REVIEW ARTICLE
THE JAPANESE INDUSTRIAL SYSTEM

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A review article of H. Odagiri, Growth through Competition, Competition through Growth, *Clarendon Press, Oxford, 1992 ISBN 0-19-828655-4; W.M. Fruin,* The Japanese Enterprise System, *Clarendon Press, Oxford ISBN 0-19-828318-0; and T. Nishiguchi,* Strategic Industrial Sourcing, *Oxford University Press, Oxford, 1994 ISBN 0-19-507109-3.*

The industrial system in Japan has created the economic success story of the 20th century. While there are major adjustments taking place in Japan, its industrial system will remain a source of strength and will continue to underpin an adaptable and innovative economy. The three Oxford University Press books reviewed here analyse the characteristic features of the Japanese industrial system and the sources of its continuing vitality.[1]

THE CHARACTERISTICS OF THE JAPANESE INDUSTRIAL SYSTEM

These three books analyse some major features of Japanese business strategies (including focus, growth orientation, management discretion, and close subcontracting relationships), and the context in which they operate (including the nature of Japanese industrial structure and government policies). These will be examined in turn.

The Strategic Focus of Business

Fruin's scholarly work produces a vast array of historical detail in describing the evolution of the Japanese enterprise system. He describes how major Japanese firms differ in as much as they have fewer employees, are less vertically integrated, less diversified in product line, and less international in their activities than comparable American and leading European firms. In contrast to the predominant M-form, multi-divisional organization in the USA, the Japanese system of highly-focussed firms emerged from:

> A lack of resources, talent and experience within single firms [which] pushed Japanese companies to focus their efforts internally while they sought and secured complementary functions and assets externally. ... The Japanese enterprise system appeared conclusively in response to the need to focus organizational resources in three ways: *downward* in the production function as a result of the processes of technology transfer and adaptation; *outward* in interfirm cooperative structures as a partial consequence of pre-existing and developing production, transportation, and distribution functions in the

value chain; *inward* in a process of adapting Western corporate models and methods to indigenous business values and systems of social relations.[2]

The emergence of these highly focussed corporations, such as Toyota and Toshiba, with strong central corporate organization in key areas (R&D and sales, for example) was also consistent with the internal labour market system. "The divisional business form hinders the cross-divisional mobility of employees needed to attain employment adjustment with minimum lay-offs and to foster the inter-divisional transfer of knowledge".[3]

Growth Orientation

Odagiri, an economist addressing strategic management issues, elevates the characteristics of the internal labour market as a central determinant of the Japanese industrial system. These characteristics are well known: lifetime employment, a seniority-based payment system, enterprise unionism, the encouragement of skill development with a high degree of on-the-job training, and high levels of internal competition for promotion.[4] The growth orientation of Japanese companies is also well known,[5] and Odagiri emphasises the internal labour market considerations underlying this.

> When a man expects to work with a single firm for his lifetime, the future of the firm - its size and prosperity - is naturally of the greatest concern to him....Growth creates opportunities to utilize the firm's human resources fully and to enrich and expand them, because only a growing firm can create challenging jobs that force the workers to expand their knowledge and experience. The human resources thus accumulated in a successfully growing firm then become the basis for the firm's further growth, creating further opportunities for the employees to gain economic, social, and psychological attainments.[6]

Odagiri argues that this preference for internal rather than external growth prevents unrelated diversification and also makes greater R&D expenditure feasible.

Power of Managers

Control of management by the capital market is weaker in Japan than in the USA or the UK. There is a greater incidence of shareholding by non-financial companies and banks in Japan. These differences have profound consequences for the decision-making of managers. Odagiri explores the comparative freedom of Japanese managers. He found the average length of annual shareholders' meetings held in June 1987 by 1082 listed companies (70 per cent of all listed companies) was only 29 minutes, suggesting little more than straightforward approval of management proposals by shareholders. Revealingly, he also compares the business headlines of the *Financial Times* and *Nihon Keizai Shimbun* on a random day, and found the former were all about buying and selling companies; the latter about developing new products. He argues that this lack of subservience to financiers, the comparative lack of external directors in Japanese companies, and the internal promotion process for most senior managers, provides greater power to managers, who are generally more sympathetic to employees' needs.

