

FOREIGN DIRECT INVESTMENT AND CORPORATE RESTRUCTURING IN HUNGARY*

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Abstract

Large-scale foreign direct investment and intensive business activities by multinational companies have played a crucial role in Hungary's transition to a market economy. The massive inflow of foreign capital has supported the macro-economy by spurring effective demand, contributing substantially to its long-lasting and stable economic growth, as well as to drastic changes in the corporate sector through the conversion of ownership structure, improvements in production system, strengthening market competitiveness, modernization of management systems, and revitalization of R&D and innovation activities. In spite of all this, Hungary still has many problems with corporate restructuring. The Hungarian government and the business sector are now at a turning point in their passive strategy of economic transformation.

Keywords: Hungary, Foreign Direct Investment (FDI), Corporate Restructuring

JEL classifications: F21, F23, O33, P21.

I. *Introduction*

In May 2004, Hungary joined the European Union with seven other former socialist countries in Central and Eastern Europe (CEE) and the Baltic region,¹ materializing the countries long-cherished dream of re-integrating with Europe. The fifteen-year reform efforts to tackle systemic transformation by the Hungarian government and its citizens finally paid off after their decision to break away from the socialist regime.

The road to the EU accession has not been easy since the 'European Agreements', which proclaimed that the European club would allow membership from CEE countries, were signed

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¹ The Czech Republic, Poland, Slovakia and Slovenia in Central and Eastern Europe, and Lithuania, Estonia and Latvia in the Baltic region. The Mediterranean countries of Malta and Cyprus also acquired EU membership on this occasion.

in December 1991.² However, Hungary, which had already been engaged in drastic reforms of its socio-economic systems before its application for membership in March 1994, had relatively smoothly met three criteria — politically, economically, and administratively — to be part of the EU, which was adopted at the Copenhagen summit in June 1993. As a result, Hungary was placed on the priority list of candidates for “Agenda 2000,” which was drawn up in July 1997 to further clarify the policy of the EU enlargement, together with Poland, the Czech Republic, Estonia and Slovenia. Right after this, the Hungarian government started diplomatic negotiations with the EU committee with the aim of coordinating between ‘Acquis Communautaire’ — the code of EU laws and regulations — and Hungarian legislation, and settled all difficult issues in about thirty fields just before European leaders officially confirmed on December 13, 2002 that the EU would welcome new members including Hungary.³ In this regard, Hungary had always been a ‘front runner’ in the process of the EU enlargement towards the east.

One of the main reasons why Hungary has been able to promote its systemic transformation is that this small country attracted relatively large amounts of foreign direct investment (FDI). The Hungarian government has been making great efforts to increase foreign investment from the very early stages of its transition to a market economy. In fact, Hungary had been a leader in the region in terms of the total accumulated FDI inflows through to 1997. Although Poland and the Czech Republic have ranked higher than Hungary since 1998 in that category, the country received 24.4 billion USD as FDI during the twelve years from 1991 to 2002, accounting for 19.2% of the total in Central Europe and 14.9% of the total in CEE region.⁴ This vast influx of foreign capital strengthened the Hungarian economy by spurring effective demand, contributing significantly to the restructuring of domestic firms through the conversion of corporate ownership structure, improvements in production system, strengthening market competitiveness, modernization of management systems, revitalization of R&D and innovation activities. In other words, FDI has been a powerful ‘driving force’ for Hungary to create an effective market economy, which was one of prerequisites for joining the EU. As Kárpáti (2003) states, the success of the Hungarian economy during this period was largely dependent upon foreign investment.

This paper examines corporate restructuring in Hungary during the transition period with a special attention to FDI. The next section presents an overview of the roles of FDI in the growth and stability of Hungary’s macro-economy. Section III describes the effects of foreign investment and business activities of multinational corporations on reforms of corporate ownership and governance and on the improvement of efficiency in the management and production systems in the Hungarian firms. Section IV examines the contributions of foreign companies to R&D and innovation activity. Concluding remarks follow.

² The “European Agreements” set forth necessary matters regarding special economic relations between the EU and CEE countries, such as, political dialogue, free mobilization, economic, cultural and financial cooperation between the two, as well as the candidate nations’ obligation to coordinate their domestic laws to meet designated EU standards (Tanaka, 1999, pp.8-9).

³ The success of these negotiations is owed not only to the Hungarian government’s diplomatic efforts but also largely to political decisions of the EU. Transitional measures included a moratorium on the adoption of EU standards had been agreed upon in a wide variety of negotiated areas. For details on ‘Agenda 2000’ and ‘Acquis Communautaire’ as well as on the process of negotiations between the EU and CEE countries, see Tanaka (1999, pp. 8-12), Momozumi (2000, pp. 521-535) and Tanaka (2002, pp. 161-168).

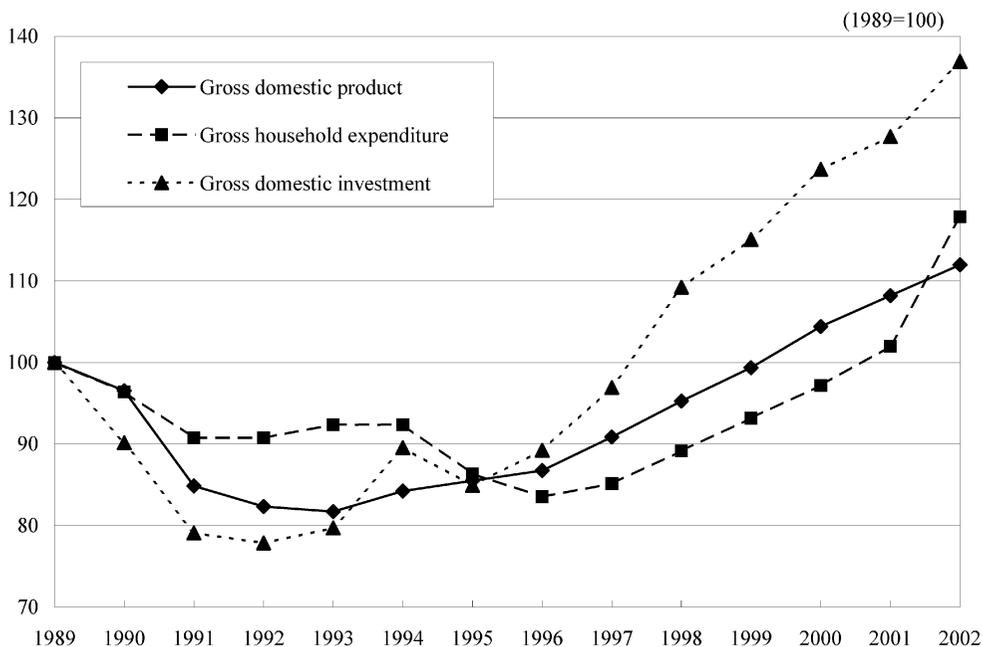
⁴ Calculated based on UNCTAD (2003, p. 252).

II. Roles of Foreign Direct Investment in the Stabilization and Growth of the Macro-economy

Hungary has enjoyed positive economic growth for ten straight years through 2003 after coming out of a debilitating economic slump which had continued until 1994 due to the confusion arising from the abandonment of its planned economy (Table 1 (a)). According to preliminary data issued by Hungary's Central Statistical Office (KSH), the real GDP growth rate for 2003 reached 2.9%, with the last ten year average standing at 3.5%. Since leading Hungarian think tanks foresee that the country will have from 3.3 to 3.7% growth for 2004 (Konjunktúraelemzések, 2004, 4. o.), it is almost certain that Hungary will continue its economic growth also after the EU accession. This long-lasting economic boom has steadily pushed up Hungary's national income, leading to an increase in its per capita GDP on a purchasing power parity basis to 53% of the average of 15 EU economies in 2002 (Havlik, 2002, p. 4).

Investment activities have been a key factor in Hungary's long-term and stable economic growth. In contrast to its flagging household expenditures, gross domestic investment has continued to expand at a rapid pace after reaching its lowest point in 1992, and as shown in Figure 1, has grown 36.9% larger than in 1989, the last year of the socialist period. Hungary's booming economy of recent years has been driven by these intensive investment activities with

FIG. 1. EVOLUTION OF GDP, HOUSEHOLD EXPENDITURE AND DOMESTIC INVESTMENT, 1989-2002



Source: Author's illustration based on KSH, *Magyar Statistikai Évkönyv 2002* (2003, 12. o.).

