

IMPACTS OF THE JAPANESE INVESTMENT IN THE UK ON THE LOCAL SUPPLIER RELATIONSHIP

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Abstract

The management of the business relationship with suppliers has come to be regarded as an important source of competitiveness. Previous studies show that the relationship in the UK has been substantially changing since the 1980s under the globalization of competition and increasing Japanese direct investment. Evaluating the results of a field work on 40 firms in the automotive and the electronics industry in West Midlands, this paper shows that in the last years long-term oriented cooperation between customers and suppliers has been established for costdown and quality improvement and expanding into lower tiers of the supply chain with considerable differences among industries and companies. Japanese transplants are the main promoters of this change, with some major British and European customers following them to a quite different extent. This paper also provides evidence of the positive effect of the changing pattern of business relations on the performance of suppliers.

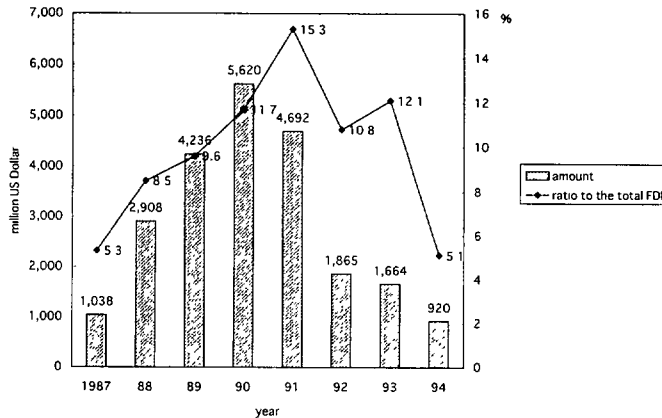
I. Background and Main Issues of the Research

The management of the supplier relationship¹ has come to be regarded as an important source of competitiveness. In recent years, British firms have been increasingly adopting a closer, long-term relationship with their business partners. This trend was caused by two factors which are related to each other: the globalization of competition, which forces British manufacturers to improve their competitiveness both in price and quality to match the challenge from abroad, above all from Japan, and the Japanese direct investment in the UK which increased remarkably in the late 1980s (Figure 1).

Japanese companies have intensified the direct investment in the UK since the mid-80s to avoid anti-dumping measures and import restrictions by some EU-countries as well as to secure a better competitive position in the integrated European market. According to the informal local contents agreement, they had to purchase at least a part of the necessary components from suppliers in the UK or the EU-countries, including the Japanese-owned ones. As it was difficult to have most of the Japanese suppliers set up their transplants in the UK, and as the local contents regulation was applied also to components in 1987, many Japanese transplants have been trying to develop a close, long-term relationship with their

¹ The supplier relationship should be understood in this paper as the business relationship between a supplier of industrial components or subcontracting services and a manufacturer which purchases them as productive inputs.

FIGURE 1. DIRECT INVESTMENT BY JAPANESE FIRMS IN THE UK



Notes: Flow data based on the balance of payment statistics.

Source: Ministry of Finance, Monthly Report on the Balance of Payment, various issues.

UK-suppliers. So both from the British and the Japanese side there are good reasons to establish a closer supplier relationship in the UK.

The supplier relations in the UK had traditionally a quite different pattern from that in Japan (Cf. Dunning 1986, Turnbull 1991, Sako 1992, Morris/Imrie 1992). In the UK, independence was the guiding principle; Both customers and suppliers preferred nondisclosure of information, with little cooperation in regard to product quality and design. Price competitiveness was achieved through open bidding, with customers often changing suppliers. In Japan, on the contrary, both parties accept mutual obligations over the long run, disclosing business information each other and cooperating for quality improvement and product design. Competitiveness in price and quality is achieved through the ranking of core suppliers by regular performance reviews.

The traditional British pattern of "arm's length" relationship may be effective in a static price competition with rather simple and standardised products, while the Japanese pattern of long-term commitment is thought to have advantages in a dynamic competition with specialised products, where cost-effective quality and shorter cycles of product development are essential (Cf. Sako 1992). We may assume that the Japanese pattern is in general better suited to cope with global competition of today which is increasingly characterised by the latter type.