....a typical Japanese manager has substantial freedom to pursue his own ideas and goals. What are these goals? We should remember that he has been internally promoted after long service with the firm. Typically, he was recruited directly from university, and has been working with the firm for more than thirty years, probably having gained experience in many of the firm's departments. The workers are familiar with him, some of them having worked together for many years. He understands what is important to them: he is keenly aware of it. The employees are very much closer to him than the shareholders he sees only a few times a year at most. They are the insiders, whose satisfaction he can share and for whose dissatisfaction he knows he is to blame. The Japanese manager, as a result, is more concerned with the welfare of the management staff and other employees. He lays more emphasis on the human aspect of the firm than the financial aspect. He believes that the accumulation of human resources and their full utilization are the keys to the success of the firm. The whole incentive system and the system of allocating the internal labour-force are geared to this end, and the manager intends to ensure that employees contribute to the company's success voluntarily and happily.[7]

Subcontracting Relationships

Nishiguchi charts the movement in Japan from arm's-length subcontracting relationships to what he calls a 'clustered control' structure:

....firms at the top of the clustered control structure buy complete assemblies and systems components from a concentrated base (and therefore relatively limited number) of first-tier subcontractors, who buy specialized parts from a cluster of second-tier subcontractors, who buy discrete parts or labor from third-tier subcontractors, and so on.....this system absolved those on top of the hierarchy from the increasingly complex controlling functions typical of external manufacturing organizations."[8]

This arrangement has had a marked impact on the efficiency of the system.

Japanese automotive and electronics producers have achieved noteable growth not only by unilaterally exploiting subcontractors but by strategically creating, and benefiting from, distinctive institutional arrangements in subcontracting based on problem-solving. These new arrangements institutionalized the goal of continuous improvement with the aid of systematic checking mechanisms.....Prime contractors benefit from the subcontractors' enhanced performance, and the result is better design, higher quality, lower cost, and timely delivery. At the same time, the establishment of rules to share fairly the profits from collaborative design and manufacturing has encouraged the subcontractors' entrepreneurship and their own symbiotic relationships with their customers. Benefits from the subcontractors' commitments have reached their customers as well; thus a virtuous circle has emerged.[9]

Subcontractors benefit from this system through the existence of stable contractual relations (which are usually automatically renewed), improved technological learning which occurs as customers make considerable efforts to upgrade the equipment and skills of their suppliers, and improved growth opportunities.

The extent of the cooperation between contractors and subcontractors is extraordinary when seen from the perspective of the usual arm's-length relationship evident in Anglo-Saxon countries. This cooperation extends to the cost information which customers frequently request from subcontractors, opening the way to rational price determination. Contractors and subcontractors seek to reduce costs by

means of joint problem solving. One way in which this occurs is through the use of resident engineers. In an arrangement pioneered by automotive companies, engineers from supplier companies join in the development and manufacturing activities of the customers, and, according to Nishiguchi, have had an important role to play in promoting the benefits of bilateral design and collaborative manufacturing. Large customers have also been sensitive to the needs of their suppliers during times of recession.

> During recession, it [is[a general practice for the large customers not only to give advance warning (up to several months) about the forthcoming reduction in subcontracting orders but also to help those subcontractors most likely to be severely affected to change their products and look elsewhere for business. The large customers also frequently [help] the subcontractors find stopgaps (e.g. by finding other, less affected business entities to work with or even by sharing parts of the customers' own in-house operations not as affected by the recession), in order to keep the subcontractors' factories running.[10]

Industrial Structure

Fruin sees the Japanese enterprise system as consisting of a focal factory-firm-interfirm network, which he analyses in great depth, describing his conceptualization as "one part empirical, one-part stylized, and another part metaphorical". He summarises the characteristics and aims of each.

Focal factories - production facilities complemented with planning, design, development and process engineering capabilities and focussed on the propagation and improvement of products and processes.

Firms - Fruin contends that Japanese firms have much greater depth than breadth in their business activities.