TABLE 1. SELECTED INDICES OF THE MACRO ECONOMY

	1990	1991	1992	1993	1994
(a) Macroeconomic indices					
Gross domestic product ¹	▲ 3.5	▲ 11.9	▲ 3.1	▲ 0.6	2.9
Gross industrial production ¹	▲ 3.3	▲ 18.3	▲ 9.7	4.0	9.6
Gross domestic investment ¹	▲ 9.8	▲ 12.3	▲ 1.5	2.5	12.3
Consumer price index ¹	28.9	35.0	23.0	22.5	18.8
Unemployment rate (ILO method)	-	-	9.8	11.9	10.7
Trade balance (million USD)	939	▲ 1,195	▲ 374	▲ 3,623	▲ 3,853
Total exports (million USD)	9,588	10,187	10,705	8,907	10,701
Total imports (million USD)	8,649	11,382	11,079	12,530	14,554
Current account balance (million EUR)	109	223	235	▲ 2,959	▲ 3,300
(b) FDI indices ²					
Annual FDI inflow (million EUR) ³	244	1,186	1,142	2,039	966
Accumulated FDI stock (million EUR) ³	244	1,430	2,572	4,610	5,576
Annual FDI inflow per capita (EUR) ⁴	24	114	110	197	93
Accumulated FDI stock per capita (EUR) ⁴	24	138	248	445	539
Direct investment income (million EUR)	▲ 19	▲ 26	▲ 34	▲ 48	▲ 98
Number of foreign capital-affiliated enterprises ⁵	5,693	9,117	17,182	20,999	23,557
Total equity capital (billion HUF) ⁵	274.2	475.6	713.1	1,113.2	1,398.2
Total foreign capital participation (billion HUF) ⁵	93.2	215.0	401.8	662.9	833.5
Foreign capital participation rate (%) ⁵	34.0	45.2	56.3	59.5	59.6

Notes: ¹ Figures are year-on-year percentage changes.

² Annual FDI inflow, accumulated FDI stock, per capita FDI inflow, per capita accumulated FDI stock

³ Figures from 1990 to 1994 exclude reinvestment earnings.

⁴ Calculated by the author based on total number of population of each year.

⁵ Figures from 1990 to 1994 are on a subscribed capital basis.

Source: Compiled by the author based on KSH, *Magyar Statistikai Évkönyv* (various years), KSH (2003a, 11 o.), Central Statistical Office website (<http://www.ksh.hu/>).

their multiplying effects. In particular, foreign enterprises have contributed significantly in the form of FDI with positive crowd-in effects that have led to additional investment by domestic corporations (Mišun and Tomšik, 2002).⁵

The concentration of FDI in Hungary during the early 1990s is considered the result of political efforts to broadly open up its domestic market to foreign investors and intensely involved them in the privatization of state-owned enterprises. According to some analysts, such policies may have been taken not because the Hungarian government was prescient about the future of its national economy, but largely because of Hungary's political and economic situation at the time, such as the large amounts of foreign debt, serious current-account and budget deficits, mounting pressure from international organizations that feared the government would default on the official aid loans, and active lobbying activities by multinational corporations and by their supporting governments in order for the corporations to take part in the privatization program. Regardless of the above factors, however, it is a fact that the Hungarian government succeeded in attracting large amounts of foreign capital especially in

⁵ Mišun and Tomšik (2002) verified FDI's spill-over effects on domestic investment in Hungary, the Czech Republic and Poland by using panel data and investment models based on the mix of the stock adjustment theory and the adaptive expectation theory regarding investment for economic growth, which revealed that Hungary from 1990 to 2000 and the Czech Republic from 1993 to 2000 both enjoyed FDI's crowd-in-effects while Poland from 1990 to 2000 had crowd-out-effects.

AND FOREIGN DIRECT INVESTMENT, 1990-2003

1995	1996	1997	1998	1999	2000	2001	2002	2003
1.5	1.3	4.6	4.9	4.2	5.2	3.7	3.5	2.9
4.6	3.4	11.1	12.5	10.4	18.7	3.6	2.8	6.4
▲ 5.3	5.2	8.5	12.7	5.3	7.4	3.2	7.8	3.1
28.2	23.6	18.3	14.3	10.0	9.8	9.2	5.3	4.7
10.2	9.9	8.7	7.8	7.0	6.4	5.7	5.8	5.9
▲ 2,599	▲ 2,440	▲ 2,134	▲ 2,701	▲ 2,996	▲ 3,988	▲ 3,184	▲ 3,275	▲ 4,667
12,867	15,704	19,100	23,005	25,013	28,092	30,498	34,337	43,008
15,466	18,144	21,234	25,706	28,008	32,080	33,682	37,612	47,675
▲ 1,270	▲ 1,408	▲ 1,812	▲ 3,026	▲ 3,531	▲ 4,380	▲ 3,612	▲ 4,900	▲ 6,488
3,399	2,143	3,165	2,381	2,489	2,645	2,575	3,068	3,439
8,975	11,118	14,283	16,664	19,153	21,798	24,373	27,441	30,880
328	208	307	232	243	259	252	302	339
865	1,077	1,387	1,621	1,868	2,132	2,390	2,697	3,045
▲ 149	▲ 190	▲ 377	▲ 792	▲ 787	▲ 824	▲ 867	▲ 1,050	▲ 3,304
24,163	25,671	26,083	26,264	26,438	26,634	26,809	25,693	-
1,972.8	2,438.2	3,470.4	5,001.8	6,282.8	7,608.1	7,787.5	8,703.9	-
1,466.2	1,945.1	2,867.3	4,012.6	5,086.0	5,998.0	6,195.2	7,020.7	-
74.3	79.8	82.6	80.2	81.0	78.8	79.6	80.7	-

(EUR) and FDI income are net figures based on a balance-of-payments basis.

official statistics available at the Magyar Nemzeti Bank website (<http://www.mnb.hu/>) and the Hungarian

the privatization of the state-owned enterprises by continuously offering investment incentives such as large scale corporate tax holidays and the establishment of custom-free zones in line with the basic principle of opening up the market and letting foreign investors participate in privatizing state-owned businesses.⁶ In fact, 66% of the total amount of FDI for Hungary between 1990 and 1999 was invested in privatizing state-owned enterprises (Antalóczy-Sass, 2002, 8. o.). The Hungarian government's generosity in selling off its largest public corporations to foreign strategic investors led to the expansion of greenfield investment as well as to its export-driven economic growth as noted by Mihályi (2001, pp. 120-128).⁷

As Oblath and Richter (2002) and Antalóczy-Sass (2002) stress, foreign companies now are increasing their additional investment in Hungary by using earnings gained from their business in the country (i.e. reinvestment earnings).⁸ As a result, the gap between the amount of capital inflow from outside and that of investment by foreign companies including those in

⁶ Regarding the policy measures taken by the Hungarian government to enhance investment incentives, see Antalóczy-Sass (2003a) and Iwasaki and Sato (2004).

⁷ The ratio of FDI to the total amount of privatization earnings obtained by the Hungarian government had rapidly declined as follows: 1996: 32.3%, 1997: 15.1%, 1998: 0.8%, 1999: 0%. (Antalóczy-Sass, 2002, 50. o.)

⁸ 'Reinvestment earnings' are: (i) earnings of Hungarian affiliates/subsidiaries of foreign corporations that are not allocated to investors as dividends; and (ii) earnings of Hungarian branch offices of foreign corporations and those of foreign non-corporate entities that are not directly remitted to investors.

Hungary has been widening at a rapid pace.⁹ The amount of this kind of reinvested earnings from 1996 to 2000 accounted for as much as 44.9% of the total amount of FDI during the same period (Antalóczy-Sass, 2002, 46. o.). This means that investment by foreign companies in Hungary is now far from diminishing and is still active enough to stimulate the economic growth by shoring up effective demand on the same large scale as that of the mid-1990s, although capital sources of investment continue to sophisticate its main form with expansion of business activities by foreign companies.

III. *Foreign Direct Investment and Corporate Restructuring*

Large-scale and continuous foreign capital inflows have completely changed the supply side of the Hungarian economy, that is, the corporate sector. The number of Hungarian companies with foreign participation increased 4.5 times from 1990 to 2002, and the amount of investment by foreign capital reached 720.7 billion HUF, or 80.7% of the total amount of equity capital of all Hungarian companies during the same period (Table 1 (b)). The role of these foreign enterprises has rapidly expanded in the employment, production, investment, and trade activities (Table 2). In addition, as shown in Table 3 indicating the sectoral breakdown of FDI in 2002, foreign capital has made inroads into every area of the Hungarian economy, especially in manufacturing, wholesale and retail trade, and real estate and renting businesses. The same can be said about the financial sector. By the end of 2000, foreign capital increased to 66.6% of the total subscribed capital in the banking sector and the number of banks with a foreign participation rate of more than 50% surged to 68.1% of all Hungarian commercial banks (Várhegyi, 2001, 583-584. o.). According to Hamar (2004, 42. o.), the share of FDI of the total subscribed capital in the financial service sector also expanded from 44% in 1996 to 89% in 2001.

In Hungary, 'foreign companies' (külföldi érdekeltségű vállalkozás) are defined as those with a foreign participation rate of more than 10%. Almost all foreign companies in the country, however, far exceed such standard, as seen in the fact that the share of 100%

TABLE 2. POSITION OF FOREIGN COMPANIES IN THE CORPORATE SECTOR¹ (%)

	1994 ²	1995 ²	1996 ²	1997 ²	1998 ²	1999 ²	2000 ³	2001 ³
Employment	24	33	29	32	36	37	35	35
Net sales revenue	38	41	44	48	48	50	47	49
Added value	39	39	43	48	48	49	44	45
Investment	51	60	54	60	60	59	53	50
Exports	54	58	69	75	77	80	73	81
Imports	57	63	70	74	74	76	71	79

Notes: ¹ Figures indicate share of foreign-affiliated enterprises with 10 percent or more of foreign ownership in the overall corporate sector.

