INSTITUTE FOR

WORLD ECONOMICS

HUNGARIAN ACADEMY OF SCIENCES

Working Papers

No. 131 October 2002

Miklós Somai

THE HUNGARIAN AUTOMOTIVE INDUSTRY

1014 Budapest, Országház u. 30.
Tel.: (36-1) 224-6760 • Fax: (36-1) 224-6761 • E-mail: vki@vki.hu

SUMMARY

Hungary received several major investments in the automotive industry in the first half of the 1990s, after decades in which the industry had been confined largely to making components. As a settling-down period had passed, further investment usually followed, for investors bought sites, of considerable size along with options on neighbouring sites and cost-benefit analysis showed clearly it was not economical to leave such sites unused.

The magnitude of these investments is clear from the examples of Opel, which had invested over DEM 1 billion by late 2001 and of Audi, with over DEM 2 billion. The total that Suzuki invested is confidential, but probably lies in the range of USD 350–400 million. Over 750,000 private cars and nearly 8.2 million engines were built between 1992 and late 2001. The importance of the industry emerges from the fact that every fourth or fifth passenger car sold in Hungary is made locally and every 25th to 27th car sold worldwide has a Hungarian-made engine.

The passenger-car industry in the COMECON period, with 20 domestic companies, was much smaller in size and importance than Hungary's bus and truck-making industry. After the transition, bus and truck production declined rapidly and the new Hungarian car industry, coupled with the Western links (including subcontracting) developed by many suppliers caused a marked shift in the structure of the background industry towards carmaking.

The structure of the industry did not evolve in an organic way. Thanks to the favourable conditions in the early 1990s, a number of multinational automotive firms established affiliates in Hungary, mainly in Transdanubia. These factories usually perform classic subcontracting, importing all the necessary materials and sub-assemblies and exporting the bulk of the final production. Due to the heavy concentration of production and the large profits allocated to Hungarian affiliates, the share of this handful of firms in the total turnover of the industry is greater than their share of employment or value added.

Many Hungarians expected small and medium-sized firms in the background industry to strengthen rapidly as the EU and overseas automotive industry entered to Hungary. These expectations proved to be exaggerated. Most Hungarian firms struggled for survival, and since they were undercapitalized, were able to join in the multinational networks only on the lowest, least profitable level. System suppliers, or first-tire suppliers are very rare, and most firms had to accept second-tire supplier positions. The meagre profits that could be realized at this low level in the automotive pyramid, have been unable to support major modernization of technology. The ascent of the pyramid expected by politicians will probably begin very slowly. Nevertheless, there are hopes that Hungarian background industry may move up the hierarchy later, (i) because wherever there is production, the need for development appears sooner or later, and, (ii) because it is almost as difficult to get out of the chain, as it is to get in. A car model is usually made for 8–10 years, so that the outside supplies are required for a similar period. Furthermore, smooth co-operation makes the best reference for ob-

taining new orders or involvement in product development.

Carmakers in developed countries choose their first-tier suppliers from firms able to achieve consistently high technical and economic performance. This is especially true today, when the global concentration and lean production systems in the automotive industry have reduced the number of firms with which carmakers develop direct cooperation links. The affiliates of big carmakers do not usually become reliant on local background industry. They prefer instead to continue cooperating with traditional suppliers. Replacing traditional suppliers with local companies is a slow and burdensome process. Furthermore, big carmakers are reducing the number of their suppliers worldwide. They are therefore giving contracts to large and properly capitalized firms in Central and Eastern Europe. Very few firms in Hungary qualify in this respect.

Under the circumstances, makers investing in Hungary tried to convince their established suppliers to follow them and invest in Hungary as well. All makers emphasize their intention of increasing local value added. (In the case of Opel's new CVT gearbox, the target is 16 per cent.) But this mainly means contributions from other wholly foreign-owned affiliates, even in the case of initiatives by foreign investors to map and utilize the potentials of Hungarian background industry. There is, of course, nothing wrong with having widespread FDI in the Hungarian automotive industry. Such ventures are especially welcome from the employment point of view. Component manufacture is usually labour intensive (for example the production of cables).

Another category of background industry consists of medium-sized Hungarian-owned firms. These firms have had troublesome histories – emotional privatization with substantial capital pre-emption (reduction) and delayed restructuring. Despite these drawbacks, they are still serious constituents of Hungary's industrial potential. However, in the view of managers, these firms are at once too big and too small. They are too small to invest on the same scale as multinationals can, but they are too big to benefit from the state support aimed at SME development, where the usual ceilings are 250 employees and a turnover of USD 8 million. These firms also require special attention from industrial policy-makers. According to managers, this should include increased customs protection and cheap development credits.

Finally, mention must be made of SMEs, whose role in the Hungarian automotive industry is increasing. They can be regarded as winners by the transition process and its associated foreign investment. This applies especially to the partly foreign-owned firms that have successfully joined in the Suzuki cooperation network.

With competitiveness, the part played by foreign firms in spreading the Western industrial standards in Hungary has to be mentioned. Although quality is not new, the introduction of Western corporate attitudes and philosophies affects economic integration much more readily than any administrative effort at harmonization. The best results have come in product quality, where Hungarian manufacturing figures are among the best in the world. Less successful has been the implantation of just-in-time systems. Despite improvements, punctuality measured in minutes is not yet characteristic in Hungary, so that relatively high stock levels are still required.

1) MULTINATIONAL CARMAKERS IN HUNGARY

Hungary received several major investments in the automotive industry in the first half of the 1990s, after decades in which the industry had been confined largely to making components. The magnitude of these investments is clear from the examples of Opel, which had invested over DEM 1 billion by late 2001 and of Audi, with over DEM 2 billion. The total that Suzuki invested is confidential, but probably lies in the range of USD 350–400 million.

Several factors explain this move into Hungary by major carmakers. At the time when the decisions were being taken, Hungary was unrivalled in its region for economic openness, legal infrastructure and general progress with the political transition from state socialism to capitalism. Also desirable by comparison with other Central and Eastern European countries were its location, relatively developed travel infrastructure and close ties with the EU. Hungary already had numerous cooperation links with Western firms. It was seen as a country with high levels of technical skills and education, and a creative, innovative labour force able to work independently, receptive to new ideas and willing to learn. This meant it could perform to the standard of a Western labour force under adequate management and control, but at far lower cost. However, cheap labour alone would not have been a sufficient incentive to relocate production, since the automotive industry today is highly technology intensive. Finally, the government was offering a generous, ten-year package of tax incentives to firms investing in the sector: a tax holiday in the first five years, followed by 60 per cent of the normal tax bill in the second five years. However, the 100 per cent relief could extend to the second five years if trading profits were reinvested in Hungary. The last was especially beneficial for component producers, who can make quick returns on their investments. Other incentives were provided on a piecemeal basis:

* several hundred million Hungarian forints in state subventions to infrastructure development,
* state guarantees for syndicated loans,
* support for training,
* contributions in kind to investment schemes in the form of cheap premises,
* customs-free imports,
* advantages related to industrial free-trade zones,
* cheap public utilities,
* and in some cases (such as Audi), consent for continuous working.