> Japanese industrial companies are inclined to have a focused set of core technologies while less closely related technologies are delegated to outside, affiliated firms (interfirm networks). To the extent that firms maintain this focus, the need for elaborate portfolio and strategic planning exercises diminishes. Instead of trying to allocate capital efficiently amongst scores and perhaps hundreds of different divisions (the American multidivisional model), Japanese companies concern themselves with several to perhaps a half-dozen core business....This structural focus results in its own strategy, namely digging deeper and deeper into what you do best and finding ways to use firm-specific resources more flexibly.[11]

Interfirm networks - of which there are three types: the *kigyo shudan*, horizontal groupings; *keiretsu*, vertical groupings; and 'task force' groupings bringing firms together for relatively short-lived activities. Firms may belong to all three types, and positioning within the networks are very important for competitiveness. "Business success depends on an adroit and agile management of organizational interdependence".[12]

Such structure, Fruin argues, has tremendous advantages for the strategies of firms: "Integration across organizations is a complement to differentiation and specialization among organizations. Interfirm coordination provides a framework for tremendous breadth in activities even while individual firms remain highly focused in their pursuits".[13] The advantages of specialization and flexibility are also

to be seen, of course, in the structure and conduct of subcontracting relationships.

Government Policies

There are starkly contrasting views on the role of government policies in shaping the Japanese industrial system. At one extreme there is the view of 'Japan Inc', which sees government and business as being so close and collusive as to be inseparable. More sober views are provided by those analysts who have studied the development of Japanese industrial and technological policies and their impacts through research into agencies such as MITI.[14] Odagiri challenges the view that these policies have had the effects on business commonly ascribed to them by Western analysts.

> ...although government measures may have helped in certain cases (for instance, the application of the infant industry theory in the automobile and electronics industries in the 1950s), the driving force was not government policies but the growth-pursuing behaviour of firms. Government policies were effective only to the extent that firms were eager to utilize the opportunities they provided....[15]

He describes how in high-tech industry government programmes have not been financially large, nor particularly successful. He argues that the Japanese government contribution to R&D is much smaller than in the West, and that industry itself is responsible for the majority of expenditure on R&D. This expenditure is not encouraged by favourable R&D tax treatment.

Fruin ascribes a larger role to government policies. He explores the complex and often tense relationships between government policies that have fostered cooperation and corporate strategies which have favoured competition, but argues that:

> ...there has always been an implicit and mutual recognition that the state-championed domestic business institutions and, in return, the progress and well-being of the Japanese enterprise system promoted the national welfare. Probably the development of no other industrial nation has been distinguished by as much parity, reciprocity, and mutuality of means and ends between business and government.[16]

The role of the Japanese government in determining industrial and innovation policy remains contentious[17], but while there is debate about the impact of policies, there are many examples of where the government has ably directed the development of industry. Such an example is provided by Nishiguchi, who emphasises the importance of small, subcontracting firms in the Japanese economy, and the role the government played in assisting their development.

> ...the current state of small Japanese firms would have been quite different if the government had not intervened, through an outpouring of legislation, to stop unfair subcontracting practices, promote cooperatives, and systematize small-firm financial institutions. Had more *laissez-faire* policies been pursued, or had more asymmetrical measures to the disadvantage of small entities been established, their very existence would have been at stake. Perhaps an industrial structure similar to the more mass production-oriented economies in which large firms predominate might have emerged in Japan. Large prime contractors could have squeezed out the last drop of blood from their subcontractors and jettisoned them when they were no longer needed. Legislation prohibiting the withholding of payments due and authorizing....continuous (and extensive) investigations....must have considerably influenced the previously asymmetrical relationships.[18]

It would be a mistake to assume uniformity and continuity of the impact of gov-

ernment policies for industry, and Odagiri provides a welcome note of scepticism to many of the rose-tinted analyses of government influence over business. Nevertheless, Japanese government policy is remarkable for, first, the high quality of its policymakers, and second, the coordination and adaptability of the policies used.[19] While the market forces argument of Odagiri has credibility, it is too dogmatically applied in his denial of the strong and continuing influence of government on business.