² Calculation on a subscribed capital basis.

³ Calculation on a equity capital basis.

Source: Based on KSH (2003a, 16, 21. o.) and Fazekas (2003, 220. o.).

⁹ Until 2003, the official FDI statistics on a balance-of-payments basis did not include the data on reinvestment earnings. Figures in Table 1 (b) are those revised in 2004.

TABLE 3. FOREIGN DIRECT INVESTMENT BY INDUSTRIAL SECTOR, 2002

Industry, branch	Enterprises		Total equity capital		FDI share in total equity capital (%)
	Number	Share (%)	Billion HUF	Share (%)	
Agriculture	861	3.4	94.6	1.1	89.6
Mining and quarrying	59	0.2	18.1	0.2	85.6
Manufacturing	3,692	14.4	3,990.7	45.8	79.9
Food, beverages and tobacco products	435	1.7	528.1	6.1	88.9
Textiles	414	1.6	66.1	0.8	91.7
Leathers	107	0.4	18.8	0.2	96.3
Wood and wood products	165	0.6	34.5	0.4	92.8
Pulp, paper, paper products and printing	378	1.5	120.3	1.4	88.5
Fuel and chemical products ¹	137	0.5	1,064.3	12.2	42.3
Rubber and plastic products	273	1.1	133.1	1.5	92.9
Other non-metallic mineral products	157	0.6	184.0	2.1	94.3
Basic metals and fabricated metal products	519	2.0	128.7	1.5	92.3
Machinery and equipments	328	1.3	227.2	2.6	87.4
Electrical and optical equipments	457	1.8	675.6	7.8	96.9
Transport equipments	108	0.4	786.6	9.0	97.0
Others	214	0.8	23.4	0.3	90.2
Electricity, gas and water supply	52	0.2	460.6	5.3	70.6
Construction	1,004	3.9	84.5	1.0	87.2
Wholesale, retail trade and repair	10,618	41.3	846.6	9.7	94.7
Hotels and restaurants	1,221	4.8	111.8	1.3	68.2
Transport, storage, post and telecommunications	766	3.0	1,086.2	12.5	63.8
Financial intermediation	220	0.9	896.8	10.3	92.3
Real estate and renting and business activities	6,356	24.7	1,043.2	12.0	83.7
Others	844	3.3	70.8	0.8	84.3
Total	25,693	100.0	8,703.9	100.0	80.7

Notes: ¹ Includes coke, refined petroleum products, nuclear fuel and man-made fibers.

Source: Based on KSH, *Magyar Statistikai Évkönyv 2002* (2003, 294-295. o.)

foreign-owned enterprises in the total number of Hungarian foreign companies increased from 1.8% in 1989 to 61.8% in 2000 while the share of joint venture companies with a domestic participation rate of over 50% sharply fell from 86.7% to 17.2% during the same period (Inzelt, 2003, p. 13). By the end of the 1990s, 76 of the top 100 of the world's largest corporations had entered the Hungarian market in some form (Antalóczy-Sass, 2003b, 20. o.). Currently, establishing a 100%-owned subsidiary is the most common way of doing business in Hungary for major multinational companies. This trend can be seen also for Japanese companies operating in Hungary. As of March 2003, 61 or 70.1% of 87 Japanese-capital-affiliated enterprises in Hungary were wholly owned subsidiaries of Japanese parent companies or those of Japanese companies' affiliates in Europe (Table 4). This trend has been gaining momentum against the background of an increasing number of Japanese companies coming to the country as suppliers for European affiliates of Japanese electronic and auto manufacturers. Hungarian affiliates of these Japanese corporations such as Panasonic, SONY and SUZUKI, as well as those of other multinational enterprises such as Audi, Philips, IBM, Nokia, GE and Opel, have now become the leading companies in Hungary. This is why Hungary is known as a country, along with Ireland and Malaysia, whose industry is overwhelmingly dominated by foreign capital (Hunya, 2002, p. 11).

TABLE 4. TYPES OF JAPANESE ENTERPRISES IN HUNGARY BY INDUSTRIAL SECTOR, AS OF MARCH 2003

	(No. of enterprises)				
	Manufacturing	Trade	Finance	Others ¹	Total
Subsidiaries/Affiliations	33	33	1	7	74
Wholly owned Japanese corporations	19	11	0	3	33
Joint venture enterprises	5	5	0	3	13
Others ²	9	17	1	1	28
Liaison offices	5	5	0	3	13
Total	38	38	1	10	87

Notes: ¹ Includes construction, consulting services and software development.

² Includes corporations in European countries.

Source: Compiled by the author based on JETRO Budapest Office (2003).

As already mentioned in the previous section, the priority of selling off state-owned enterprises to strategic investors, as well as greenfield investment activities by multinational corporations, has led to the emergence of strong corporate ownership of Hungary's core businesses. Direct corporate control by these new types of owners has been effective in alleviating so-called 'agency problems' and has prevented Hungary from being troubled by serious corporate governance woes — especially, those arising from heavy insider-control ownership — which have confronted other post-communist countries. In this context, it is remarkable that Török (1998, p. 172) presented the view that in Hungarian companies, management and supervisory organs including the Board of Directors, do not have a substantial influence on corporate strategies except for daily management issues.

Foreign companies thus formed a 'mega economic sector' in Hungary (Nishimura, 2000, p. 336) and brought about significant changes in the corporate ownership and governance structure of Hungarian firms. The increased number of foreign-owned companies has had a remarkable influence on Hungary's industrial and trading structures, especially in its manufacturing sector, and greatly contributed to the improvement of its productivity.

The penetration of foreign capital has resulted in drastic changes to Hungary's industrial structure. From 1995 to 2002, the share of the manufacturing sector in the total industrial production increased by 8.0% to 90.4% (Table 5). During the same period, production in the machine industries, in which about half of Hungary's total FDI has been concentrated, jumped phenomenally to 29.0% of the total industrial production, while the share of traditional industrial sectors in the socialist era including food, wood and paper, and light industries combined declined by as much as 10.6%. The market environment also greatly changed during this time. For example, according to estimates by Éltető (2001, pp. 6-10), the market share of 100% domestically-owned enterprises was completely surpassed by that of foreign-affiliated companies during the seven years from 1993 to 1999. The share of foreign enterprises in the manufacturing sector and in the export market increased to 71.8% and to 88.6% respectively in 1999. Based on a review of financial data of Hungarian manufacturing companies from 1996 to 2000, Hamar points out that there was a significant positive relation between these companies' foreign participation rates and their degrees of export orientation, which is consistent with the findings of Éltető (2001).¹⁰

¹⁰ The 'degree of export orientation' is defined as the share of exports in total net sales.

TABLE 5. COMPOSITION OF GROSS INDUSTRIAL OUTPUT BY SUBSECTORS, 1995-2002¹

	(Total gross output = 100)							
	1995	1996	1997	1998	1999	2000	2001	2002
Mining and quarrying	1.3	1.3	1.0	0.7	0.7	0.5	0.6	0.5
Manufacturing	82.4	82.3	84.2	86.2	87.7	89.8	90.1	90.4
Light industries ²	33.8	32.9	29.3	27.4	26.2	24.4	23.9	23.2
Food, beverages and tobacco products	24.1	23.7	20.2	18.4	17.5	15.8	15.1	14.9
Textiles	3.4	3.3	3.0	3.0	3.1	3.0	2.9	2.7
Leathers	0.9	0.8	0.8	0.8	0.7	0.6	0.6	0.6
Wood and wood products	1.3	1.3	1.2	1.2	1.0	1.0	1.1	1.1
Pulp, paper, paper products and printing	4.1	3.8	4.1	4.0	3.9	4.0	4.2	3.9
Raw material industries ²	33.6	32.4	31.2	29.2	25.4	24.2	23.7	23.2
Fuel products	7.4	7.2	6.4	6.6	5.2	4.4	4.1	4.0
Chemical products	11.4	10.7	10.5	8.7	7.2	6.8	6.3	6.2
Rubber and plastic products	2.8	2.8	2.9	3.0	3.0	3.0	3.3	3.5
Other non-metallic mineral products	3.3	3.3	3.1	3.2	2.9	2.7	2.7	2.7
Basic metals and fabricated metal products	8.7	8.4	8.3	7.7	7.1	7.3	7.3	6.8
Machine industries ²	13.7	16.1	22.4	28.4	35.0	40.1	41.4	42.7
Machinery and equipments	4.8	4.5	4.1	4.0	4.0	3.7	4.0	5.1
Electrical and optical equipments	4.0	5.6	9.2	12.2	17.5	23.0	24.0	24.5
Transport equipments	4.9	6.0	9.1	12.2	13.5	13.4	13.4	13.1
Others	1.2	1.1	1.0	1.1	1.1	1.1	1.2	1.4
Electricity, gas and water supply	16.3	16.4	14.8	13.1	11.6	9.7	9.3	9.1

Notes: ¹ All figures are based on 2002 prices.