These factors ensured that foreign car manufacturers could count produce adequate quality at very low cost. Further investment usually followed, after a settling-down period, as investors bought sites of considerable size along with options on neighbouring sites. Cost-benefit analysis showed clearly it was not economical to leave such sites unused (*Tables 1* and *2*).

Over 750,000 private cars and nearly 8.2 million engines were built between 1992 and late 2001. The importance of the industry emerges from the fact that every fourth or fifth passenger car sold in Hungary is made locally and every 25th to 27th car sold worldwide has a Hungarian-made engine.

The Audi investment, the largest project in Hungary, exceeded DEM 2 billion by late 2001. The German investors chose the Hungarian location in November 1992 (out of 180 potential sites in Europe) to manufacture engines with five valves per cylinder. Audi Hungaria Motor Kft. (AHM) was established on February 18, 1993 with a founding capital of DEM 2 million, as a wholly owned subsidiary of Audi AG, Germany. Daily engine output is 3000 of the four-cylinder engines and 1400 of the six and eight-cylinder engines. In addition, there is local assembly of the company's TT Coupé and TT Roadster models, totalling 55,000 units a year. More recently, the A3

and S3 models have also been assembled. The huge site occupies an area of 68 ha and employs over 4800 directly. Its activity and continual expansion have brought substantial orders to local suppliers of materials, energy and services and to construction firms, generating a further 4000–5000 jobs. The skilled labour supply is provided by a local college of higher education. A further positive feature is that good experiences in the first years prompted Audi to relocate some R and D activity on big engines to a 5000-sq.m facility on a neighbouring Győr site. The 80 employees work on production technology, product development and adjustments to local market specifications. The new lab is developing research cooperation with Hungarian universities.

However, it has to be recognized that the social and economic importance of AHM is only local and that the Hungarian contribution to the products is very low: 3 per cent in case of the engines and 5 per cent for the finished cars. The 16 local suppliers contributed less than 0.5 per cent of AHM purchases in 1999, when all 16 were foreign-owned, such as Lear Corporation in Győr and LUK Savaria.

The company operates in an industrial free-trade zone. The sub-assemblies, packaged in Ingolstadt, Germany, arrive in Győr by rail. Assembled engines and cars return to Germany the same way the next night. AHM received 10-year tax relief, and has channelled conglomerate profits to Hungary, to cut its global tax bill. For example, AHM registered net profits of DEM 544 million in fiscal 2000, on a turnover of DEM 6.8 billion, which was an exceptionally high rate for the automotive industry. Major repatriation of profits from Hungary can be expected after the ten-year period of tax relief is over. It can only be hoped that this will be offset by a wider impact from the Audi project on local industry and bigger local orders.

In January 1990, General Motors and the Hungarian government signed an agreement to establish a joint venture for car and sub-assembly production in Hungary. Later, the German GM subsidiary Opel Eisenach GmbH became the ultimate owner of the facility. The original project envisaged an investment of DEM 250 million, annual assembly of 40,000 units, and a facility producing 200,000 1.6-litre 8-valve engines at Szentgotthárd. Favourable experiences in Hungary, the availability of further real estate and changing market demands induced Opel to make further investments. The engine factory was expanded (to include 1.4-litre 8-valve and 1.4, 1.6 and 1.8 litre 16-valve engines, as well as engine sub-assemblies and gear shafts), and the engine production batches were doubled to 460,000 units. Unlike the engine production, the car-assembly side failed to meet expectations. Local demand for new cars remained below the levels of the late 1980s during the years after assembly of the Opel Astra model began, while liberalization of trade in imported cars from the EU meant there was tough competition. The Astra assembly was based on the relatively costly CKD method, using packaged sub-assemblies and materials shipped by train. Consequently, Astra assembly never exceeded 30 per cent rate of capacity utilization and was terminated in 1998, in favour of a new CVT gear production plant. Due to Opel's human-resources policy, employees with indefinite-period contracts did not lose their jobs. A total of 140 workers were redeployed to the engine-assembly facility to start a fourth production shift unprecedented at GM worldwide. Due to this, output exceeded the nominal maximum capacity, reaching 510,000 units in 1999. Another 160 workers were employed in the assembly of Vectras for Hungary and China (3000 cars). Retention of experienced and reliable workers in reserve was a well-understood interest at GM.

Although the company is among the biggest in Hungary (in the top five for turnover), it is only one-third of the size of AHM in terms of employment and sales. However, GM leads in terms of profits. Although Opel settled in Hungary two years earlier than Audi, it has realized strikingly higher profits and profit rates. Comparing net profits with

net sales revenue, Opel achieved a 14.2 per cent rate in its second year of full operation, 18.3 per cent in its fifth, and in 1997, an astonishing 22.7 per cent. Cumulative profits in 1994–8 were DEM 974 million, which was DEM 240 million more than the total investment since 1991.

How can this difference between Audi and Opel be explained? The factor that matters seems to be the two-year difference in reaching full-scale production. Both firms received the 5 + 5-year tax holiday from the Hungarian government. Opel started in 1991 and financed subsequent investment mainly from reinvested profits. Profits in fiscal 1996 and 1997 were paid out (DEM 483 million as compared with DEM 678 million investment), while 1998 profits were again reserved for further investment again (DEM 255 million). Two remarks: first, the profit transfer was actually much lower than what is registered in the books. Opel (and GM behind it) channelled profits from elsewhere to Hungary, to use local tax advantages. Secondly, there may be a significant difference between German and American business strategies. Overseas firms pay out a larger share of profits as dividends.

More important than accounting and profit-distribution practices is the impact of Opel on the economy and background suppliers. As with Audi in Győr, the local importance of Opel in Szentgotthárd is outstanding. Another similarity is that the assembled cars and engines incorporate very little locally added value. The last Astras, assembled in 1998, had 10 per cent local content, while the engines have 5 per cent. The planned Hungarian contribution to the CVT gears is 16 per cent. Nonetheless, GM has a substantial Hungarian network of suppliers. General Motors Europe's total Hungarian purchases exceeded DEM 300 million in 1998. Adding to this the DEM 50 million in orders from the Szentgotthárd factories, it can be concluded that Opel, like Audi, directly or indirectly generates over 5000 jobs in Hungary.