The supplier relationship in the UK and its changes are not a new subject of research. Since the mid-80s various researches have been carried out on this subject both by British and Japanese scholars (Dunning 1986, Trevor/Christie 1988, Turnbull 1991, Ikeda 1992, Morris/Imrie 1992, Oliver/Wilkinson 1992, Sako 1992, Thoburn/Takashima 1992, Mitsui 1995, Sako/Helper/Lamming 1995, Ikeda 1996, to mention some). Yet there are some reasons to start another one:

First, most studies were made in the second half of the 1980s, where the Japanese direct investment increased dramatically. Most of the Japanese transplants or joint-ventures were just set up or still in planning at that time. So we may assume that it is not before 1990 that many

Japanese firms in the UK substantially developed their supplier relations. Japanese studies in the 1990s provide findings on the recent development, but they seem to leave room for more intensive inquiry into the evolution of the new pattern of business relationship with local suppliers.

Second, to date quite little is known about changes in the relations between first- and second-tier suppliers. Most studies concentrate their attention on the relationship between final assemblers and their direct suppliers, though some of them briefly refer to recent changes in the sourcing policy of these suppliers. This neglected aspect is in so far interesting and important, as the performance of first-tier suppliers may be influenced by that of lower-tier ones. Poor quality of components may be caused partly by poor quality of subcontracting service for them.

Third, the impact of the changes in business relations on the performance of suppliers has rarely been an issue in empirical studies. An exception in this regard is Sako/Helper/Lamming (1995), which systematically compares the performances of suppliers between those in "partnership" with customers and the others, using a large data set from Japan, USA, UK and the rest of Europe.

Thus, this research has the following main issues:

- 1) to find out the extent of cooperation and information exchange between final assemblers and components suppliers on the one hand, and between first- and second-tier suppliers on the other, in regard to price setting and quality control²;
- 2) to explore, when major changes in the relationship occurred; and
- 3) to examine the impact of changing patterns of the business relationship on the supplier performance.

In regard to these research issues, we have the following hypotheses to be proved:

1-A: The supplier relationship in the UK has changed to the direction of long-term mutual commitments and more information exchange, though there are still considerable differences between industries and among companies.

*A number of previous studies already point out this tendency. As the globalization of competition has rather intensified and more Japanese firms have established in the UK in the last years, we may assume that this tendency has intensified as well.

1-B: Japanese-owned customers are more active and perform better than the others in supporting their suppliers to achieve higher performances.

*The Japanese are in general more and better experienced in this respect and have to support local suppliers if they need to purchase from them, for example because of the local contents agreement.

1-C: The relationship between first- and second-tier suppliers is changing as well, though not to the same extent as that between final assemblers and their direct suppliers.

² The research issues include originally also delivery control and product design, which have to be omitted in this paper for want of space. All of the interviewed Japanese assemblers but an electronics manufacturer develop and design all (or almost all) the components in Japan. So there is very little room for local suppliers to cooperate with them in product design.

*We may assume that first-tier suppliers can better match the requirements of the customers and achieve higher performance, if they change the pattern of relationship with their own suppliers in the same way as the customers do. So the changes in the upper tier in the supply chain will lead to further changes in lower tiers sooner or later. However, it will take much time as the first-tier suppliers themselves still have little experience of managing the new pattern of relationship.

2: Major changes in the relationship occurred in the 1990s.

*Increased Japanese direct investment is regarded as a main factor of changes in the business relations in the UK. But, as mentioned above, many Japanese transplants were set up in the late 1980s or even afterwards, so that major changes must have occurred as late as in the 1990s.

3: The new pattern of business relationship has positive effects on the competitiveness of the suppliers, especially on the product quality.

*Suppliers can improve the quality level of their products more effectively and match the special requirements of the customers better, the more and the better they are informed and supported by their customers in regard to quality control.

The research method, as well as the selection, composition, and some characteristics of the sample firms, is described in the next section. The results are presented and evaluated in Section III. Concluding remarks follow in Section IV.

II. *Research Method and Sample Firms*

The author visited 42 firms in the automotive and the electronics industry in West Midlands and the surrounding area from June to July 1996 for semi-structured interviews with managing directors, general managers, sales/purchasing directors or managers. The sample consists of 40 firms including 7 final assemblers, of which 3 belong to the automotive and 4 to the electronics industry, and 33 parts suppliers (23 suppliers to the automotive and 10 to the electronics industry³). Two firms, a supplier of testing equipments and a distributor of standard parts, were excluded from the sample. All the automotive assemblers in the sample are car makers, while the main products of the assemblers in the electronics sector are quite different: telecommunication equipments, copy machines, mobile phones, monitors, and printers.