² A category introduced by the author for special reference.

Source: Based on KSH (2003c, 266. o.).

Under these circumstances, the total trade volume of Hungary surged 10.8 times from 1992 to 2002, while that with EU members rose at a more rapid pace, marking a 15.3 times increase over the same period.¹¹ Such dominance of foreign enterprises over the export activities is closely related to the fact that the affiliates of multinational corporations in Hungary have continued to actively supply their products to EU markets in line with their global marketing strategies.

Many previous studies indicate that foreign firms greatly contributed to the improvement of productivity of the Hungarian corporate sector. For example, Hunya (2002, p. 12) estimates that labor productivity of foreign companies was as much as 3.1 times higher than that of domestic firms in 1999, the largest difference noticed among ten Central and Eastern European countries. The statistical office also recognized that a significant labor productivity gap does exist between the two groups (KSH, 2003d). They estimate that the average added-value per employee of foreign firms was 1.8 times higher than domestic corporations, adding that much larger gaps were observed in several industrial categories (Table 6). Moreover, Hamar (2004, 43-44. o.) estimates that the difference between foreign corporations and domestic firms in productivity, added-value, wage level and capital equipment ratio per employee reached 2.9 times, 4.0 times, 1.6 times and 3.2 times respectively in 2000.

There also have been many quantitative analyses on this topic. By estimating Cobb-Douglas production functions based on cross-section data of 1994-1997, Szekeres (2001) show

¹¹ Calculated based on *Magyar Statistikai Évkönyv 2002* (2003, 331. o.).

TABLE 6. LABOR PRODUCTIVITY BY INDUSTRIAL SECTOR AND BY FORMS OF CORPORATE OWNERSHIP

	100% domestically- owned enterprises	Foreign companies (Foreign ownership rate)		
		100%	50-99%	Less than 50%
Overall corporate sector	56.7	90.0	119.9	92.1
Food, Beverage	42.5	126.3	98.8	70.9
Chemical	35.1	106.8	99.6	94.4
Electronics	63.1	99.0	96.8	124.3
Transport equipment	20.5	112.5	86.4	23.5
Power generation	84.3	101.1	99.9	101.2
Agriculture	47.8	115.1	81.5	75.8
Construction	49.8	900.6	50.0	86.9
Wholesale	44.2	104.2	90.3	91.6
Retail	83.3	111.6	60.5	101.8
Land transport	52.9	97.5	161.9	67.9
Post/Telecommunications	11.6	33.9	87.4	243.6
Real estate	18.9	142.6	37.4	144.2
Services	51.9	97.6	111.3	87.8

Notes: The above figures are those when the average added-value per employee of foreign-affiliated enterprises is set as 100.

Source: KSH (2003d, 29. o.).

that total factor productivity (TFP) tended to improve in proportion to the growth of the foreign participation rate. Using a large-scale database covering about 90% of all Hungarian manufacturing and construction firms, Sgard (2001) confirmed that TFP showed a significant increase of 38.5% on average when the foreign ownership rate was expanded from 0% to 100%. Novák (2002) also found that Hungarian corporations with a foreign ownership rate of over 50% probably succeeded in the improvement of their productivity at a faster pace than other enterprises, based on regression analysis on the productivity of foreign-owned corporations by estimating three quantitative models including a simultaneous equation model designed to treat the endogeneity of the investment decision-making process of foreign firms.

The above research suggest that there is a close relation between the fact-finding of Oblath and Richter (2002, p. 17) in which the productivity of the Hungarian manufacturing sector rose at an average annual rate of 15.4% from 1993 to 2000 — a much faster pace than any other CEE countries — and large inflows of foreign capital into Hungary during this period. However, categorizing Hungarian firms into only two groups, ‘foreign-affiliated corporations’ and ‘domestically-owned corporations’ is insufficient. As Halpern and Kőrösi (2000) and Novák (2003) point out, it is impossible to strictly verify the relation between the growth of foreign investment and the improvement of productivity, considering the selection bias that foreign investors may choose domestic companies for investment, because those companies have the significant potential to improve their own management efficiency and productivity in comparison with their competitors.¹² Furthermore, we have to pay attention to the possibility

¹² While Halpern and Kőrösi (2000) state, based on their estimates of Dynamic Cobb-Douglas frontier production functions using dataset from 1990 to 1997, that selection bias effects can be observed only during the initial few years of the transition period, Novák (2003), who came up with estimated production functions in fixed effect

TABLE 7. PERFORMANCE OF 167 LARGEST HUNGARIAN ENTERPRISES, FY2002

	Annual sales per employee (million HUF)	Operating profit (million HUF)	Gross pretax profit (million HUF)	ROE ¹ (%)	ROA ² (%)
All 167 enterprises	315.89	3,813.63	4,073.02	84.36	7.53
Subsidiaries of multinational enterprises	347.48	4,734.69	4,348.71	*179.45	**9.73
Other enterprises	297.23	3,269.76	3,910.24	28.21	6.23

Notes: ¹ Return on equity = current profits / equity capital

² Return on assets = current profits / total assets

³ **: Statistical significance of difference in mean values from domestic enterprises at the 5% level,
*: at the 10% level.

Source: Author's estimation based on Figyelő (2003, 32-39. o.).

that the improvement of profitability and productivity of foreign corporations in their accounts might be largely due to preferential investment incentives toward foreign investors adopted by the Hungarian government, which was not granted to domestic enterprises. A way to mitigate these problems is to compare newly established FDI-based companies and major domestic corporations. Here, we discuss Hungarian affiliates of multinational corporations. As already mentioned above, those local subsidiaries — almost all of which were established in the framework of greenfield investment — can fully utilize management know-how and production technologies devised by their parent multinational firms. Therefore, such wholly owned companies of multinationals could easily dominate privatized, formerly state-owned enterprises and other domestic corporations — both of which have been afflicted with a negative legacy from the socialist era — in terms of management efficiency and productivity. Results of empirical analysis support this presumption.

Table 7, which compares Hungary's major 167 corporations listed in *Figyelő* magazine in 2002 by using representative management and financial indexes, reveals that there is a clear difference in average performance between multinational-affiliated corporations and domestic corporations.¹³ In particular, there is a large gap in statistical significance between the two groups regarding return on equity (ROE) and return on assets (ROA). This is noteworthy, as it demonstrates that affiliate companies of multinationals enjoy remarkable capital efficiency.

Next we examined the effects of the organizational form as a multinational affiliate company on TFP by regression analysis. Following Szekeres (2001), we estimated log-linear Cob-Douglas function with a constant dummy (*MNCs*), which controls the recognition of being a 100% multinational-affiliate, and checked its value and statistical significance. Two kinds of data — the first set is an unbalanced panel of 237 corporations and the second set is a balanced panel of 118 corporations, both of which are listed on *Figyelő* magazine's leading corporation rankings through to 1999 — were used for estimation. We conducted cross-section

models by using 1992 — 1998 panel data on industrial firms, suggests that selection bias effects are universal. In this way, there are different views on selection bias effects over time.

¹³ Most of the domestic corporations used in the analysis are public enterprises and privatized ex state-owned firms. The latter include many foreign companies. Therefore, the problem of superficial accounting improvements owing to favorable policies for FDI can be mostly eliminated in the analysis.

TABLE 8 REGRESSION ANALYSIS ON EFFICIENCY OF LOCAL SUBSIDIARIES
OF MULTINATIONAL ENTERPRISES

(a) Estimation results based on unbalanced panel of 237 corporations¹

Estimation period	1999	2000	2001	2002	1999-2002		
Estimation method	OLS	OLS	OLS	OLS	OLS	Fixed effects ²	Random effects
Const.	7.691*** (22.68)	7.949*** (24.12)	8.320*** (28.71)	7.735*** (23.72)	7.751*** (46.59)	6.793*** (22.55)	7.532*** (38.75)
ln(<i>K</i>)	0.286*** (5.41)	0.214*** (4.25)	0.200*** (4.71)	0.235*** (5.10)	0.229*** (9.70)	0.190*** (8.41)	0.189*** (9.48)
ln(<i>L</i>)	0.713 (1.19)	0.699* (1.65)	0.735* (1.65)	0.714** (2.44)	0.763*** (3.00)	0.782*** (6.72)	0.768*** (6.00)
<i>MNCs</i>	0.398*** (2.80)	0.336** (2.50)	0.316*** (2.83)	0.345*** (3.11)	0.342*** (5.57)	-	-
<i>00D</i>	-	-	-	-	0.163* (1.93)	0.197*** (8.93)	0.202*** (9.18)
<i>01D</i>	-	-	-	-	0.269*** (3.30)	0.345*** (15.43)	0.353*** (16.02)
<i>02D</i>	-	-	-	-	0.288*** (3.50)	0.385*** (15.87)	0.393*** (16.63)
Mean of individual effects							
Multinationals	-	-	-	-	-	0.230 [†]	0.205 [†]
Other firms	-	-	-	-	-	-0.134	-0.096
<i>R</i> ²	0.329	0.297	0.279	0.340	0.324	0.970	0.794
<i>Adj. R</i> ²	0.315	0.283	0.267	0.329	0.318	0.955	0.792
<i>F</i>	22.920***	22.092***	23.842***	30.962***	53.664***	65.314***	517.322***
<i>N</i>	144	161	189	184	678	678	678

(Continued on the next page)

analyses for each of the 1999-2002 data and panel-data analyses using all observations. In the latter case, individual effects of samples were taken into consideration by estimating fixed and random effects models.