Third in alphabetical order and size of investment is the Magyar Suzuki Rt. (MS). The traditional, classic work phases of car-making are performed in Esztergom (metal forming, welding, painting and final assembly). Because of the small batches, robots, in the early years, were only used in the phases most crucial to quality (in the pressing and paint shops), while the welding and assembly were done with manual support. As output volume has increased, so has the degree of automation. Local employment is 1600, with an additional 2000–3000 generated through orders to Hungarian suppliers.

The Esztergom Suzuki plant was established to serve the Hungarian and EU markets. The Japanese investors met serious difficulties in the first few years, after opening the plant in 1992:

* Domestic demand was at its lowest, so that it was hardly possible to sell more than 1000–1300 cars a month until 1998.
* Local (European) content needed to be at least 60 per cent to qualify for preferential EU customs tariffs. This was not achieved until 1994.
* The recession in Hungary made it difficult to increase Hungarian value added in the cars. Most Hungarian suppliers were unable to carry out the smallest necessary investment and the lower batch sizes in the early years did not promise them big profits.
* The yen loans taken out to finance the first USD 200 million of investment in Hungary became rather expensive due to exchange-rate movements.

MS tried to master the difficulties by a strategy of accelerating out of danger. The three main elements of this strategy were to expand capacity, diversify production and supply, and increase efforts to increase exports.

Although the factory was a year late in reaching its planned level of output in 1996, capacities were developed to a potential of 100,000 units by 1999. The new investment was prompted by the improving business climate in Europe from 1996 and

by increasing sales in Hungary from 1998 (see *Table 3*).

The original five-door version of the Suzuki Swift model was followed in 1993 by four-door sedan more usual in Hungary. Using the Swift chassis, up to 10,000 four-wheel-drive Subaru Justies a year were also produced in Esztergom. By February 1996, the full range of three, four and five-door Swift versions were being produced, along with a small van. The Swift design was also developed substantially, and in 1996, the usual European standards were achieved in comfort and safety. The newly developed Wagon R+ further improved the range in 2000.

After the development of its domestic supply network, Magyar Suzuki began making Western European exports in 1994 (*Table 4*). Today it exports to 30 countries worldwide, of which the most important markets are Germany, the Netherlands, Austria and the UK. Overseas sales represent 10 per cent of the output. Exports reached USD 300 million in 1997.

According to established Japanese practice, Suzuki tried to find a reliable, long-term supplier for each item. First the company ordered simple parts and then gradually moved towards more sophisticated sub-assemblies. This stable network of local suppliers was not easy to build. Suzuki's high quality requirements caused a problem and the small runs made supplying Suzuki less attractive. The number of potential Suzuki suppliers was also reduced by under-capitalization and a low propensity to take risks. The development of the supply network has slowed again since, because the simplest items that do not require expensive investment and sophisticated technology have already been allocated, so that new Hungarian suppliers face more complicated tasks.

The European content of the Swifts produced at Esztergom was 70 per cent in mid-1998 – 15 per cent imported from EU countries, 26 per cent manufactured locally, and 29 per cent coming from local suppliers. The remaining 30 per cent was delivered from Japan, which was not far behind the stated target of 20 per cent (basically the engine and the gearbox) that would still be imported from Japan.

Suzuki has 60 suppliers now delivering parts worth USD 100 million a year. There is an important difference between the Japanese strategy of Suzuki and that of other carmaker towards suppliers, although there has been some convergence in the past 15 years. MSC develops long-term co-operation links, establishes more of a 'family' atmosphere. Suppliers can rely on Suzuki's support whenever they confront problems or need help in introducing new material and energy-saving technologies. MSC is a long-term secure market for suppliers, constituting a valuable source of technology and know-how and providing financial support for investment.

On the other hand, Suzuki, unlike Opel, does not provide other markets for local background industries. There is no data registered by MSC about the extent to which their suppliers deliver to the global Suzuki network. Japanese philosophy states that although they provide support to suppliers to achieve adequate quality standards, they are not involved in the sale of outside products. This means that when a product has reached Suzuki quality, it is deemed competitive in other markets as well.

2) THE BACKGROUND INDUSTRY

Background industry is the part of the automotive industry whose output is not finally assembled cars. It covers everything from major component sub-assemblies to the production of classical background industries. The production structure has changed greatly in the last ten years. The passenger-car industry in the COMECON period, with 20 domestic companies, was much smaller in size and importance than Hungary's bus and truck-making industry. After the transition, bus and truck production declined rapidly and the new Hungarian car industry, coupled with the Western

links (including subcontracting) developed by many suppliers caused a marked shift in the structure of the background industry towards carmaking.

Firms in the background industry usually have several production profiles, of which delivery to the car industry is just one. This is largely because many engineering firms lost markets during the transition process and picked up opportunities in the car industry. Producing large batches for car assemblers was regarded as a potential means of survival or even the ultimate opportunity. The structure of the industry did not evolve in an organic way. Thanks to the favourable conditions in the early 1990s, a number of multinational automotive firms established affiliates in Hungary, mainly in Transdanubia. These factories usually perform classic subcontracting, importing all the necessary materials and subassemblies and exporting the bulk of the final production. Due to the heavy concentration of production and the large profits allocated to Hungarian affiliates, the share of this handful of firms in the total turnover of the industry is greater than their share of employment or value added.

Many Hungarians expected small and medium-sized firms in the background industry to strengthen rapidly as the EU and overseas automotive industry entered to Hungary. These expectations proved to be exaggerated. Most Hungarian firms struggled for survival, and since they were undercapitalized, were able to join in the multinational networks only on the lowest, least profitable level. System suppliers, or first tire suppliers are very rare, and most firms had to accept second tire supplier positions. The opportunities for R and D in Hungarian-based component manufacturers decreased sharply with the decline of the domestic truck and bus-makers. In fact, R and D ceased altogether in many firms. It became more typical to apply foreign technologies and techniques. Indirect deliveries increased, which then increased dependence and subcontracting ties. The meagre profits that could be realized at this low level in the automotive pyramid, have been unable to support major modernization of technology. The ascent of the pyramid expected by politicians will probably begin very slowly. The 5–10 per cent investment rate of Hungarian firms compares with 20–25 per cent of turnover in Western Europe.

Compared with its geographically closest competitors in Central and Eastern Europe, Hungarian background industry lags behind its Czech and Polish counterparts, although its position is improving. The main reasons are shortage of capital, a restricted domestic market (which discourages the launching of new ventures), and most importantly, the 40-year hiatus in domestic automotive development, which lost Hungarian suppliers their market shares.

2.1. The carmakers' criteria

Carmakers in developed countries choose their first-tier suppliers from firms able to achieve consistently high technical and economic performance. This is especially true today, when the global concentration and lean production systems in the automotive industry have reduced the number of firms with which carmakers develop direct cooperation links. The affiliates of big carmakers do not usually become reliant on local background industry. They prefer instead to continue cooperating with traditional suppliers. Replacing traditional suppliers with local companies is a slow and burdensome process.