All the final assemblers but a car maker are Japanese-owned. Among 33 parts suppliers, 9 are Japanese-owned including joint-ventures (4 to the automotive and 5 to the electronics industry), of which most were established in the late 1980s. All the suppliers to the electronics industry are regarded as first-tier firms, though some of them supply the automotive parts suppliers as well. 7 of 23 automotive suppliers are classified to second-tier firms, for they sell more than a half of their turnover to first-tier suppliers. Table 1 gives a summary of the sample

³ Suppliers to the assemblers of the electronics industry do not always belong to this industry. Those in the sample rather produce such non-electronic parts like plastic moulding or precision pressing.

TABLE 1. CLASSIFICATION OF THE SUPPLIERS
IN THE SAMPLE

classification	first-tier	second-tier	total
automotive	16 (3)	7 (1)	23 (4)
electronics	10 (5)	0 (0)	10 (5)
total	26 (8)	7 (1)	33 (9)

- Notes:* 1. numbers of Japanese-owned firms in parentheses.
 2. 6 of the 10 suppliers to the electronics industry (including 2 Japanese) have business relations with first-tier suppliers of the automotive industry as well.
 3. The firms are classified to second-tier suppliers, when more than a half of the turnover is sold to first-tier suppliers. So a part of the first-tier firms supply other first-tier ones, and a part of the second-tier firms have direct business with final assemblers as well.

structure.

Among many final assemblers, we selected those whose main factories are located in West Midlands or the surrounding area. The sample does not include any British assembler of the electronics industry, as there are no more companies which would match the Japanese ones in the sample. The suppliers in the sample were partly selected from two directories of companies edited by the Department of Trade and Industry (DTI), "UK Automotive Components" (n. d.) and "Japan Electronics Business Association (JEBA) Directory of Members" (January 1996), and partly recommended by some of the visited companies as their suppliers. The latter is the case for most second-tier suppliers.

Therefore it cannot be denied that the sample has a limited representativeness. It may be biased, too, as probably those suppliers who are relatively successful in business with their customers, especially with the Japanese, and could improve the relationship with them, tend to accept the interview. We should be aware of this possible bias in the sample in evaluating the results. Anyway, the sample contains almost all Japanese-owned customers and suppliers in the target area and industries, except those which refused the interview. Because of the limited representativeness and the small sample size, we will dispense with strict statistical analysis of the results.

The sample suppliers are mostly small and medium sized firms with less than 500 employees, with an average of 260. The first-tier automotive suppliers are on the average larger (392) than the second-tier ones (130) and those to the electronics industry (140). They have various main products and production processes, with 16 firms classified to presswork, 8 to component assembly or sub-assembly, 4 to plastic moulding, 2 to die-casting, and 1 to cutting.

The share of the main (or biggest) customer in the turnover is about 40% on the average. Many firms, especially the Japanese-owned, expanded their customer base in the last 5 years. Japanese suppliers to the electronics industry concentrate their business on Japanese customers, while it is not the case for automotive suppliers. The dependence of non-Japanese suppliers on Japanese customers is still quite low (for a half of them less than 20% of sales), though most of the automotive suppliers have been expanding business with them. Two thirds of the sample firms have been supplying Japanese customers for at least 5 years.

All of the interviewed firms are kept in anonymity. Some final assemblers will be mentioned by name, in so far as reported by suppliers in regard to different purchasing practices of their customers. Otherwise, no firm-specific information will be reported explicitly with the name of the company.

III. *Main Results of the Research*

The results of the research should be presented and evaluated in regard to the following aspects of business relationship:

- expected length of business relations,
- determination and review of prices, and
- measures for quality improvement.

Special attention will be paid to differences between industries on the one hand and ownership nationalities of firms on the other, as far as possible. The relationship of the suppliers with their own suppliers and subcontractors should be explored in the same way. Finally, the impact of the changes in business relations on the performance of suppliers in regard to cost and quality is examined.

III-1. **Business Relationship with Customers**

(1) **Expected Length of Business Relations**

The pattern of contract and order is quite different among customers, with some of them providing their suppliers with long-term orders. To establish a long-term relationship with selected suppliers has been a declared policy for the interviewed Japanese car makers from the beginning, and the only non-Japanese car maker in the sample reports that he has converted to long-term relationship with his suppliers since the second half of the 1980s. This policy has not always been pursued explicitly in the electronics industry, yet they all report that in fact there has been little change of suppliers in recent years. When the customers in both industries have any problem with a supplier, they will at first help him to solve it before cutting him off.