ADJUSTMENTS IN THE JAPANESE INDUSTRIAL SYSTEM

It is widely believed that when the Japanese bubble economy burst, many of the features of Japan's industrial structures and practices were irreparably damaged. With scarcely concealed *schadenfreude* , observers point to the painful upheavals taking place in industry as a country used to a rapidly expanding economy has had to cope with three years of zero growth. They point to the dismay and anger at blue chip companies laying off workers previously believed to have jobs for life, and the growing discontent of younger Japanese unprepared to make the sacrifices of their parents. They describe as characteristic of the general malaise the embarrassingly rapid turnover of prime ministers attempting to lead ungovernable governments. Anecdotes on the extent of the changes occurring in Japan abound: Japan is now a net importer of colour televisions, the product that epitomized its industrial prowess; Koreans now spend more per capita on their shopping trips to Singapore than consumers from Japan; Taiwanese firms can have a new computer in the shops in the time it takes a Japanese firm to approve its development.

However, three central themes in the three books under review support the view that the Japanese industrial system will continue to adapt and innovate to overcome the present difficulties. Thus, Odagiri argues that a virtuous circle exists between high levels of competition and growth; Fruin points to the continuing adaptation of organizational structures and corporate strategies encouraged by organizational learning; and Nishiguchi refers to the close links down the supply chain of key industries facilitating information exchange and innovation.

To illustrate these salient and enduring features, it is interesting to consider how they apply to one of the major adjustments taking place in contemporary Japan – the change from being a 'technological follower' to a 'technological leader'. Japanese industry is highly skilled at taking technological knowledge from overseas and using it to produce cheap and reliable products. In order to do this, it has had to have extensive technological capabilities. These capabilities are currently being extended and enhanced by highly active government policies and by the strategies of leading corporations intent on building world-leading domestic scientific and technological expertise.

Competition and Growth

Japanese industry is marked by the high level of competition amongst domestic manufacturers. There are, for example, 11 car manufacturers in Japan. The internal labour markets in Japanese corporations are also noted for their high level of

competition. Yet, as Odagiri complains, this competition is often ignored in analyses of Japanese industry. He argues that many explanations of Japanese industry, such as those which elevate 'culture' (groupism *versus* individualism, close links between labour, business and government, etc) or conspiracy theories (Japan Inc), underestimate the extent of competition in Japan, and (a great crime in Odagiri's view) negate Adam Smith's invisible hand.

> ...the principle of the Invisible Hand is just as applicable to the Japanese economy (and possibly more so) as it is to the Western economies....people in Japan are also motivated to pursue self-interests and that, if there is any difference, it is the incentive system that leads Japanese workers and management to behave differently: specifically in Japan, as in any other country; competition has been the key to performance.[20]

The growth orientation of Japanese corporations has already been noted. "When a firm intends to grow, it must expand its business, either horizontally, vertically, or by diversifying, and whichever way is chosen will lead to confrontation with firms already in business or those with plans to enter into business, thus intensifying competition."[21] He also argues that "the tendency of Japanese management to pursue growth implies a willingness to spend more on research and development."[22]

Odagiri outlines a variety of reasons why Japanese managers are more comfortable than their US equivalents in pursuing an R&D-based growth strategy. The first of these is that more Japanese managers have a technological background: the majority of directors in Japan come from production and technical functions, whilst in the USA they come from administration, finance and accounting. Japanese managers, therefore, better understand the nature and outcomes of R&D. A second reason is the job rotation process whereby managers are exposed to the needs of technical departments and also form links across departments. A third reason is the usually close links between the production and technical functions, both geographically and organizationally.

This self-sustaining combination of growth strategies and high levels of competition has led to the dynamic and rapid adjustment of Japanese industry away from traditional sectors, such as textiles and steel, and into areas such as electrical machinery and consumer electronics where there are large export markets. It has led companies to compete in domestic markets less in low value-added industries (which are increasingly controlled in overseas subsidiaries) and more in high value-added, and often high technology industries. Odagiri, in one of the more technical chapters of his book, shows that as long as the corporate R&D efforts of Japanese companies increase labour productivity, the managerial preference for growth results in rapid economic growth (provided there is a high level of competition in the economy).