Any of the components of a currently marketed car is the result of long cooperation of carmaker and system suppliers (joint development effort). Long-term contracts regulate which firms deliver the different parts. Since new models are produced in quantities of several hundred thousand a year, a new Third World assembly plant can easily be served by traditional suppliers in the first years of operation, when batches are smaller.

Big carmakers have centralized purchasing systems, so that affiliates can only employ new, local suppliers with permission from the parent. Headquarters put applications from would-be suppliers through a long examination process, covering the product and the producer. Central purchasing can be illustrated best by a matrix recorded by the parent. The columns of the matrix represent the demand from the various production sites for the various components in the rows of the matrix. The costs of the supplier's offers are then calculated separately for each of the sites, although price, of course, is by no means the only criterion.

The following considerations apply:

* What technology does the potential supplier use?
* What is the quality of the product offered and what materials does it contain?
* What sort of management does the potential supplier have?
* What is the applicant's corporate financial position?
* How much free capacity does the potential supplier have available?
* Is the potential supplier capable of producing in large batches?
* Are there R and D staff available for any quick adjustments and retooling that become necessary?
* Is there tool production at the potential supplier firm?
* Where is the plant located?
* Is the offered price competitive, etc.?

What other kinds of product are made at the firm is also important. If a potential supplier is also involved in a production task entailing a commercial risk, cooperation with the carmaker could also be affected by any financial problem. Likewise important are high levels of quality control and management. Many Hungarian firms have acquired VDA or ISO certificates in the past few years, but German and American carmakers have meanwhile tightened their quality requirements and now contract only with firms with a QS-9000 certificate. Finally, a potential supplier needs adequate references. Carmakers usually prefer partners with experience in the automotive industry.

Although the most important of these criteria concern the triangle of price, quality and production capacity, practically everything must be satisfactory before a supplier is engaged. Years may pass as tests, licences and permits are obtained, before the applicant can start effective delivery. The experiences of multinationals investing in Hungary are interesting from this point of view.

Carmakers hold occasional conferences for suppliers. (Audi, for example, does so every second year). Interested firms are introduced to the requirements and qualifications necessary to become a supplier, so that Hungarian background industry are confronted by the burdens they will have to face. According to Opel, 90 per cent of applicants are unacquainted with the production technology required. The overwhelming majority cannot produce the material or product quality required, in Audi's opinion.. A further problem is size and the associated lack of capital. Big carmakers are reducing the number of their suppliers worldwide. They are therefore giving contracts to large and properly capitalized firms in Central and Eastern Europe. Very few firms in Hungary qualify in this respect. Furthermore, a first-tier supplier must be able to develop a sub-assembly according to the parameters required for the final product. Firms with adequate R and D capacities are very rare in Hungary. In other cases, lack of suitable hardware, knowledge of technology or language skills causes failure.

Under the circumstances, makers investing in Hungary tried to convince their established suppliers to follow them and invest in Hungary as well. VAW, for example, provides aluminium casts to both Audi and Opel. Loranger produces plastic parts for AC pumps and other components, and settled in Székesfehérvár, next to the local Ford affiliate. The list of instances is long and the result clear. Of the first-tier suppliers in Hungary, only a handful is domestically

owned (MOL, Bakony, Berva, Kaloplasztik and Perion). The 3–4 per cent of the local added value at Audi, 5 per cent at Opel and 20 per cent at Ford come mainly from foreign-owned companies. With inputs not directly associated with assembly, domestic shares are much higher, however. All makers emphasize their intention of increasing local value added. (In the case of Opel's new CVT gearbox, the target is 16 per cent.) But this mainly means contributions from other wholly foreign-owned affiliates, even in the case of initiatives by foreign investors to map and utilize the potentials of Hungarian background industry.

One such initiative was the establishment of high-level working committees by GM and the Hungarian government in 1996. The Background Industry and R and D Working Group continuously monitors possibilities of moving various GM activities to Hungary. This is not confined to the automotive industry, for GM has promised to consider investment and cooperation possibilities in electronics, computers, telecommunications and other industries as well. Reports on the results are slow to appear and the initiative is hardly in the spotlight at present, but this is obviously an opportunity that Hungarian partners should be seizing.

The other undertaking has been more successful. Ford Hungária was set up in 1997 independently of the Ford Alba production company, to look for suppliers in Hungary, Romania and former Yugoslavia, for deliveries to Ford factories in Europe. The Budapest office of Ford Hungária has three tasks. The first is communication and coordination with traditional Western suppliers. The office tries to convince them to invest in the region and monitors the activity of those already present. The second is to seek new suppliers, mainly among firms with experience in the automotive industry. Thirdly, it fosters the cooperation links already established. Ford Hungária only formulates recommendations, however. Decisions are taken at Ford headquarters in Germany and Britain. It may suggest a new supplier if there is proof of a cost saving compared with existing sources, at comparable performances and wastage rates. Only ten potential suppliers had been identified by late 1999, one of them in Slovenia and nine in Hungary, but all majority foreign-owned.

There is, of course, nothing wrong with having widespread FDI in the Hungarian automotive industry. Such ventures are especially welcome from the employment point of view. Component manufacture is usually labour intensive (for example the production of cables). Some have escaped tighter Western environmental regulations by coming to Hungary (for example, in polyurethane production or aluminium casting). The skill and knowledge-intensive stages of production have stayed in the West. Only in exceptional cases has any R and D been moved to Hungary, and in those cases the labour-intensive development tasks have been relocated. In fact, there was little reason to expect anything else in view of Hungary's historical position in industry. High-tech products from Hungarian producers have been almost exclusively licensed from abroad or produced in tight cooperation. Only a few locally developed products have featured (for instance from Rába). Hungary represents only a small link in the value chain of global industry and its entry and contribution were only possible on the lowest level. Nevertheless, there are hopes that Hungarian background industry may move up the hierarchy later:

* because wherever there is production, the need for development appears sooner or later, and,
* because it is almost as difficult to get out of the chain, as it is to get in. A car model is usually made for 8–10 years, so that the outside supplies are required for a similar period. Furthermore, smooth cooperation makes the best reference for obtaining new orders or involvement in product development.

It is also obvious that it is easier to join a completely new project as a supplier than to supplant a supplier in an existing project is. The best Hungarian example of this is the

joint GM-Suzuki project (SUB-S programme), a development effort to forge co-operation links based on the Wagon R+ programme. This has been joined by several Hungarian partners previously unable to join in the Swift production programme.