Panel (a) in Table 8 shows results based on the unbalanced panel data, and panel (b) refers to those based on the balanced panel. These results are almost satisfactory, because signs of explanatory variables are consistent with theoretical assumptions and the hypothesis of constant returns to scale is virtually met in all cases.

The effects of *MNCs* on TFP are positive throughout the analytical period with statistical significance. In addition, the fixed effect model and random effects model estimations indicate that there is a 1% level of significant difference between the above two sampling groups regarding the mean of individual effects. That is to say, multinational corporations had much larger individual effects than other corporations. These findings verify the superiority of multinational corporations as production organizations compared to other Hungarian enterprises. Therefore, our empirical results — which strongly suggest that the expansion of multinational corporations contributed to the improvement of efficiency in the overall corporate sector in Hungary — supports assertions by preceding studies by Hunya (2002) and others.

In summary, the large-scale FDI inflow and massive embarkation of multinational

(b) Estimation results based on balanced panel of 118 corporations

Estimation period	1999	2000	2001	2002	1999-2002		
Estimation method	OLS	OLS	OLS	OLS	OLS	Fixed effects ³	Random effects
Const.	7.360*** (19.27)	8.004*** (20.18)	8.109*** (20.31)	8.018*** (19.41)	7.636*** (37.59)	6.664*** (19.16)	7.506*** (29.74)
ln(<i>K</i>)	0.318*** (5.26)	0.234*** (3.97)	0.212*** (3.64)	0.218*** (3.70)	0.244*** (8.33)	0.255*** (6.25)	0.257*** (6.98)
ln(<i>L</i>)	0.722* (1.84)	0.634** (1.96)	0.749 (1.47)	0.718* (1.65)	0.705* (2.18)	0.654*** (7.89)	0.626*** (6.80)
<i>MNCs</i>	0.427*** (2.76)	0.393** (2.45)	0.449*** (2.86)	0.519*** (3.28)	0.443*** (5.67)	-	-
<i>00D</i>	-	-	-	-	0.228** (2.34)	0.210*** (9.06)	0.215*** (9.31)
<i>01D</i>	-	-	-	-	0.320*** (3.28)	0.335*** (14.06)	0.345*** (14.68)
<i>02D</i>	-	-	-	-	0.371*** (3.80)	0.380*** (15.59)	0.389*** (16.22)
Mean of individual effects							
Multinationals	-	-	-	-	-	0.451 [†]	0.376 [†]
Other firms	-	-	-	-	-	-0.190	-0.159
<i>R</i> ²	0.380	0.303	0.314	0.329	0.352	0.973	0.559
<i>Adj. R</i> ²	0.363	0.285	0.295	0.311	0.344	0.964	0.554
<i>F</i>	23.237***	16.509***	17.354***	18.637***	42.086***	103.195***	118.125***
<i>N</i>	118	118	118	118	472	472	472

Notes: ¹ The estimation equation is formulated as follows: $\ln(Y) = \mu + \alpha_1 \cdot \ln(K) + \alpha_2 \cdot \ln(L) + \alpha_3 \cdot MNCs + [\alpha_4 \cdot 00D + \alpha_5 \cdot 01D + \alpha_6 \cdot 02D] + \varepsilon$; *Y* is total annual sales (million HUF). *K* is total equity capital (million HUF). *L* is annual average number of employees adjusted differences in average work hours per employee based on Fazekas and Koltay (2003, pp. 216-217). *MNCs* is a dummy of multinational corporations. *00D*, *01D* and *02D* are year dummies. μ and α_i are constant terms. ε is an error term. *MNCs* is excluded when estimating fixed effects models and random effects models.

² Hausman test for the specification of the fixed and random effects models: $\chi^2 = 18.625$, $p = 0.002$.

³ Hausman test for the specification of the fixed and random effects models: $\chi^2 = 15.871$, $p = 0.003$.

⁴ The *t*-statistics are given in parentheses. ***: significance at the 1% level, **: significance at the 5% level, *: significance at the 10% level.

⁵ †: Statistical significance of the mean differences from domestic enterprises at the 1% level.

Source: Estimated by the author based on Figyelo (2001, 30-37. o.; 2002, 30-37. o.; 2003, 32-39. o.).

corporations changed the corporate ownership and governance structure in Hungarian firms as well as played a crucial role in improving export competitiveness and streamlining its management and production activities. The next section will further demonstrates FDI effects by focusing on R&D and innovation activities, both of which are also important aspects of corporate restructuring.

IV. Foreign Direct Investment and R&D / Innovation Activities

In the late 1980s, Hungary spent 2.5% of its GDP on R&D, which is a large percentage

TABLE 9. SELECTED INDICES OF R&D ACTIVITIES IN

	1990	1991	1992	1993	1994
Total staff number	36,384	29,397	24,192	22,609	22,008
in R&D institutions	14,524	11,909	10,235	9,164	8,343
in R&D units of higher education	8,843	8,458	7,917	7,776	7,611
in R&D units of enterprises	13,017	9,030	6,040	5,669	6,054
Share of enterprise R&D staffs (%)	35.8	30.7	25.0	25.1	27.5
Total number of R&D units	1,256	1,257	1,287	1,380	1,401
R&D institutions	142	133	118	124	112
R&D units of higher education	940	1,000	1,071	1,078	1,106
R&D units of enterprises	174	124	98	178	183
Share of R&D units of enterprises (%)	13.9	9.9	7.6	12.9	13.1
Total R&D expenditure (HUF/million)	33,725	27,100	31,600	35,300	40,289
From state budget	18,108	9,100	11,000	12,000	14,700
From governmental funds	10,132	...	...	...	...
From other domestic sources	538	...	...	...	...
By international organizations	346	...	...	...	...
By enterprises	13,075	13,085	10,921	9,891	10,096
Share of R&D expenditure by enterprises (%)	38.8	48.3	34.6	28.0	25.1
Total R&D expenditure to GDP (%)	1.6	1.6	1.1	1.0	0.9
Total number of patent applications	...	...	...	12,779	17,039
By Hungarian residents	...	...	...	...	1,178
By non-Hungarian residents	...	...	...	...	15,861
Total number of patent registrations	...	...	...	1,409	1,144
By Hungarian residents	...	...	...	...	536
By non-Hungarian residents	...	...	...	...	608

Source: Compiled by the author based on KSH, *Magyar Statistikai Évkönyv* and *Kutatás és Fejlesztés* (various

by international standards of the time (Balázs, 1994, p. 283). However, the ensuing full-fledged transition to a market economy brought about a drastic reduction in Hungary's R&D activities. By 1996, the R&D expenditure as a percentage of GDP dropped to 0.7% and the total number of researchers fell by 53.2%. In particular, the number of corporate researchers diminished sharply by 76.6% during the same period (Table 9). Even during the high economic growth after 1997, R&D activities stagnated at low levels. In 2002, the R&D expenditure as a percentage of GDP was almost 1.0%, which is much lower than those recorded during the socialist era. This scale is much smaller than the average of developed countries, as well as that of 15 EU nations (Figure 2). Figure 3 indicates that although R&D activities in Hungary have been on the rise over the past few years, their growth rates have been very moderate. The R&D expenditure for 2002 was still below the 1990 level.

The full-scale transition to a market economy, the disappearance of the COMECON market and the drastic reduction in the government's R&D spending including those for corporate subsidies were grave 'external shocks' which led to the rapid downsizing of the national R&D sector. At the initial transition stage of economic transformation, the Hungarian government did not initiate consistent policies to stimulate R&D and innovation activities due to the lack of clear recognition regarding the linkage between economic growth and technological development — which also accelerated the stagnation of its R&D sector (Havas, 2002, pp. 16-17).