Most of the suppliers (30 of 33) get or expect to get supply orders from at least one of the main customers for the model-life of the product, based on explicit or implicit agreement. In this regard there is no or little difference between the industries nor the nationalities of the customer. So the long-term relationship seems to be predominant. Though the standard length of product models is quite different between cars (5 to 7 years) and electronic products (1 to 3 years), and so a model-life supply contract does not always secure a long-term relation, most suppliers report that they have continuous relations with the main customers beyond the model cycle.

Many of them regard their know-how in production as the main reason for the customers' not switching suppliers in short terms. Such a conviction is related to the fact that the supplier keeps tools. Though the tools are usually owned by the customer so that the supplier might not supply others with the same kind of products made with them, the supplier maintains (and sometimes designs and produces) them and so can accumulate specific production-related know-how. However, this is not always the case for subcontracting works where no tools are

used. A cutting company remarks that business relations are mostly unstable and in short terms, a very different situation from presswork.

For the suppliers to the electronics industry, rapid change of products, technology and production location is more problematic than changes of models. A final assembler has introduced 5 different product groups in the last years, of which 3 groups are no more produced today. A Japanese-owned supplier complains that he had to look for new customers shortly after setting up the transplant as the main customer stopped producing its main product in the UK.

(2) Determination and Review of Prices

The traditional pattern of price determination in the UK was bidding: The supplier who offers the lowest price gets the order. The customer did not ask how the price was calculated.

All the Japanese assemblers in the sample have been practising the open-book system to set the price, i.e. they require from the suppliers full cost-breakdown as the base for a detailed discussion about further costdown possibility. What is characteristic for this method is that the price is negotiated in detail after the selection of the supplier, and not before it. As British suppliers were not familiar with the disclosure of cost information and at least partly felt resistance to it, some Japanese customers could get at first only rough information, requiring then more and more detailed information as business relations developed.

However, for some electronic equipments the price competition at the final market is so rigorous that in fact the price of components is often dictated by the customer based on the competitive price of the final products.

The only non-Japanese car maker in the sample reports that he moved to open book system about 5 years ago. Some of the other major car makers (Ford, Fiat and Audi) are reported by their suppliers to persist in price tendering as the main pattern of price setting.

Automotive suppliers report that the Japanese customers require particularly detailed cost information, but are also cooperative for costdown. All of them show their cost breakdown to the customers, though to a different extent: while some firms report every process time in detail, the others keep back some detailed information, or conceal real data on strategically important processes. 12 UK-suppliers report how long they have been practising the open book system with the major customers; for most of them the change occurred some time in the 1990 s, for the majority 2 or 3 years ago.

In the automotive industry, component prices are generally reviewed every year during the model life, while the electronics manufacturers partly review the price every 3 months according to rapid changes of production technology, product design and market situation. The increase in labour costs is generally expected to be absorbed by suppliers through rationalisation; whether or not the supplier may add the increase in material costs (or at least a part of it) to the product price, is different from customer to customer, and also case by case⁴. A half of the suppliers report that their main customers generally cover the increase in material price.

⁴ For example, in case that a component consists exclusively or mainly of a certain material whose price is controlled by a few European or global big suppliers and so beyond any control of component suppliers, the increase in its cost is fully covered by the customer. The typical case is the aluminium for die-castings. An assembler of electronics has the general rule to accept the increase in material costs if the rate goes over 5% in the review period.

Usually the customers show a certain target for the yearly costdown; the Japanese car makers tend to show clear and stable targets for the next years⁵, while the non-Japanese are apt to change it every year according to the situation of costs and sales. The Japanese firms, above all Toyota, are reported to cooperate intensively with suppliers to achieve the target (and their help is much appreciated), while the non-Japanese are regarded as less cooperative in this respect. Ford, for example, is accused of forcing a high target rigidly without cooperating to achieve it. If the cost is reduced beyond the target, Japanese customers tend to share the gain with the suppliers according to the contribution of each party to the costdown. Though the customers require a costdown and not a price-cutting, the suppliers, under pressure, often find it necessary to achieve the target by cutting their profit margin, when they could not reduce the cost accordingly.

(3) Quality Control

The customers measure the quality level of purchased parts by the reject rate and show a clear target of quality to the suppliers. It is not a new trend in the UK that the final assemblers are aware of the importance of components quality, but it has been increasingly recognized in recent years both by customers and suppliers.

Car makers measure the reject rate by ppm (parts per million) in recent time, tightening the targets every year. The present target rates are largely between 25 and 50 ppm, but the real rate is on the average much higher. Electronics manufacturers have much more serious quality problems than car makers especially with presswork and plastic mouldings, the reject rate of which is in fact much higher than the target of 1% (= 10,000 ppm).