During the bubble economy period, weaker firms were cushioned from competition in as much as growth was easily financed and attained. Now there is increasing rationalization and the weaker, non-competitive, firms are being weeded out. The older, maturer industries (e.g. cement, chemical and pulp and paper) are facing the greatest problems, and marginal companies in these industries are being squeezed as growth strategies become untenable for all companies in shrinking markets. In the very competitive high-tech markets, such as autos and electronics, the reces-

sion has seen such leaders as Toyota and Sony gain market share whilst Mazda and Sanyo lose it. The stronger firms are getting stronger, and companies like NEC are able to sustain billion dollar investments in new areas, such as DRAMs. Furthermore, throughout the Japanese recession cash flow has remained high, as has investment in advanced technological capital equipment. Gross domestic savings and gross domestic investment as a proportion of GDP in Japan are much higher than world averages, and are more than twice those of the USA.[23] The combination of growth strategies and high levels of competition have ensured that the stronger Japanese firms have survived the recession. Odagiri argues that the competitiveness of these firms relies on a high commitment to R&D.

Government has played an important role in creating the environment in which firms compete and collaborate at the same time.[24] It has created important infrastructural organizations, such as the 57 Government-established Research Associations and the 170 Regional Technology Centres, which have improved the technological competences of firms. And, through MITI, it has played an important role in information dissemination.

Organizational Learning

According to Fruin, this process of dynamic adjustment is characteristic of Japanese culture: "change, constant change, and the need for social and organizational adaptation and experimentation, are ingrained in Japanese culture"[25] Fruin describes a commonality of world view and values.

> [These]include a widespread recognition of the value of learning from abroad, the need to adapt foreign ideas and institutions to fit local circumstances, the necessity of changing often in order to respond to continuous exogenous and endogenous change, and the desirability of encoding this legacy of learning and experience in an institutional form. These attitudes and convictions grow out of the Japanese historical experience - the history of a small country adjusting with difficulty and determination to the outside world - and they emerge today as basic values in a Japanese cultural framework for conducting business. [26]

Numbers of analysts point to the devotion of the Japanese to learning, and Fruin makes organizational learning central to his thesis showing the continuing evolution of institutions in response to changing economic and technological conditions. He argues that there are three reasons why learning economies are pronounced in Japanese firms: the long-term employment system, the system of on-the-job training, and the high levels of participation and meaningful contributions which encourage motivation. There has been a long tradition of Japanese enthusiasm for learning about overseas management practice. Fruin relates how the Peters and Waterman book, *In Search of Excellence* was read with near religious fervour. This tendency extends back to the enthusiasm for the work of F.W. Taylor.[27] Agencies, such as MITI, have honed the art of seeking and disseminating knowledge and encouraging learning in the Japanese industrial system.[28]

It is perhaps in the field of new product and process development that Japanese companies most profitably use their organizational learning expertise. Imai *et al*. have described what they call 'multilearning' in new product development and the

competitive advantage it accrues.[29] Comparative studies of the automotive industry discuss the advantages Japanese firms enjoy in the quick and easy transfer of knowledge between functions facilitated by and encouraging organizational learning.[30] A classic example of learning and adaptation of the industrial system is provided by Nishiguchi in the way that subcontracting relations underwent a major transformation in the 1960s and moved from exploitation to collaborative manufacturing, with the consequence that "both purchasers and suppliers benefited from the synergistic effects that accrued from joint problem solving and continuous improvements in price, product quality, delivery, design, and engineering.[31]

Supply chain integration

As Japan has moved to the technological frontier it is looking for improved sources of creativity. A number of interesting developments are occuring in this regard. Scientific links between industry and universities are more widespread than commonly believed and are increasing in scale and importance. Small and medium-sized firms are also playing an increasing role as a source of innovation in Japanese industry. This latter issue runs counter to the view of many analysts, such as Fruin, who see small firms as being totally dependent upon the activities of large firms.

Innovation theory has long told us of the importance for innovation of close links and effective technology transfer between firms in the supply chain.[32] It is often assumed that in Japan the transfer of technology has been one-way, down from the prime contractor firms to subcontractors.

> To cope with the increasing manufacturing complexity, Japanese producers began to use, from the 1960s onward, a distinctive strategy to delegate the assembly of finished products and the subassembly or manufacture of systems components to major subcontractors. Over time, many parts of the assembly and subassembly lines at major contractors were moved intact from major producers to their affiliated firms and subcontractors newly converted into contract assemblers and subsystem manufacturers".[33]

However, as Nishiguchi points out, there is increasing incidence of joint R&D between contractors and subcontractors, and some subcontractors are providing new technologies for their customers.