The Suzuki experience has been left to the end of this account deliberately, because it cannot be regarded as typical, at least in terms of supplier-network creation. Suzuki started production at a time of deep recession in the Hungarian car market. Customs and other measures in neighbouring, car-producing countries left Suzuki uncompetitive. To reduce losses, a forced effort was made to accelerate preparations for EU exports. According to Hungary's association agreement with the EU, there were to be reduced tariffs, and from 1995, customs-free deliveries if the European content of the cars exceeded 60 per cent. Relying on imports from the EU would have pushed up costs too high, so that Suzuki made efforts to source in Hungary instead. The accelerated creation of a Hungarian supply network was only possible through compromises at the expense of economic rationality. Tooling for small batches, for example, increased unit fixed costs, but in the first half of the 1990s, many Hungarian firms were willing to join Suzuki at zero profit or even a loss, since they saw this as a last chance of survival or a vital reference.

2.2. The views of suppliers

2.2.1. Corporate background and privatization

Like Hungarian manufacturers in general, automotive companies faced the challenges of the late 1980s and early 1990s from widely different starting positions. Many had specialized in the outdated demand structure of COMECON and possessed over-sized, outdated and inefficient capacities, including a bloated, underemployed workforce, leading to a low level of labour productivity. The collapse of COMECON in 1991 had left them in great difficulties, as suppliers to COMECON countries (especially the Soviet Union, for instance in the case of the giant bus maker Ikarus) or suppliers to such suppliers. The situation was aggravated by the concurrent liberalization of imports into Hungary, the introduction of the radical bankruptcy regulations, and an overall increase in interest rates (following inflation).

Many automotive suppliers therefore failed in the early 1990s, and their assets were sold off cheaply to foreign or Hungarian investors. Adjustment to market changes was usually started earlier, and the companies without previous debts could properly prosper after the procedures. With some patience and care, state owners also could have enjoyed the financial results of this prosperity. Contradictions of privatization also thwarted adjustment of distressed firms. Privatization was usually a long procedure until the companies could find their long-term strategic owners being able to provide capital and markets necessary for long-term survival of firms.

Some of the privatization practices typical in Hungary were also detrimental to the long-term survival of troubled automotive firms, for instance leveraged buy-outs (MBO or ESOP schemes) or privatization based on an emotional background proved to be a failure in most cases. 'Emotional privatization' meant giving preference to non-commercial factors during the privatization process, for example favouring the conservation of employment and activities, or domestic over foreign bidders, which tended to postpone the necessary adjustment efforts. Ostensibly new owners such as the state asset-holding company or commercial banks acquiring assets through liquidation proceedings could not or would not assume a real ownership role. Reorganization, investment and sales initiatives were omitted.

Delayed or reduced modernization and the consequent loss of production capacities and competencies thwarted Hungarian firms that were already disadvan-

taged in international competition. A better post-liquidation performance was usually obtained by financial investors, although it was often still insufficient. The motive of financiers' efforts to improve performance was future sale of the firm to strategic investors or a stock-exchange flotation. Since this could be achieved only through increasing sales and profitability, such investors were under continual pressure to ensure growth. Where they had obtained assets cheaply in liquidation proceedings, they found themselves unable to build up the capital from depreciation to ensure modernization or capacity development. Profits were usually low. Such firms in the event had little chance of becoming desirable investment targets for strategic investors.

Some firms were able to remain afloat despite the hardships of bankruptcy and privatization provided they avoided direct confrontation with the interests of big multinationals, by serving small market niches in small quantities, e.g. the demand from MS. Many firms that lost their raw material bases after privatization found themselves in an especially bad position. Instead of growth, they usually faced exit in the medium term, or at best, dependence on a multinational.

However, numerous cases of successful adjustment also occurred. In these cases, Hungarian automotive suppliers deliberately prepared themselves for the coming market changes and acted quickly and firmly on them. Many managers in the mid-1980s were aware that COMECON cooperation was ailing and hedged by developing cooperation links with Western companies as well. Initially, this usually meant subcontracting, which taught Hungarian partners how to produce automotive parts in the required quality and make accurate, punctual deliveries. Later developments were enhanced by the accumulated cooperation experience and the economic and legal changes that came with the socio-economic transition after 1989. Joint ventures were established, and traditional cooperation Western partners took part in the privatization process. Subcontracting links were replaced by longer-term cooperation agreements and supplier contracts involving licensing and know-how transfers. A further step in most cases was an increasing local added value in the sub-assemblies and ultimately the complete assembly, with even R and D moving to Hungary in some cases.

Firms that realized the necessity of developing Western cooperation did not automatically survive, however. It was beyond the powers of many able managers to overcome the endemic difficulties of the Hungarian transition (corporate payment arrears, poor quality of basic materials, lack of supplier discipline, etc.) Nonetheless, survival and adjustment in most cases depended crucially on what corporate management did. A surprisingly high number of Hungarian managers managed to reorient their business strategies rapidly, making sweeping adjustments, of which the most important were:

* changing the corporate organizational structure to comply with Western standards in the automotive industry,
* rationalizing and tidying corporate profiles – firms had to part with many activities, institutions and facilities only loosely related to their core competencies (e.g. social infrastructure, own electricity or water supplies, etc.), and with unreliable suppliers, but also outsource many new activities such as cleaning, warehousing and transport,
* starting new business links at zero profit that offered prospects of future profits and engineering development,
* finding efficiency reserves by improving loose cost calculations by participating departments and making sure their cost planning was efficient
* ensuring that partners' requests could be rejected only by the chief executive,
* improving on the performance of major Western competitors in quality, delivery potentials and many other aspects, in order to gain international acknowledgement,
* firms have to strive for localization as large part of the production as they only

can in order to increase profitability of operations.

On the other hand, it was useless to establish joint ventures for every activity and product in an industry where profits are low and there is substantial overcapacity in some products even in Hungary. The strategic goal had to be to increase output of self-designed products, and most of all, to grow. Only a firm with an annual turnover over USD 100 million would be thought large enough to qualify as an equal partner for Western firms.

2.2.2. Corporate structure, foreign experiences in Hungary, and criticism of Hungarian managers

The stories of the largest foreign firms have already been covered. Those of the smaller ones active in producing automotive subassemblies share many of the same features:

* Initially, investors in Hungary moved mainly into labour-intensive, or technology-intensive but environmentally sensitive activities. Spatial proximity, adequate level of infrastructure and legal stability were important incentives, as well as the low Hungarian wages, which were a fraction (10–15 per cent) of those in Germany. Later, the producers of labour-intensive automotive products were followed into Hungary by the producers of their basic materials.
* In Germany, these firms were employing workers with rights to a 35-hour week, six weeks' annual paid holiday and several state and religious holidays. In Hungary, they are able to run their facilities round the clock in four shifts, so that the equipment produces a significantly greater output than it would in Germany. Capital productivity is much higher in Hungary. There is practically no trade-union activity, as most employees are happy in what for them is a relatively well-paid job.
* Most of the factories in Hungary were relocated from Western Europe and brought their order books with them. They were not set up as part of the reviving Hungarian automotive industry, but as an export platform.
* The foreign parent in such cases provides the technology and the orders, while labour is the local contribution. Later, some kind of local sub-assembly production may be added, but the local value added rarely exceeds 10 per cent.
* Hungarian affiliates have little room for manoeuvre. Business links are decided at headquarters, and so are prices and profits. The parent chooses and tests the suppliers. There is no need for marketing or local purchasing or development. Cost calculations are only made for the affiliate's 'own businesses' (as in the case of Suzuki's local suppliers).
* This procedure is general in the Hungarian affiliates of multinational companies, because 100 per cent owned subsidiaries are easier to handle, influence and slot into the global network than independent Hungarian suppliers are. Furthermore, they have provided channels by which multinationals can save significant amounts of tax.