Meanwhile, as many researchers point out, Hungary's R&D system during its socialist era

HUNGARY AND ITS CORPORATE SECTOR, 1990-2002

1995	1996	1997	1998	1999	2000	2001	2002
19,585	19,776	20,758	20,315	21,329	23,534	22,942	23,703
7,739	9,080	8,866	7,815	7,978	8,204	7,766	7,979
6,310	6,558	7,210	7,561	7,452	8,859	8,397	8,528
5,536	4,138	4,682	4,939	5,899	6,471	6,779	7,196
28.3	20.9	22.6	24.3	27.7	27.5	29.5	30.4
1,442	1,461	1,679	1,725	1,887	2,020	2,337	2,426
107	121	131	132	130	121	133	143
1,109	1,120	1,302	1,335	1,363	1,421	1,574	1,613
226	220	246	258	394	478	630	670
15.7	15.1	14.7	15.0	20.9	23.7	27.0	27.6
42,310	46,027	63,591	71,186	78,188	105,388	140,605	171,470
19,975	20,562	31,992	35,305	37,518	48,170	75,386	100,392
3,302	2,996	2,862	3,625	4,106	4,037	4,591	6,455
1,744	3,172	2,929	2,022	2,131	2,189	3,317	2,441
1,997	2,076	2,655	3,375	4,363	11,202	12,918	17,773
11,563	17,221	23,153	26,859	30,070	39,790	48,984	50,864
27.3	37.4	36.4	37.7	38.5	37.8	34.8	29.7
0.8	0.7	0.7	0.7	0.7	0.8	0.9	1.0
20,887	24,979	30,105	38,707	44,974	62,438	83,021	89,327
1,117	832	774	751	787	881	919	842
19,770	24,147	29,331	37,956	44,187	61,557	82,102	88,485
1,910	1,030	1,189	1,257	1,881	1,605	1,306	1,555
534	352	346	263	300	176	...	...
1,376	678	843	994	1,581	1,429	...	...

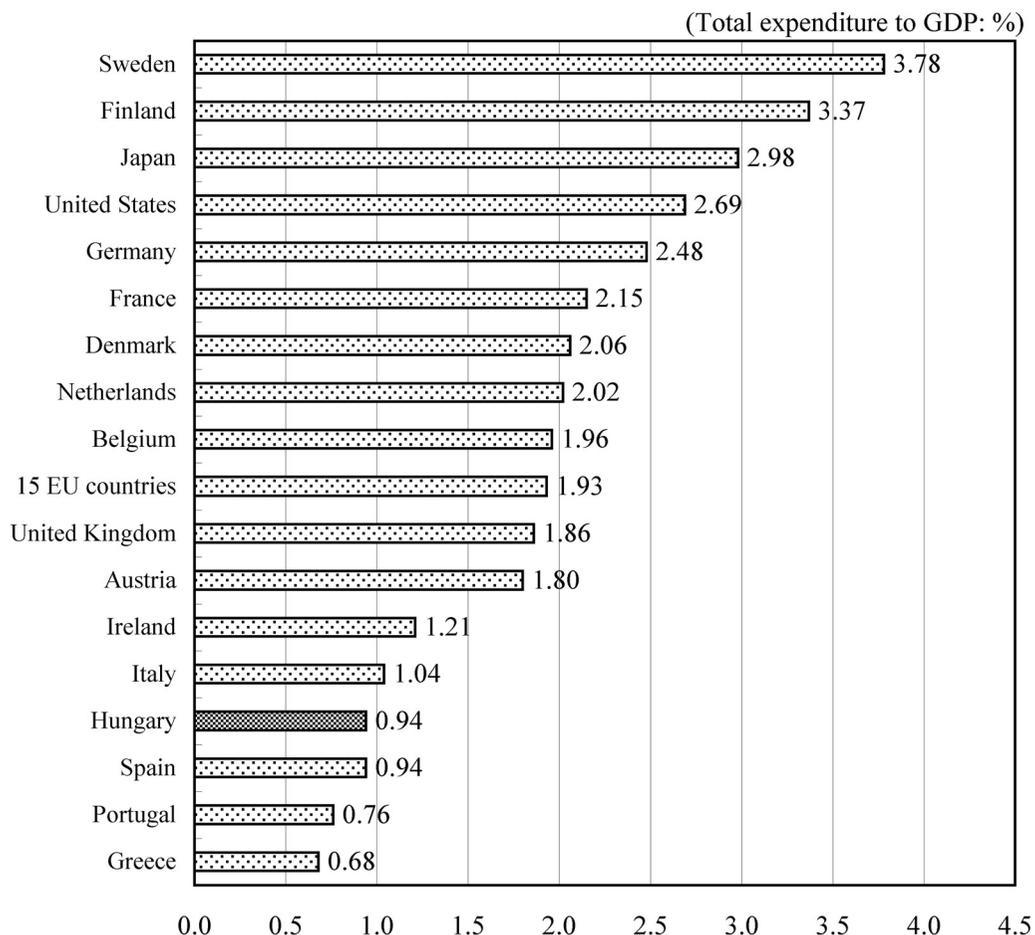
years), information available at the WIPO website (<http://www.wipo.int/ipstats/>) and Havas (2002, p. 23).

was far from effective, since it did not strongly motivate researchers to pursue their R&D and innovation activities.¹⁴ In addition, the size of R&D sectors in CEE countries including Hungary was too large in relation to their economic scales.¹⁵ Therefore, it is no surprise that those countries had to reorganize and downsize their R&D units to suit their national wealth along with changes in their socio-economic systems. Inzelt (1998; 2003), Szalavetz (1999), and Nikodémis (2003) emphasize the importance of the 'spontaneous adjustment process' relative to 'external shocks' in the modernization of the industrial technology, recognizing that a substantial reduction of R&D expenditure and research staff at the corporate level had produced restructuring effects necessary for the Hungarian firms to adapt to a market economy. As already clarified in the previous section, FDI and foreign-affiliated companies played a crucial role in the revitalization of the Hungarian economy. Therefore, the preceding studies paid considerable attention to the relation between ownership forms of enterprises and

¹⁴ For more details, see Balázs (1994, pp. 283-284), Tanaka (1993, pp. 212-215), Matsui (1996, pp. 69-70), and Inzelt (1998, p. 63). These researchers point out the following as causes of the previous ineffective R&D sector in Hungary: (a) Localized division of roles by academic research institutions, high educational institutions and industrial research institutions. (b) Domestic enterprises' low consciousness of the benefits of R&D activities. (c) Non-availability of economic institutions and agents able to build a bridge between the R&D sector and the industrial sector.

¹⁵ According to Knell (2000, pp. 201-202), as of 1990, scales of R&D activities in CEE countries and in Russia were comparable to those of Western developed nations, such as Germany and France.

FIG. 2. R&D EXPENDITURE BY COUNTRY



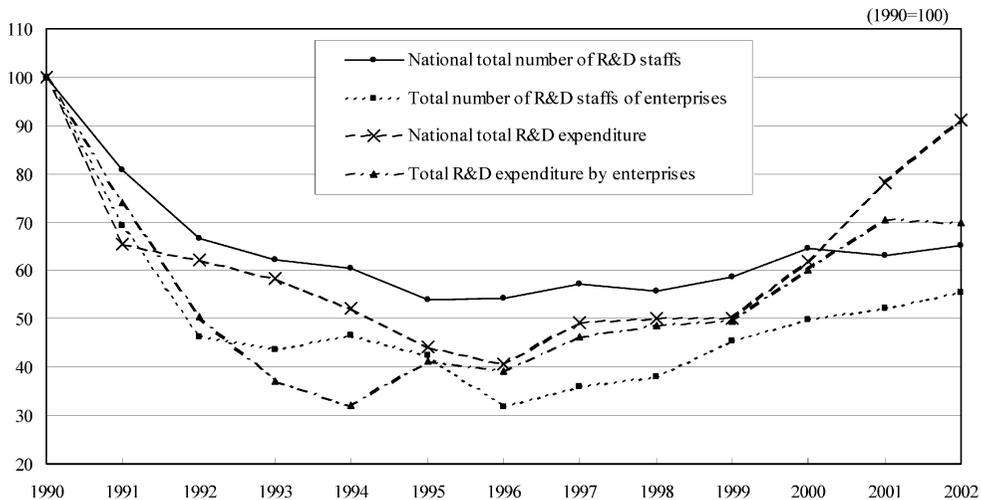
Notes: Figure for Hungary is in 2001. Figures for Greece, Ireland, Italy, Belgium, Netherlands, Denmark and Spain are in 1999. Figures for the average of 15 EU nations and other countries are in 2000.

Source: *Népszabadság*. 2003. Április 12., 5. o.

their R&D/innovation activities.

According to these studies, foreign-affiliated corporations may have been more engaged in R&D activities than the wholly domestic enterprises from the early stage of transition. For instance, Inzelt (1998, p. 68) refers to the strong link between foreign ownership rates and R&D expenditure based on the enterprise survey conducted by the statistical office in 1996. Furthermore, she suggests that foreign investors have been constantly utilizing many of R&D units of Hungarian companies they bought with the aim of introducing new production licenses and know-how (op. cit., pp. 69-70). Moreover, Nikodémis (2003, 41-42. o.) points out that multinational corporations in Hungary boosted their R&D spending by five times in real

FIG. 3. R&D ACTIVITIES IN HUNGARY AND IN ITS CORPORATE SECTOR, 1990-2002



Source: Author's illustration based on Table 1 and Table 9.