Suppliers report almost the same level as the quality target of the main customers: for automotive suppliers 10–100 (in the majority 25–50) ppm, and for those to the electronics industry mostly on 1% level, with some extremes of 10 ppm or below for fasteners and precision pressings. The majority of suppliers have not yet achieved the present target level, and those who have achieved it often veil a much higher internal reject rate: a large part of defects are discovered at the final check before delivery. Many suppliers apply different levels of quality check to customer-specific product lines to cope with different quality requirements of the customers⁶. So the regular practice of the suppliers seems to be still far from the ideal of Total Quality Control, though most of them have adopted team work on the shop floor in recent years and are promoting the Kaizen-activity, so that every operator might feel himself or herself responsible for the product quality and the quality problems might be solved through the improvements in the production process.

The Japanese car makers are judged to be severer and more precise in quality requirements, but to be more cooperative as well⁷, though to a quite different extent. Such differences in quality management can be seen among the electronics manufacturers as well, where two firms give regular inspection, guidance and meeting for quality improvement, while the others

⁵ A well-known example is the Honda-rule that the production cost should be reduced by 1.5% per annum for the next three years, regardless of the state of the material and product markets. But the Japanese customers are also reported to be rather flexible in evaluating the costdown performance.

⁶ In an extreme case, a supplier assures a quality level of 2–3 ppm for the main customer but 1% (10,000 ppm) for the others.

⁷ The only non-Japanese car maker in the sample has become quite cooperative in this respect. He trains many core suppliers for quality control, gives quality instructions through an expert team which stays at the supplier for a while and holds regular meetings for quality improvement.

cope with quality problems only when they occur. About a half of the suppliers mention that they have regular or steady contacts with the main customer(s) for quality improvement, such as instruction or advice, regular inspection of production process and/or regular meeting of quality engineers and managers. This group includes those automotive suppliers with relatively long and/or intensive business relations with Japanese customers.

All but one customers practise regular (monthly) supplier ratings on quality and delivery (and partly cost) performances and feed back the results to each supplier constantly. Also in this respect it is often remarked that Japanese customers check the performance more skillfully, while Ford and some European makers don't apply this system at all or there is no feedback of the results. Many (12 of 17 respondents) experienced the first rating about 4 to 5 years ago. Together with the rather few information about the beginning of regular inspection or meeting, the results suggest that the major change in quality control occurred as late as in the 1990s.

III-2. Relationship with Own Suppliers and Subcontractors

28 of 33 suppliers have parts suppliers or subcontractors on their part. This is the case for most of the automotive suppliers, especially for component assemblers and pressworks. For suppliers of plastic mouldings and die-castings, on the contrary, the outsourcing consists almost exclusively of raw material, and all of the production processes are performed internally. Most suppliers to the electronics industry as well have a very high degree of vertical integration because of relatively simple production processes. The outsourcing is often limited to small parts of pressing or plastic moulding and some subcontracting works like machining, plating, painting or heat-treatment, in quite little value.

Second- or third-tier suppliers and subcontractors are mostly located in West Midlands and the surrounding area, but parts and services which need highly specialised skill are purchased from other areas including the Continent. Japanese suppliers purchase electronic components to a large part from Japan or Japanese transplants in Asia, because of the reliability of quality and delivery. Moreover, since the local contents agreement on some electronic equipments and components was abolished a few years ago, Japanese firms are no more forced to purchase in the UK or Europe.

A large part of the suppliers using outsourcing (23 of 28) make efforts to establish a long-term relationship with their suppliers and subcontractors partly through formal long-term contracts (especially Japanese-owned automotive suppliers), though not always successful and often against tough resistance of the counterpart. Only a few firms mention that their sourcing policy is of an "arm's length" character, preferring high flexibility in the "arm's length" relation to high performances which may be achieved by mutual commitment in the long run. It is noteworthy that all of the second-tier suppliers are promoting long-term relationship with their suppliers and subcontractors.

A half (15 of 28) of the suppliers require cost breakdown, though often not very detailed, from at least a part of their suppliers and subcontractors as the base for costdown negotiation. Two more firms, both second-tier suppliers, are just introducing this method. Most of them changed the way of price setting from bidding to open-book negotiation quite recently, just after their main customers had applied new sourcing policy to them. However, it is still difficult for many suppliers to achieve effective costdown, partly because they themselves have little

experience with the new way and partly because production processes of their subcontractors are so simple that little room is left for further improvement.