Initially, foreign investors were not very enthusiastic about Hungarian industry. They seemed to regard Hungarians as people to do the simple work and only moved final assembly tasks into the country. They did not use local supplier capacities. Firms engaged in investment and starting production rarely change traditional suppliers for new local ones. However, the success of the Suzuki project influenced several other companies and the interest of potential foreign investors in Hungary increased. There is a major difference between European and overseas investors. Large overseas firms usually establish their local supply network quickly, while the mainly smaller, European suppliers remain tied more closely to their parent companies and are slower in this respect.

The experience of foreigners in Hungary has not always been positive. Managers are usually appreciative of the qualities of local labour (especially engineers and

skilled workers), but they often add that labour needs further training and managers have to watch them carefully. This means in part that they need potential sanctions before they perform properly, otherwise 'they steal.'

There have also been some negative experiences with local suppliers. Firms investing in Hungary usually find it hard to track down suitable partners for deliveries. Hungarian firms often do not understand what they were expected to produce, let alone meet the quality and reliability requirements necessary to become a supplier. For foreign investors (and for Hungary) it has been found best for firms to have their traditional partners follow them here. Hungarian managers themselves admit that they find the requirements for making a bid for business with a multinational very complicated. For many, entry into the network is effectively obstructed at that very early stage.

But the negative picture is offset by many good examples. Favourable experiences in Hungary have induced several multinationals to move even R and D facilities to Hungary. (Examples include Knorr-Bremse and Audi.)

The next category of background industry consists of medium-sized Hungarian-owned firms. The number of these fell sharply during the years of transition and most of them remain in a much worse position than foreign-owned suppliers are. Most of them lost the bulk of their markets with the collapse of COMECON. They managed to reduce employment quite quickly, but found they could hardly sell their outdated and excessive production. These firms have had troublesome histories – emotional privatization with substantial capital preemption (reduction) and delayed restructuring. Many also have a troublesome present, as parts of Hungarian conglomerates, having to cross-finance losses at other divisions. Despite these drawbacks, they are still serious constituents of Hungary's industrial potential, because:

* They possess their own R and D facilities and their own products.
* They have investment-project management.
* They carry out marketing activity.
* They maintain their own maintenance forces.
* They provide jobs (and know-how) for a number of domestic SMEs.
* They possess valuable and still accessible links with CIS countries.
* They can supply complete automotive sub-assemblies in large quantities and at standard quality.

In the view of managers, these firms are at once too big and too small. They are too small to invest on the same scale as multinationals can and to avail themselves of the generous tax and other incentives from the government, for which there are investment-size thresholds. Furthermore, they receive no support in solving their environmental problems (cleaning up past pollution). They do not receive state guarantees for investment credits, and they are not usually located in industrial free-trade zones, which means they are not exempt from tax and VAT. At the same time, they are too big to benefit from the state support aimed at SME development, where the usual ceilings are 250 employees and a turnover of USD 8 million. These firms also require special attention from industrial policy-makers. According to managers, this should include increased customs protection and cheap development credits.

Finally, mention must be made of SMEs, whose role in the Hungarian automotive industry is increasing. They can be regarded as winners by the transition process and its associated foreign investment. This applies especially to the partly foreign-owned firms that have successfully joined in the Suzuki cooperation network, gaining much from the substantial support for technology development and machinery improvements provided by the Japanese investor, along with solutions to financial problems.

The legal regulations allowed private companies to be founded even before the transition process began. Many engineers

and managers previously in SOE employment switched to private business, usually utilizing skills and connections gathered over many years in their previous jobs. These firms characteristically offer good quality and relatively low prices, and they are growing very fast. However, the growth may run up against two main barriers:

* The increasing demand they face can often be satisfied only by making a radical technology change (introducing new equipment for mass production or making other expensive investments. In most cases, firms do not generate the profits to finance such investment. Many managers also shrink from investing in expensive machinery, at the still high rates of interest in Hungary.
* On the other hand, many managers are wary of expanding beyond a fairly small size, because corporate indirect costs tend to jump when the workforce exceeds 50 employees, so that other, smaller firms may become more competitive and capture business.

Many smaller firms have based their prosperity on employing technologies and producing goods that are still in limited demand, but have been removed from the catalogues of big multinationals. Other market niches require manual production of small batches of highly skill-intensive goods.

Small size does not necessarily mean that there is no development activity, but multinationals do not usually buy inventions from small firms, however environmentally friendly and cost efficient they may be. These inventions become a lot more expensive after going through the complete corporate hierarchy and receiving the necessary refinements, so that the benefits of them prove smaller than the costs.

Not all SMEs are success stories. Firms that existed before the transition were usually deprived of their markets by market collapse and import liberalization. Interviews showed that SME managers felt as much at a disadvantage as the managers of other Hungarian-owned suppliers. They thought that Hungarian government did not support them and that they were at a disadvantage compared with multinationals. But they also blamed banks, which sometimes called for HUF 300 million security as collateral for a loan of HUF 10 million.

2.2.3. Experiences with new supplier links: matchmaking, investment, development, technology and quality control

It is not easy to become an automotive supplier. Success depends much on the question of who wants to supply whom.

Car assembly resumed in Hungary in 1992 after a 50-year break. The two multinational carmakers, Opel and Suzuki, established their plants with completely different objectives. Opel only wanted to supply the Hungarian market. Suzuki wanted to become the market leader in Hungary, but also to use its Hungarian factory as a jumping-off point for customs-free deliveries to the European Union. Opel produced only 10,000–15,000 cars a year and possessed a wide network of suppliers in Europe. Suzuki wanted to produce 50,000–60,000 cars a year initially, rising later to 100,000 cars, while developing a local network of suppliers within two or three years, to meet the local-content requirements for concessionary tariffs on exports to the EU. GM did not need Hungarian suppliers and the small batches meant it would not have been economical to use them either. The few exceptions included motor oil and batteries, which Hungarian firms supplied to the Opel assembly plant at Szentgotthárd. Suzuki, on the other hand, held seminars to assist in recruiting Hungarian suppliers, where the disassembled parts of the car were displayed and interested Hungarian firms were usually able to copy them. However, it was necessary to purchase a production licence for each part from the original designer. Hungarian partners were allowed to introduce their own designs only for 'invisible parts', but even for these, there was a lengthy vetting procedure at Japanese headquarters.