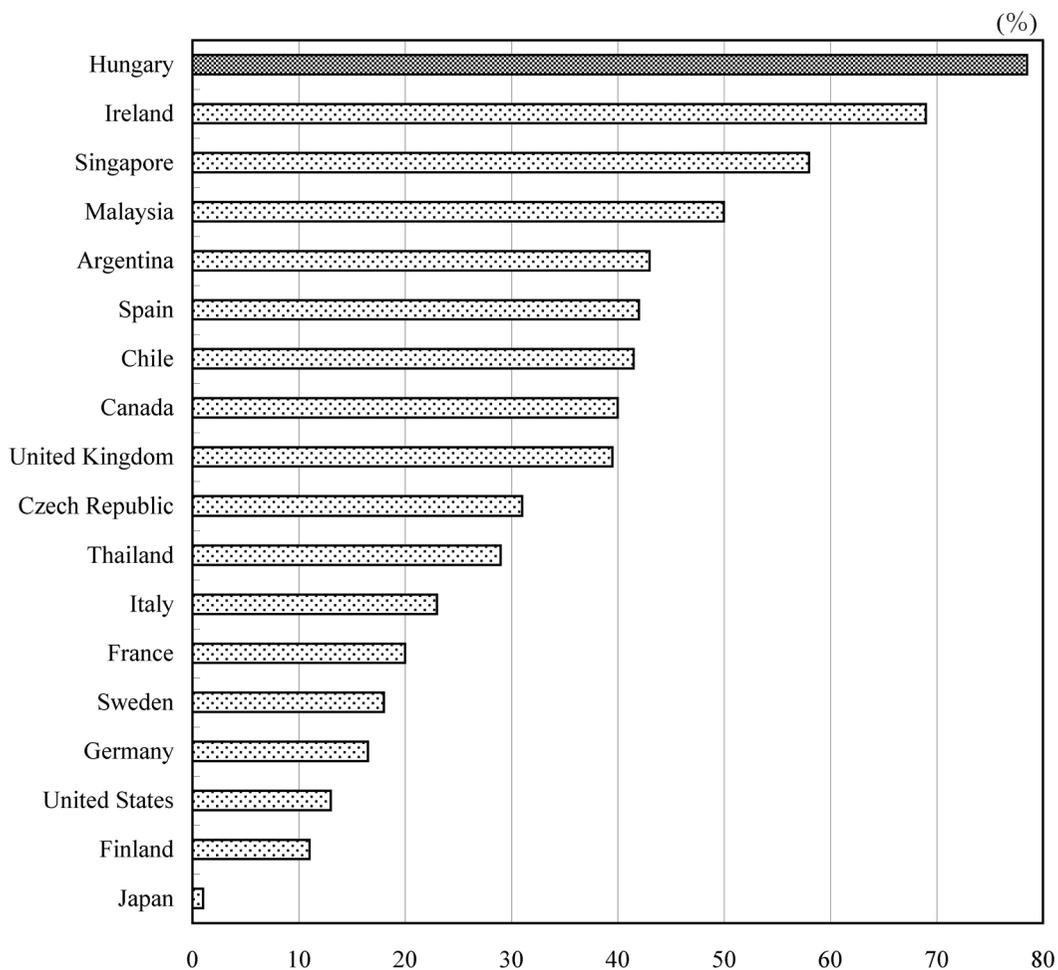
terms over the six-year period from 1995 to 2000. As a result, the share of multinational companies in the total R&D spending in the corporate sector increased from 22% to almost 80% during the period. As indicated in Figure 4, the proportion of R&D spending by multinationals in the Hungarian corporate sector is extremely high by international standards. Nikodémis states that this is further highlighted by the fact that domestically-owned corporations, especially small and medium size enterprises, were substantially cutting or restraining R&D expenditures in that period.

The same trend can be seen for innovation activities. The latest survey by the statistical office (KSH, 2003b) covering 26,495 manufacturing companies reveals that there is a certain gap between domestic and foreign companies in terms of achievements in innovation activities. Table 10 shows that 3,441 or 15.1% of 22,186 wholly domestically-owned corporations surveyed conducted innovation activities during 1999 to 2001, while 1,055 or 28.7% of 3,679 foreign-affiliated enterprises carried out such activities during the same period, which is about 1.9 times larger than that of the former on a percentage basis. Meanwhile, the statistical office obtained similar results to the above based on another enterprise survey for 1997 to 1999 (KSH, 2001). Hence foreign-affiliated enterprises may have been continuously more active in innovation activities than domestic corporations.

Szalavetz (1999, 37.o.), who conducted an in-depth interview survey of fifteen manufacturing companies under the control of German capital, advocates that "the technological benefits of being owned by multinational corporations can be summarized by the fact that domestic firms were able to accelerate their technology accumulation process with the help of foreign direct investment", adding that the "Hungarian economy has been modernized at a remarkable scale as a result of technology transfer through foreign investment".

In addition to this paper, there are many other studies focusing on the achievements of technology transfer and spillover effects stemming from R&D and innovation activities by

FIG. 4. SHARE OF FOREIGN COMPANIES IN CORPORATE R&D EXPENDITURE BY COUNTRY, 1996-1998



Source: Nikodémis (2003, 41. o.).

foreign corporations. For example, Antalóczy-Sass (2000; 2003b) found the effects of technology transfer in qualitative changes in Hungary's export structure from the late 1990s. As indicated in Table 11, Hungary's top 10 export goods for 2002, five of which were high-tech products, are products of foreign-affiliated enterprises that carried out greenfield investments within custom-free zones. The total export volume of high-tech products increased by as much as 5.3 times on a US dollar basis from 1992 to 2002 (Table 12). The total imports of high-tech products also expanded by 7.6 times during the same period partly due to foreign corporations' rising demand for plant and equipment investment. Based on statistical data, Hamar (2004) examined the role of foreign capital from the viewpoint of Hungary's technological catching-

TABLE 10. INNOVATION ACTIVITIES BY FORM OF CORPORATE OWNERSHIP, 1999-2001

		Innovative enterprises					Total	Non-innovative enterprises	Grand total
		Innovation activities completed				Unfinished or cancelled innovation activities			
		Products only	Processes only	Products and processes	Total				
Actual numbers	100% domestically-owned enterprise	1,230	669	1,169	3,068	373	3,441	19,375	22,816
	Enterprise with foreign participation ¹	279	122	255	656	56	712	1,368	2,080
	100% foreign-owned enterprise	123	40	118	281	62	343	1,256	1,599
	Total	1,632	831	1,542	4,005	491	4,496	21,999	26,495
Share (%)	100% domestically-owned enterprise	5.4	2.9	5.1	13.4	1.6	15.1	84.9	100.0
	Enterprise with foreign participation ¹	13.4	5.9	12.3	31.5	2.7	34.2	65.8	100.0
	100% foreign-owned enterprise	7.7	2.5	7.4	17.6	3.9	21.5	78.5	100.0
	Total	6.2	3.1	5.8	15.1	1.9	17.0	83.0	100.0

Notes: ¹ Excluding 100% foreign-owned enterprises.

Source: Compiled by the author based on KSH (2003b, 23, 29. o.).

TABLE 11. TOP 10 EXPORT COMMODITIES, 2002

Rank/Commodities	Export volume (1,000 USD)	Share in total export volume (%)	Manufacturing by foreign-affiliated enterprises	Greenfield investment	Production in custom-free zones	High-tech products
1 Mobile communication devices	2,691,198	7.84	△	△	○	○
2 Piston engine-type manufacturing	2,114,963	6.16	○	○	○	×
3 Passenger vehicles	1,481,180	4.31	○	○	△	×
4 Input/Output devices	766,262	2.23	△	△	○	○
5 Parts for TV sets, radios and communication devices	706,874	2.06	○	○	○	×
6 Computer memory devices	550,146	1.60	○	○	○	○
7 TV sets	533,894	1.56	○	○	○	×
8 Video recorders	529,641	1.54	○	○	○	○
9 Automatic data processing equipment/units	508,393	1.48	△	△	○	○
10 Conductors	431,424	1.26	△	○	△	×
Total for 10 commodities	10,313,975	30.04	8.0	8.5	9.0	5.0

Notes: ○ indicates 'applicable', × indicates 'not applicable' and △ indicates 'partially applicable'. For the numerical estimate of the total for 10 commodities, each ○ mark is given 1.0 point, △ mark 0.5 point and × mark 0.0 point.

Source: Antalóczy-Sass (2003b, 26. o.).

up and confirmed that industrial sectors requiring higher technologies have larger foreign participation rates (Table 13). These findings indicate the benefits of technology transfers brought about by FDI.

Szanyi (2002) focused on technological spillover effects arising from outsourcing contracts and from supplier agreements between multinationals and domestic companies, which has been rapidly spreading among Hungarian industrial firms in recent years. He found that small and medium size firms are actively involved in businesses outsourced from multinational enterprises, and aim to adapt to a market economy as well as undergo restructuring. That is, these domestic enterprises regard outsourcing contracts with multinationals as "the most

TABLE 12. TRADE ACTIVITIES OF

	1992	1993	1994	1995
Total exports (million USD)	286.9	321.5	351.7	593.2
Year-on-year change (%)	-	12.06	9.37	68.68
Shares in total exports (%)	2.68	3.61	3.26	4.60
Total imports (million USD)	1,001.3	1,145.6	1,416.7	1,394.0
Year-on-year change (%)	-	14.41	23.67	-1.60
Share in total exports (%)	9.04	9.17	9.54	9.01
Trade balance (million USD)	-714.4	-824.1	-1,065.1	-800.8

Source: Compiled by the Author based on Antalóczy-Sass (2003b, 27, 30. o.).

important sources of technologies, competitive products and markets, each of which is necessary for their modernization” (p. 20). Meanwhile, multinationals are also actively promoting their subcontractors to introduce new management techniques and carry out other organizational innovations (Havas, 2002, p. 28). In addition, these domestic corporations are devoting themselves to renewing their production facilities, developing new products, preparing to meet domestic needs, streamlining production systems, and improving designs on the basis of outsourcing contracts.