The suppliers have often quality problems in material sourcing. Some argue that the defects in their own products are mostly due to low quality of purchased material, parts and subcontracting service. Thus, many of them (22 of 28) regularly check the quality of purchased components and services and, with a few exceptions, feed back the results. However, as they admit, their supplier rating is generally not yet on the same level as their customers do. Some of them have just begun it. Supplier rating is by no means limited to the first-tier suppliers, for all of the second-tier suppliers are practising or just preparing for it. In addition to quality, 18 suppliers check the delivery performance and feed back the results regularly, as the unreliability of delivery is often a serious problem.

While a half of the suppliers behave rather reactive in regard to quality improvement, coping with quality problems when they occur⁸, another half (13 of 28) have proactive practices, such as regular meeting with suppliers and inspection of their production process. Some of them, including all of the Japanese automotive suppliers, give advice in quality control. Many suppliers try to imitate the supplier quality management which their major customers apply to them.

To summarise this section, we can confirm that a majority of the interviewed suppliers have recently been making efforts to build a new relationship with their own suppliers and subcontractors which is similar to that with their main customers: establishing a long-term relationship with joint costdown efforts and regular control and cooperation in regard to quality and delivery. Thus we have evidence that the changes in the first tier of the supply chain are expanding into lower tiers, though still in trial and not yet very effective, and often against tough resistance of their counterpart.

III-3. Impact on the Competitiveness of Suppliers

It is one of the main subjects of this paper to examine the impact of the changing pattern of the supplier relationship on the performances of suppliers in regard to price (costdown) and quality. The background idea is that the customers make efforts to enhance the competitiveness together with their suppliers and so the latter shall be the more competitive, the more intensive the relationship is, as they may get more support for costdown and quality improvement from their customers.

(1) Impact on Cost Performance

16 of 33 suppliers reported the extent of overall costdown in the last 5 years or of annual costdown in recent time, of which 3 firms had a net cost increase due to soaring material and labour cost. Among the rest of 13 firms, 3 achieved a remarkable costdown of more than 7% per annum (i.e. 40% or higher in the last 5 years), 2 firms about 5% annual rate, 6 firms 1~2%, and 2 firms below it. They achieved costdown partly by improved production process and product design, but also through economies of scale and by the rationalisation of production,

⁸ Some of them are in fact not able to give any technical advice or instruction to the suppliers, as the technology fields are quite different. It implies that the lack of technical support to suppliers is not necessarily an evidence of reluctance to cooperate with them.

which have little to do directly with the new pattern of business relationship. In fact, there is no evidence that higher costdown rate is positively related to an intensive relation with main customers or to the dependence on the Japanese. This result may at least partly due to the limited sample size and to various factors influencing costdown. No further analysis controlling them is possible with our limited sample⁹.

(2) Impact on Quality Performance

18 of 33 firms report their quality level measured by reject rate of today and 5 years ago. Most of them show a remarkable decrease of reject rate at least to a half of the previous level, in some cases even to less than a tenth.

It is certainly not easy to measure quality improvement properly. Here it is measured as the relative decrease of the lowest achieved reject rate in the last 5 years¹⁰. However, there is no standard for reject rate; it is rather customer- and product-specific and so may be influenced by changes in quality criteria of customers, model specification, production technology, and product programme of suppliers. It would be impossible to control these factors in measuring the relative decrease of reject rate. But we will try to control at least industry- and product-specific factors to some extent by taking only automotive suppliers into comparison.

The impact of the new relationship on quality improvement is examined in three ways: At first, the unweighted mean value of relative decrease of the lowest achieved reject rate is compared between the groups of automotive suppliers with and without active supplier quality management by customers (technical support, inspection, meetings) on the one hand, and between the groups with and without active quality control of own suppliers on the other. Then, two firms with similar products but different customers and trade patterns are compared. Finally, a case of a small second-tier supplier supported by a Japanese first-tier firm in regard to quality improvement is described.

The group with active supplier quality management by car makers (7 suppliers including 2 second-tier) enhanced the quality level 38,9 times on the average, the other group (4 firms including 1 second-tier) 7,6 times. The suppliers cooperating with their own suppliers for quality improvement (5 firms with no second-tier) improved the quality level of own products 53,2 times on the average, the others (5 firms with 3 second-tier) 6,4 times. These results are supposedly influenced by an outlier with the relative decrease of 200 times, but a clear difference remains even after excluding it. So we may conclude that the suppliers which have intensive relationship with customers and/or own suppliers have achieved a larger extent of quality improvement in the last years than the others, though the results should be taken with caution because of the limited sample size and still remaining structural differences in the sample.