Big differences were evident among those applying for supplier status. Most striking was the difference between foreign firms with traditions in the automotive industry and inexperienced Hungarian companies. The former were ready to deliver in a few weeks, while the later needed several months or even years to prepare. Major obstacles for the latter were inadequate levels of quality control, logistics, foreign-language knowledge, and above all development capital. Firms with a background of supplying the state-owned bus-maker Ikarus and with additional experience with other carmakers (such as BMW, Renault and Volvo) were noticeably better prepared than the newcomers to the industry. Previous cooperation links also served as references and provided a background in production culture, quality and reliability that enabled them to adjust to the Suzuki requirements more rapidly.

As far as supplier quality was concerned, Opel initially required of potential suppliers simple ISO qualification, but in 1998, this was upped to the QS–9000-quality standard. Another requirement was on-line connections with Opel (using the EDI communication system). Suzuki did not make these stipulations, because the company graded applicants according to its own set of criteria. Furthermore, Suzuki provides much more support for achieving the necessary qualifications than Opel does. Managers of supplier firms report finding contacts with Suzuki much more 'friendly and family-like'. Suzuki also provides technical assistance, contributes to machinery development and retooling, provides loans at lower than commercial interest rates, and organizes training courses to reduce the level of substandard output. Suzuki is a much more faithful partner, than the European carmakers. However, Hungarian firms do not always have a good opinion of Suzuki. They mention here clumsiness in relations, long communication routes, and the need for good contacts between multinationals and the government.

Both Suzuki and Opel insist on a framework agreement with each supplier. This stipulates the various obligations of the supplier and provides security against possible risks and hazards to both parties.

Initial investment costs for a supplier range from HUF 1–2 million to several dozen million, depending on the scale of the orders and the product. Some companies already had adequate technology, for example because they had previously supplied the Soviet defence industry, with its rigorous quality standards, but even then, several million HUF had to be spent on modelling, retooling and test production. Investment in machinery also contributed to the costs wherever technology was inadequate. Suzuki was prepared to transfer licences and know-how free of charge, but with Suzuki partner firms, the Hungarian firms had to make a down payment and then pay an annual royalty.

The established practice in the industry is for the carmaker to pay for the initial tooling. Suppliers, especially smaller ones, tend to buy the tools fairly soon, for fear that their partner may move the production elsewhere. This also explains why it is hard to penetrate a supply network of an existing model. Models are produced for 8–10 years, so that a latecomer may find the tooling expenses too high, while existing suppliers have already shortened the period beyond which they will earn a return.

There are further differences in the status of GM and Suzuki suppliers. GM suppliers may deliver to any European GM affiliate, usually in batches of several hundred thousand. Suzuki suppliers usually deliver only to the Esztergom factory. This does not necessarily mean that the batches are all small. Esztergom requires some components in quantities of several hundred thousand a year. Additionally, Suzuki teaches Hungarian firms how to produce a specific product efficiently, so that the supplier firm may then apply successfully for similar jobs with other carmakers or in other industries.

The problem of small batches in the Suzuki cooperation programme resurfaced with the 'SUB-S Programme'. Opel and Suzuki decided to collaborate on developing a

small car, with product development to be done by Suzuki and supplier recruitment by GM. The results were mixed. A number of new Hungarian suppliers (not previous Suzuki partners) received orders, at least as second-tier suppliers. On the other hand, several well-performing Suzuki suppliers did not qualify in this round. GM's insistence on its own traditional suppliers exemplifies a widespread phenomenon, but many of the Suzuki 'dropouts' accused GM of using the tender only to secure its traditional suppliers against the threat of local competition. Traditional Hungarian suppliers to Suzuki suffered a severe drop in demand, since the production of the new Wagon R+ model tied down much of the capacity at Esztergom, reducing the output of the Swift model. There are a few suppliers where deliveries to Suzuki account for 40–60 per cent of turnover. For them, the model change may be very painful. Most suppliers, however, have insured themselves by developing several parallel activities.

2.2.4. Prices, costs, profits, competitiveness and labour

Managers often claim that supplying the automotive industry is not a good business. It is instructive to see who asserts this and what reasons are given.

* The complaints come mainly from managers with long experience of COMECON cooperation (supplies to Ikarus or another manufacturer). They find it hard to adjust to the stronger competition since the demise of COMECON and they need to cater to a narrower, but more demanding market. They now produce at a much lower level of complexity in the international division of labour, so that products generate less added value and profit.
* Complaints come mainly from managers at firms that still bear burdens inherited from the collapse of COMECON. They have remained in Hungarian ownership and undergone a long and troublesome privatization process (e.g. emotional privatization). Subsidiaries among them have had to cope with the parent siphoning off profits. Later hardships have usually included troubles on the Russian market. They usually possess oversized capacities, redundant infrastructure, and a still high level of debt that compromises business performance and competitiveness.
* Another suffering type of firm consists of Hungarian SMEs with supply links only to Suzuki. They usually lack the preconditions for developing mass-production capacities of standardized quality.

Automotive cooperation gets a much better evaluation from firms starting in the business with no inherited obstacles. Wholly foreign-owned greenfield investments or Hungarian firms without accumulated debt or inadequate expensive capacities are able to develop and grow, improve quality and satisfy the needs of further automotive partners.

Competition is certainly fierce in the automotive industry, but the same applies to other sides of manufacturing. Product and technology development have resulted in an increasing number of driver conveniences that were optional in the past but have become standard today. Security and environmental standards are also becoming stricter by the year. All these features increase costs, while the solvent demand for cars does not increase to the same extent. The whole industry is therefore characterized by rigorous cost and price-cutting, which affects worst the firms at lower levels in the cooperation and those that are least innovative.

Managers complaining of low profit rates in the automotive industry accuse Suzuki of dictating abnormally low price levels. They suspect that the Japanese originally planned for a much quicker increase in production and sales, and are constantly pressing suppliers to reduce prices after several years of trading losses. On the other hand, wholly foreign-owned affiliates and firms supplying several companies in the automotive industry think that Hungarian suppliers are covering up their own mistakes by complaining of low profits. This means that although profit rates are lower than they are in the bus industry, makers

are not asking for the impossible. They try to push down prices as far as possible, but they are not intent on pushing suppliers into bankruptcy. In fact, Suzuki even checks the records of potential suppliers to make sure that corporate failures are avoided.

The relatively low profit rates may be compensated for by the large order batches. It is also important that contracts are for the long term. Firms may plan their incomes, and their clients are usually reliable, they pay in time. This sector provides job for several ten thousands of people.

