6%	41.4%
Average statistical employment (heads)	20,117	18,637.0	17,828	17,545
Number of companies (units)	61	64	63	67
Equity	38,515.8	41,551.1	45,365.3	49,898.1
<i>of which:</i> foreign ownership	3,699.4	7,964.1	14,327.4	29,317.8
state ownership	28,777.9	26,878.8	22,632.0	13,377.4
Share of foreign ownership	9.6%	19.2%	31.6%	58.8%
Pre-tax profits	2,645.5	8,362.2	14,894.1	20,923.3
<i>of which:</i> profits	4,481.7	9,639.4	15,239.9	21,620.6
losses	-1,836.2	-1,279.1	-345.7	-697.2
Net profits	n.a.	6,551.6	14,201.2	20,078.3
Labour costs	11,905.7	14,831.7	18,636.0	23,155.0
Assets	n.a.	107,939.5	124,834.2	148,410.1
Value added	n.a.	34,537.9	42,551.6	50,974.6
Productivity (sales/employee)	3.1	4.6	6.0	7.3
Net profit/sales	n.a.	7.7%	13.4%	15.7%

*Source:* Ministry of Industry and Trade and author's calculation

*Note:* Only double-book-keeping companies are included

Major companies have already been privatised, again, in most cases by foreign investors, either by medium-sized Western European or US pharmaceutical firms or by financial investors. As opposed to most other industries, it is even reflected at the sectoral level, too: the share of foreign ownership increased from less than 10 per cent in 1992 to almost 60 per

<sup>37</sup> Substantial research efforts would be required to establish if they would have been able to market their products in the heavily protected Western markets, had they followed a different strategy vis-à-vis licences. Moreover, this - otherwise exciting - question would lead our research beyond the scope of the current project.

cent by 1995. In fact it can be regarded as another indicator of the ‘heavy weight’ of the major companies.

Preliminary findings suggest that the participants bring complementary assets into these partnerships. The domestic pharmaceutical firms have accumulated strong (chemical) R&D skills and capabilities, while they have been fairly weak in marketing and some of them have been heavily indebted, i.e. they have badly needed fresh capital to service loans, and hence ease financial burdens. Their foreign partners, on the other hand, are ‘agressive’, ‘young’ companies, and thus lacking long-established tradition in R&D and their own original drugs. Yet, they are financially strong and have access to various marketing channels, hence they are growing through acquisitions. These cases, therefore, raise exciting questions about the co-operation of partners with different expertise, experience and strength.

Even more intrestingly, in one case first an international financial institute acquired a minority stake, and was strongly pressing the Hungarian government agencies to find an industrial partner to reduce risks and state ownership. Surprisingly enough, the state ownership was lowered from 58% to 28% in a rather differnt way: the Hungarian State Holding Co. unexpectedly floated 30% of the shares in 1994. Moreover, a year later, it sold its remaining stake of 28% to an Anglo-Saxon investment bank, which, in turn, sold a 7% stake immediately through international stock exchanges. Eventually, an industrial investor bought the 30% stake of the international financial institute and the 21% holding of the investment bank. Thus this series of deals have resulted in a fairly interesting ownership structure: a foreign firm acquired a 51% majority stake, while 49% of the shares are held by a number of financial investors. Moreover, the industrial investor is a family-owned firm, while almost 50% of shares are traded at various stock exchanges. Thus quite interesting lessons might be drawn from this case, too.

Another major Hungarian pharmaceutical company has been privatised via flotation of its shares, too, and its management wants to avoid any industrial investors with a considerable stake. As the managing director pointed out in a recent interview:

“If you are independent, you can have a wider range of alliances, be it for R&D or marketing.”

This company, too, has some original drugs and also produces other medicines under licences for its Western partners, besides the so-called generic drugs. It is setting up joint ventures in other Central and Eastern European countries to preserve its significant market shares. Thus it would be also an interesting case for our project.

Customer-suppliers relationships, on the other hand, are of a lesser importance in these cases, i.e. the impacts of FDI on local suppliers are not significant in terms of the introduction of new products, processes, managerial and organisational innovations.

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