The next attempt is a comparison between two suppliers with similar firm size, products and production process, but different kind of customers and business relations. In the sample we have a pair of comparable aluminium die-casting firms. One of them (let us call it A) is

⁹ Sako/Helper/Lamming (1995) found out with a large sample of automotive suppliers that those in "partnership" with their customers were more successful in controlling the cost than the others. However, they do not regulate the factors which may influence the cost level.

¹⁰ As most suppliers have very different quality targets for different customers and products, achieved reject rates have a wide range accordingly. In an extreme case, a supplier of precision pressings achieved a reject rate of 2~3 ppm in regard to the products for the main customer, but otherwise only 1% (= 10.000 ppm).

more diversified than the other (B) and has a wider customer base including two Japanese ones (Toyota and one of his core suppliers). While Ford remains a major customer for both firms, A has reduced the business with Ford (though not voluntarily) in the last 3 years and increased it with Toyota whom A has been supplying from the beginning of his production in the UK. Firm B, on the contrary, has no Japanese customers. He has no customers to give him strict and detailed quality requirement and control, while the other receives tight quality targets of 40~50 ppm and regular inspection of production process by some major customers (in case of Toyota indeed every week), exchanging suggestions for further quality improvement with them. As a result, A reduced the reject rate from 2~3% 5 years ago to 0.5~0.1% (1,000 ppm) this year. Though there is still a large difference between the target and the achieved level of product quality, A's performance is now much better than B's, which lowered the reject rate from 3~5% to 1% in the same period. This case suggest that quality improvement of suppliers is affected by the commitment of their customers.

There is another evidence for this view. A small second-tier supplier of presswork (C) has business relations with a major Japanese first-tier supplier (D) for 4 years and expanded it up to 35% of the turnover, so that now D is the main customer. The latter intensified the quality control of suppliers in recent time, holding quality meetings with the quality engineers of C every month and providing them with monthly results of the supplier quality rating. Firm D gives a quality improvement plan at the beginning of the year with monthly targets, which become gradually tightened from 0.3% to 0.1% during the year. With his support, C could achieve the target already in the first half of the year with an average of 900 ppm.

IV. *Concluding Remarks*

The results of this research could be summarized as follows:

- 1) The supplier relationship in the UK has adopted as a whole some factors of the Japanese practice which is characterized by long-term, mutual commitment with intensive information exchange, particularly regarding cost evaluation and quality control, though there are considerable differences between industries and among firms. Long-term relationship, at least for the model-life of products, seems to be already predominant in both industries, though often without contractual security.
- 2) This trend was promoted largely by the Japanese transplants. Non-Japanese customers in the UK have been adopting to a very different extent new practices of supplier relations since the late 1980s. They partly apply practices similar to those of the Japanese, but often performing them less effectively. Japanese-owned customers are generally more eager to establish a long-term relationship beyond model cycles. They all carry out open-book costdown negotiation with selected suppliers from the beginning of the UK-operation, while some major non-Japanese customers still rely on price bidding. The Japanese tend to be severer and more precise in requirement for costdown and quality improvement, but also more supportive to achieve the target, with considerable differences between industries and among firms.
- 3) Stimulated by the changing pattern of business relations with their customers, the suppliers on their part have recently been making efforts to build a similar relationship with their

own suppliers and subcontractors. They have to manage it with little managerial experience and ability in this respect and often against reluctance or resistance of their counterpart, so it will take more time till they might achieve a comparative level with their customers in regard to supplier management.

- 4) The new practices in business relations seem to have developed largely after 1990. For the automotive suppliers it was crucial in this respect that two Japanese car makers began to produce in England in 1992. A majority of suppliers remark that their major customers have been applying to them supplier rating for quality and delivery largely since 1991–92 and open-book negotiation about costdown since 1993–94.
- 5) These changes in business relations have positive effects on the competitiveness of suppliers, especially on their quality level: Firms with joint quality management with customers and suppliers achieve a higher extent of quality improvement than those without it.

Thus, the new pattern of business relations is really developing in the UK, at least in the industry sectors increasingly exposed to global competition. These results offer sufficient support for our hypotheses presented in Section 1, though they should be taken with caution because the sample is small in size and may be over-represented by supporters of the new relationship.

Our findings are generally supported also by Sako/Helper/Lamming (1995) which confirm a rapid development of the “partnership” in the UK after 1989/90 and the trend to regional “convergence” of business patterns between the UK and Japan¹¹. Moreover, we have new evidence, which is not in their study, that the new business pattern has begun to penetrate into lower tiers in the supply chain in the last few years and has already contributed to improve remarkably the performance of the suppliers in regard to product quality.