There have also been several empirical works on spillover effects brought about by foreign capital. For example, Novák (2003) confirms the existence of FDI spillover effects by detecting a significant positive correlation between TFP and the share of multinational corporations in the total sales in each industrial sector.¹⁶ Sgard (2002) shows the high significance of these spillover effects by introducing into production functions the share of foreign capital in the total equity capital by sector.¹⁷

The above two studies highlight the major role played by foreign capital and multinational corporations in the restructuring process of industrial technologies in the corporate sector. As mentioned in the previous section, drastic structural changes in the Hungarian manufacturing sector as well as the significant improvement of its export competitiveness were leveraged by the introduction of foreign capital. In addition, it is clear that foreign-affiliated corporations supported the overall industrial sector in terms of R&D and innovation activities. It is also a noticeable trend that in recent years, foreign companies in Hungary have been actively hiring Hungarian researchers and strengthening ties with domestic universities and research institutes, as pointed out by Havas (2002, p. 29)

However, the above series of positive moves does not imply that an internationally competitive R&D sector is now emerging in Hungary. Firstly, the quantitative analyses performed by Török and Petz (1999) and Knell (2000) show that R&D activities are not a strong explanatory factor for Hungary’s enhanced export competitiveness and its improved

¹⁶ The coefficients of spillover effects had a positive sign with statistical significance regarding enterprises with 100 or more employees throughout the analytical period, while with enterprises with fewer than 100 employees, it had a negative sign with statistical significance for the first half of the 1990s and had no significance for the second half of 1990s.

¹⁷ Sgard (2002, pp. 9-11) also reports that the northwest region between the border of the EU and Budapest is enjoying more positive spillover effects than southern and eastern regions, which might have widened the regional gap in the productivity of local enterprises.

HIGH-TECH PRODUCTS, 1992-2002

1996	1997	1998	1999	2000	2001	2002
523.9	2,663.3	3,890.5	4,857.2	6,429.1	6,186.6	7,256.2
-11.67	408.32	46.08	24.85	32.36	-3.77	17.29
3.98	13.91	16.88	19.39	22.85	20.29	21.13
1,607.2	2,745.7	3,419.8	4,368.5	6,283.7	6,850.3	7,593.0
15.29	70.84	24.55	27.74	43.84	9.02	10.84
9.92	12.93	13.32	15.60	19.59	20.34	20.19
-1,083.2	-82.4	470.7	488.6	145.4	-663.6	-336.7

TABLE 13. SHARES OF FOREIGN COMPANIES IN MANUFACTURING SECTOR
BY TECHNOLOGICAL LEVEL, 2001

	Number of enterprises	Fixed assets	Sales	Exports	Number of employees
High-tech industries	10.4	80.5	91.5	97.5	66.5
Upper medium-tech industries	11.7	86.0	84.9	93.9	58.4
Lower medium-tech industries	10.7	74.6	71.6	73.7	42.5
Low-tech industries	8.2	58.3	57.0	71.8	36.3
Total	9.5	74.5	75.1	89.2	46.1

Notes: The following industries are included in each sector. (The numbers in parentheses are OECD industrial classification codes.) High-tech industries: aircraft and spacecraft (35.3), pharmaceuticals (24.4), office and computing machinery (30), communications equipment (32), and medical, precision and optical instruments (33.1). Upper medium-tech industries: electric machinery and apparatus (31), motor vehicles (34), chemicals (excluding pharmaceuticals) (24 excl. 24.4), railway locomotives and other transport equipment (35.2 + 35.4), general machinery and devices (29). Lower medium-tech industries: manufactured fuels (coke, refined petroleum products and nuclear fuel) (23), rubber and plastic products (25), non-metallic mineral products (26), basic metals (27), fabricated metal products (28) and ships and boats (35.1). Low-tech industries: Food, beverages and tobacco (15 + 16), textiles, apparel and leather products (17 + 18 + 19), wood products, paper products and printing (20 + 21 + 22), other manufacturing (36 + 37).

Source: Selected by the author from Hamar (2004, 48-49. o.).

productivity in the late 1990s.¹⁸ Secondly, the number of patent applications per 100 corporate researchers, a common indicator of productivity of R&D and innovation activities, dropped by 40% from 19.5% in 1994 to 11.7% in 2002.¹⁹ Thirdly, the already mentioned enterprise survey (KSH, 2003) indicates that 83% of manufacturing companies polled did not carry out any innovation activities from 1999 to 2001, almost the same percentages as that recorded in the previous investigations by the statistical office.²⁰ These findings strongly suggest that

¹⁸ Török and Petz (1999, 225-227. o.) regressed the export-orientation ratio (ratio of exports to imports) to the R&D input ratio (ratio of R&D expenditures to GDP), skilled-labor ratio and foreign capital investment ratio, while Knell (2000, pp. 208-209) conducted regression analysis using the labor productivity improvement rate as a dependent variable and the R&D input ratio and the manufacturing productivity growth rate as regressors. As a result, the former research confirmed that the coefficient of the R&D input ratio does not have economically-significant explanatory power, and the latter led to the conclusion that the R&D input ratio has no statistical significance.

¹⁹ Calculated based on Table 9.

²⁰ For more details, see Inzelt (1994, pp. 149-150), KSH (2001, 7. o.), and Nagaoka and Iwasaki (2003, pp. 12-14).

Hungary still has a long way to go before achieving rationalization and revitalization of R&D and innovation activities. FDI and multinational corporations are expected to make a further contribution to this field.

V. *Concluding Remarks*

This paper presents analysis of the roles of FDI in the corporate restructuring in Hungary from a multilateral standpoint during the process of the EU accession of Hungary after the abolition of the socialist planned economy. Foreign capital and multinational enterprises made a significant contribution to this development. However, there are several problems in relying on FDI to carry out economic transformation and to promote corporate restructuring. Firstly, there has been an increasing amount of profit repatriation by multinationals in recent years, which might further increase the current account deficit. For example, the direct investment income balance recorded a deficit of 3.34 billion Euro in 2003, which is almost the same amount as the total FDI gross inflow in that year (Table 1 (b)). Secondly, financial strains on domestic corporations and on the public arising from the preferential measures for foreign-owned enterprises have been distorting resource allocations and generating economic inequity between those who can enjoy the benefits of FDI and those who cannot. Thirdly, regional disparity in income and unemployment has been widening due to the concentration of FDI in particular regions. Fourthly, behind the rapid growth of the foreign corporate sector, technology networks and inter-industrial relations forged during the socialist era have been completely abandoned, leading to the emergence of ‘technological economic dualism’ (Farkas, 2000, p. 19). Resolving this problem remains a difficult policy challenge for the Hungarian government. And fifthly, the national economies dependence on foreign capital has been creating anxiety among Hungarian citizens about the future of the country, putting them in fear of losing their national identity as well as of a massive withdrawal of multinational corporations from Hungary, which may lead to the hollowing out of domestic industries.²¹

However, it is apparent that active investment activities by foreign corporations lowered hurdles for Hungary to transform its economic system to a market economy by overcoming capital shortage, boosted the domestic corporate sector, and greatly improved the position of Hungary in the world economy through the substantial expansion of exports (Szekeres, 2001, p. 380). Such a tremendous contribution by FDI and multinational enterprises to the Hungarian economy and industries more than offsets the problematic side effects listed above. Nevertheless, large-scale foreign capital inflow cannot corporate restructuring related problems in the country, as suggested by the analyses in the previous section referring to R&D and innovation activities. The remaining problems that have not been examined in this paper include the underdevelopment of small and medium size enterprises, the unbalanced corporate financial structure heavily dependent on retained earnings, and the insufficiency of supervision activities over managers by shareholders and by financial institutions. The following remarks were made by Szalavets (2002) regarding policies to be taken up by CEE countries after EU accession:

“The transforming countries, in the ‘long transition decade’, have remarkable had success

²¹ For details on points raised here, see Farkas (2000), Nishimura (2001), and Nagaoka and Iwasaki (2003).

with minimal state intervention. By adapting a passive policy approach, they have allowed themselves to be driven forward by the modernizing effects of foreign direct investment. However, the challenges that follow EU accession will compel them to adopt an approach of more active state involvement. Local economic policy decision-makers will need to work out how to redefine the position of their countries in the world economy.”(p. 5)

Inspired by recommendations such as the above, there is a growing opinion in Hungary calling for the modification of the current policies focusing on attracting foreign capital, in order to achieve sustainable economic growth over the medium and long term. The passive strategy for transition to a market economy, which has been driven by the Hungarian government and the business sector, is standing at a crucial turning point.

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