In fact, carmakers demand a 3–5 per cent price saving from their suppliers in the long-term framework contracts, for three main reasons:

* Suppliers only need to make major investments in the first year. They can write off their capital costs after two or three years, after which they only need to make minor maintenance investments.
* As output increases, unit cost declines. The increase occurs partly because of increasing sales of the new model, partly because of the rising demand for spare parts.
* Carmakers expect suppliers to pass some of the price cuts on to their second or third-tier suppliers.

While these considerations make it possible to reduce component prices, market competition makes it unavoidable. Every model counts as a novelty only for the first two or three years, when sales may yield some price premium. Demand can only be maintained later by offering special series at reasonable prices, equipped with a number of further conveniences and appliances. Since market success is in the interest of the whole cooperating supply chain, everyone must share the costs.

How can suppliers absorb a price cut of 3–5 per cent every year? This is a complicated problem, in which the level in the automotive pyramid is material. Usually, the more sophisticated the product produced, the greater the chance of saving on costs. Localization is therefore extremely important. Firms tend to produce in house whatever they can. Luckily, there is a tendency for carmakers to move to complete vertical production structures in Hungary, ranging from materials to final assembly.

Further opportunities to cut costs derive from the competition among potential suppliers and the discovery of internal sources of savings. In the later case, the carmaker may provide valuable help. Opel and Suzuki both require continual price cuts, but the latter is usually willing to survey the supplier, study the facility on spot, and make suggestions for cost reductions.

Cost reduction becomes really successful if output volume can be increased. Apart from the gains from increasing sales of a given model, spare parts can be sold to other carmakers and demand for spare parts develops over time. However, there are constraints on the cost reductions obtainable from these:

* It is not easy to find a new buyer for an automotive spare part, because many are specific to a brand or a model. Furthermore, the framework contract may limit sales on different markets. At the same time, there are examples of Hungarian companies, having mastered the production know-how of one carmaker obtaining contracts from others for similar products.
* The market for spare parts has become increasingly regulated in the last few years. The main tendency is for spares to be sold mainly through the carmaker itself, so that suppliers are not allowed to sell to other firms. Prices are regulated in separate contracts. The position of supplier is better in the markets for the most important sub-assemblies (A-category, highest-security priority). These markets hardly allow any other product to be used, but the original from the carmaker. The risks of trying alternative sources are very high in these markets. In less important categories, the supply is much wider, including several cheaper suppliers producing substandard quality.

It has been mentioned that foreign investors are usually satisfied with Hungarian

engineers and skilled labour. However, it is questionable whether they have met a representative sample from the whole of manufacturing industry. Multinationals offer the highest wages regionally, so creaming off the labour market. Many people accept jobs below their qualifications in the hope of a career with a multinational, so that multinationals may end up with an overeducated workforce. This improves Hungarian competitiveness. In EU countries, jobs are often casual or temporary. The share of unskilled labour is high, resulting in high labour turnover. In Hungary, many educated workers take unskilled jobs for fear of unemployment. At the Győr Audi affiliate, the workforce is 100 per cent skilled, but that applies to only 70 per cent at the main works in Ingolstadt.

Hungarian suppliers can compete in the East as well as the West. Many expect Western companies eventually to buy out Russian carmakers. The suppliers will then be well placed, since they are cheaper than Western firms are, but much better than Eastern ones.

There are also some problems with labour in Hungary. In some regions, qualified labour is in short supply and foreign firms poach each other's employees in industrial parks. Another problem is education. With some exceptions (the link between Audi and the Győr college), schools have no such contacts with firms as they have in Germany, for example. This precludes influencing directly the structure of local education and tailoring it to employment needs. Instead, the fashionable skills preferred over industry are ones in which the black economy places a big part and net incomes are relatively high.

With competitiveness, the part played by foreign firms in spreading the Western industrial standards in Hungary has to be mentioned. Although quality is not new, the introduction of Western corporate attitudes and philosophies affects economic integration much more readily than any administrative effort at harmonization. The best results have come in product quality, where Hungarian manufacturing figures are among the best in the world. Less successful has been the implantation of just-in-time systems. Despite improvements, punctuality measured in minutes is not yet characteristic in Hungary, so that relatively high stock levels are still required.

* * * * *

TABLES

Table 1
Expansion of the Hungarian car industry
(1992–2001, units p.a.)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Opel										
- Astra	9,401	13,344	12,282	12,488	11,255	12,715	9,350			
- Vectra								4,008		
Suzuki										
- Swift	3,584	13,583	23,600	33,907	43,828	53,385	60,805	63,967	42,137	40,722
- Wagon R+								48	31,843	41,668
Subaru										
- Justy				2,144	9,015	10,155	5,500	4,090	3,273	2,715
Audi										
- TT Coupe							13,682	44,022	31,046	22,078
- TT Roadster								8,557	25,712	17,271
- A3										15,947
Total	12,985	26,927	35,882	48,539	63,033	76,255	89,337	124,692	134,011	140,401

Source: MSC, Opel Hungary and AHM.

Table 2
Increase in engine production in Hungary
(1992–2001, units p.a.)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Opel	20,511	75,741	160,033	266,051	310,034	368,048	416,830	511,813	480,030	399,945
Audi			18,938	104,159	196,352	584,665	986,773	1,001,912	1,060,828	1,220,217
Total	20,511	75,741	178,971	370,210	506,386	952,713	1,403,603	1,513,725	1,540,858	1,620,162

Source: Opel Hungary and AHM.

Table 3
Increase in Suzuki sales
(1995–2001, units p.a.)

	1995	1996	1997	1998	1999	2000	2001
EU, Norway, Switzerland markets	12,007,662	12,800,138	13,408,318	14,338,912	15,050,980	14,737,660	n.a.
Suzuki sales	88,366	104,579	119,280	138,534	143,293	131,180	n.a.
Market share (%)	(0.74)	(0.82)	(0.89)	(0.97)	(0.95)	(0.89)	
Hungarian market	67,871	74,455	79,827	104,000	126,700	133,200	148,293
Suzuki sales	12,177	13,821	16,040	24,834	30,800	27,421	28,352
Market share (%)	(17.94)	(18.56)	(20.09)	(23.88)	(24.31)	(20.59)	(19.12)

Source: MSC, KSH (Hungarian Statistical Office), L'Argus and MGE (Hungarian Car Importers' Association).

Table 4
Increase in Suzuki exports
(1995–2001, units p.a.)

	1994	1995	1996	1997	1998	1999	2000	2001
Exports	3,290	23,900	37,000	47,700	35,000	35,546	49,522	56,120
As a proportion of total sales (%)	16.97	66.20	72.83	75.12	58.60	53.58	64.36	66.44

Source: MSC.