However, it would be yet too early to speak of a real convergence of business relations, as there still exist considerable differences in the institutions surrounding and supporting the supplier relationship, such as the legal framework, the financial system, the employment relation, and the role of the state¹². All of these institutions in Japan support a long-term commitment of inter-dependent firms, while in the UK they rather seem to discourage it. The stability in ownership and management is less secured in the UK, where the inter-firm fluctuation of managers and engineers is much higher than in Japan, though stability in this respect is essential to build the mutual trust and accumulate specific know-how for costdown and quality control. So it is no wonder that stability in ownership and management is an important factor for some Japanese customers in selecting the suppliers, as reported in the interview.

Therefore, to establish the new business relationship on a wider and more stable base, it seems to be necessary to make these institutions more favourable for the long-term commitment and cooperation. In this sense, industrial strategy to increase competitiveness should

¹¹ The percentage of suppliers providing customers with detailed breakdown of process steps is in the UK with 90% even higher than in Japan; 80% of suppliers in the UK (twice so high as in Japan) believe that, if a competitor offers a lower price, the customer would help them to match it. Both percentages have doubled in the last 4 years.

¹² Lane (1996) compares the characteristics of these institutions in the UK and Germany of today to find that “institutional inertia has often undermined individual actors’ efforts towards change” (p. 296). Cf. Sako (1992), Part 3, for a British-Japanese comparison of institutions.

cover a wider range of institutional adaptations simultaneously¹³.

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REFERENCES

- Dunning, John H. (1986), *Japanese Participation in British Industry*, London, Croom Helm.
- Ikeda, Masayoshi (1992), "Eikoku ni okeru nikkei toransupuranto no buhin chotatsu mondai [On the Parts Procurement by the Japanese Transplants in the UK]", *Shoko Kin'yu*, (Dec. 1992), pp. 3–20.
- Ikeda, M (1996), *Oshu ni okeru nihon kigyo no genchi seisan to buhin chotatsu no "Japanization"* [Japanese firms' local production in Europe and the "Japanization" of parts procurement], MITI Discussion Paper #96 DOJ 72 (Dec.), Tokyo.
- Lane, Christel (1996), "The social constitutions of supplier relations in Britain and Germany," in: Whitley, R./P.H. Kristensen eds., *The Changing European Firm: Limits to Convergence?*, London, Routledge, pp. 271–304 (Chap. 11).
- Milgrom, P./J. Roberts (1994), "Complementarities and Systems: Understanding Japanese Economic Organization", *Estudios Economicos* 9 (1), pp. 3–42.
- Mitsui, Itsutomo (1995), "Eikoku Wales ni okeru nikkei denshi/denki kigyo "genchi seisan" no genjo [Japanese firms' local production of electronic equipments and parts in Wales]", *Chusho Kigyo Kiho* 95 (1), pp. 8–18.
- Morris, J./R. Imrie (1992), *Transforming Buyer-Supplier-Relations. Japanese Style Industrial*

¹³ The concept of complementarity which regards an economic system as a system of complementary elements suggests that "copying individual elements of Japanese practice and transplanting them piecemeal into other countries' systems, where the complementary elements are absent, cannot be expected to yield the sort of results experienced in Japan, because the positive interaction effects that the elements of the Japanese system exert on one another will be missed." (Milgrom/Roberts 1994, p. 5).

- Practices in the Western Context*, London, Macmillan.
- Oliver, N./B. Wilkinson (1992), *The Japanization of British Industry* (2. ed.), Oxford, Blackwell.
- Sako, Mari (1992), *Prices, Quality and Trust. Inter-firm Relations in Britain & Japan*, Cambridge Univ. Press.
- Sako, M./S. Helper/R. Lamming (1995), "Supplier Relations in the UK Car Industry: Comparisons with Europe, Japan and the USA", a Report prepared for the Vehicle Division, Department of Trade and Industry, London, DTI.
- Thoburn, J.T./T. Takashima (1992), *Industrial Subcontracting in the UK and Japan*, Aldershot, Avebury.
- Trevor, M./I. Christie (1988), *Manufacturers and Suppliers in Britain and Japan. Competitiveness and the Growth of Small Firms*, London, Policy Studies Institute.
- Turnbull, Peter (1991), "Buyer-Supplier Relations in the UK Automotive Industry," in: Blyton, P.J. Morris (eds.), *A Flexible Future? Prospects for Employment and Organisation*, Berlin/N.Y., De Gruyter, pp. 169-189 (Chap. 9).