> ...approximately 60 per cent of subcontractors in the 1980s in Japan's electronics, transportation equipment, and precision machinery industries were involved in joint design projects with their customers. Furthermore in the 1980s many subcontractors used self-developed technologies at their factories, and one-third of them provided these technologies to their customers.[34]

Japanese companies, both large and small, face considerable difficulties in developing strategies for working effectively together in their technological development activities, but this is happening.[35] There is no doubt, however, that Japan is far behind the USA and Europe in creating the conditions whereby small firms provide important sources of creativity and innovation. For example, the small firm capital market in Japan is relatively underdeveloped; the Japanese market for small firm stocks, JASDAQ, started in 1991, 20 years later than the US equivalent, NASDAQ, and has only 500 registered firms (compared with 5,000 in the US). Nevetheless, past experience of the adaptability of smaller firms in the Japanese

economy suggests that further transitions are possible, and the experience of Japanese firms with overseas collaboration and purchase of small firms in areas such as biotechnology and software is increasing their awareness of the value of using this potentially valuable source of creativity.

CONCLUSIONS

These three books add to the recent literature on the Japanese enterprise system, and in combination point to some of the historical and enduring features of the system that will ensure the continuing strength of the Japanese economy, despite its recent difficulties. They are not, and their authors would not consider them to be, complete analyses of the Japanese situation, but do provide very valuable building blocks.

They are not particularly illuminating about two important contemporary issues affecting the industrial system. The first of these is the deregulation of industry and the growing concern to expand consumer markets. The second concerns the internationalization of Japanese industry. While Odagiri points to the way Japanese exporters will continue to be successful because of their growth maximization behaviour and the way Japanese acquisition of foreign firms will increase as acquiring human resources complements the growth of domestic human resources, there is little insight provided into how Japanese firms will overcome the difficulties of internationalization,[36] nor indeed into Japan's centrally important relationship with the rest of Asia.[37]

Stylistically, the books vary, with the Japanese authors being the more readable. Fruin's excellent book is marred by its wordiness and an orgy of adjectives. In his analysis, Fruin also suffers from an overcomplexity of terminology. This reviewer, no stranger to the organizational learning literature, found it difficult to follow Fruin's complex categorization of learning.[38]

The books provide some insights into the transferability of Japanese practices. Odagiri argues that much of Japanese practice is transferable overseas. And Fruin sees Japanese practices as universal.

> The organizational arrangements - competitive strategies and cooperative structures - of the Japanese enterprise system advance rather persuasive examples of how to organize economic institutions for personal, social, and institutional gain, and in my opinion these lift the Japanese enterprise system beyond a particular place and time to a realm of universal significance.[39]

Given the hybrid nature of all industrial systems, and the continuing and growing strength of other systems, such as the US and Chinese respectively, this is overstated. Nevetheless, there is extensive transfer of Japanese practice overseas. This is evident among Japan's ASEAN neighbours,[40] and also in Western nations, where contemporary issues of strategic management,[41] and technology management[42] are strongly influenced by Japanese experiences. Strategic focus and organizational learning are currently preoccupations of Western business schools.

Perhaps the most obvious transfer of Japanese practice lies in the area of subcontracting relationships. Nishigushi politely makes an extremely uncomplimentary comparison of subcontracting practices, and quality of subcontractors, between the

West and Japan. He refers to the realization by the managers of Japanese transplants that the relevant unit for defect measurement in the UK was parts per hundred rather than per million as it is in Japan. However, he charts the changes that are occurring.

> ....there emerged a trend in the 1980s among many Western producers to 'Japanize' their own practices, for example, resident engineers at Packard Electric; grading and self-certified subcontractors at Ford worldwide, General Motors, and Lucas CAV; and the clustered control structure at Daimler-Benz, Ford US, Renault, and BMW.[43]

The question of whether Western or other nations can emulate Japanese industry's propensity for cooperation and or trust which underpins inter-firm relationships, remains an interesting and germane topic for debate.[44]

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