

Summaries

Japan's Globalization and Informatization Impact on Trade: A Look at New International Trade Theory Trends

Mitsuo Honda

Traditional international trade theory is an approach that, on the basis of general equilibrium theory as a microeconomic tool, has sought to elucidate mechanisms that determine trade patterns and the distribution of production within and between countries. The comparative advantages found in the Ricardo and Heckscher-Ohlin (H-O) models are created by exogenously driven differences between one country and another. In the case of the Ricardo model, which qualifies as typical of traditional international trade theory, comparative advantages emerge because of bilateral differences in production technology. According to the H-O model, comparative advantages arise from production factor endowment ratio differences. For example, the H-O model can explain the actual ratio of inter-industry trade, and it is therefore thought to carry considerable weight when production locations are described. Despite this fact, however, these traditional models make the simple prediction that industry will be redistributed depending on factor intensity. Furthermore, they project that factor prices will tend to become equal. However, recently changing circumstances in the world economy cannot be explained in such terms. The real issue is linked to the growth engines that the industrialized countries including Japan utilized after World War II in order to acquire traditional comparative advantages and obtain high employment levels and economic stability. These growth engines were technologically mid-range industries, such as the machinery and equipment industry and automobiles. In the context of today's globalization, though, the comparative advantages of these growth engines are also being lost. A look at the recent rise of China and Southeast Asia presumably makes this apparent.

In light of the above, this paper considers new trade theory trends while conducting a comparison with the theory of location, a concept that has been in the spotlight lately. That is to say, it reexamines the theory of location, which explicitly incorporates transport costs and factors in imperfect competition. Additionally, this paper investigates how taking an endogenous perspective with regard to what has until now been viewed as the exogenous impact on the determination of trade patterns can presumably breathe new life into trade theory for the purpose of identifying fresh solutions to problems. In this connection the paper looks at such issues as agglomeration and fragmentation. Within such a context, new trade theory is concerned with international transactions targeting geographic space in which the international flow of goods cannot be determined by factor endowment differences or technology gaps, nor by historical contingencies, nor, moreover, by national

borders. Chiefly taking up knowledge-based economic activity as an important factor in that regard, this paper considers its significance.

Internationalization of Japanese Venture Business

Mitsuru Mizuno

Japan's economic performance has been lackluster since the early 1990s. Real GDP growth has averaged less than 1% per year. Nominal GDP in FY 2002 was virtually at the same level with that of FY1995. Because of this, some economists call the 1990s Japan's "lost decade." On the macro-economic front, various policy steps have been taken including lax monetary policy, fiscal stimulus measures, and deregulation along with banking sector and corporate sector restructuring. While these policy measures are required to create an environment conducive to economic recovery, clearly they are not sufficient for sustained economic growth.

The U.S. economy was in bad shape in the 1980s, suffering from twin deficits and hollowing out of industry. However, the U.S. resuscitated its economy through supply-side economic reform and the promotion of ventures. As a result of the transfer of university-based technology to ventures and spin-offs from big firms that was supported by venture capitalists and programs such as SBIR and SBIC, scores of ventures were born. Notably, such ventures as Cisco Systems, Sun Microsystems, Amgen, Oracle and Yahoo have become world-leading companies.

Japan also needs to nurture ventures that can effectively compete in the global market. Indeed, these businesses have an important role to play in the revitalization of the country's economy. With this in mind, the paper examines the internationalization of Japanese venture business and the issues surrounding it. The research finds that the majority of ventures are keen on internationalization. The most important thing for internationalization is original technology and a viable business model. Needless to say, adequate human resources, financial capital, knowledge of business practices and suitable partners are also essential elements for competing in the global marketplace.

Japanese Companies' Credit Risk

Yoshitaka Kurosawa

Various factors, including industrial and monetary policies pursued by the government and industry circles, kept Japanese companies' credit risk (risk with respect to debt repayment) as low as possible until the 1980s. Through the spread of globalization, though, even large corporations as well as banks started to be exposed to credit risk in the 1990s. Investors supplying capital to these corporations and depositors placing their money in banks then had to begin considering repayment risk. The credit risk of Japanese companies is measured primarily by rating agencies. Five accredited rating agencies currently operate in the Japanese market. Two of them, JCR (Japan Credit Rating Agency, Ltd.) and R&I (Rating and Investment Information, Inc.), are Japanese agencies. The other three, Fitch Ratings, Moody's, and Standard & Poor's, are U.S. and European agencies. Credit risk measured by rating agencies is a factor in the determination of interest rates when companies procure funds in capital markets. This risk is therefore an important cost factor for companies, and for investors it constitutes portfolio information for the management of their financial assets. Additionally, ratings also function as part of the financial infrastructure for the purpose of creating efficient capital markets, for they reduce information asymmetry.

Utilizing the data of the four Japanese and U.S. rating agencies as of July 1, 2003, this paper examines such questions as the current state of affairs of Japanese companies' ratings, the kinds of issues that exist, and how to distinguish which rating agencies assign proper ratings. The greatest problem at present is disparities between the Japanese and U.S. agencies' ratings. As noted, ratings are a factor in the determination of interest rates when funds are procured. But there is an average gap of three notches (equivalent to a full rating category) between the ratings that the Japanese and U.S. agencies assign to Japanese companies. This disparity has not presented a problem in the current context of low interest rate levels. There is concern, though, that the financial infrastructure role of ratings in terms of providing credit risk information will be disrupted when interest rates head upward later on. There is consequently a need to elucidate the cause of this gap between the Japanese and U.S. ratings and to establish a method for judging which rating agencies are assigning proper ratings. This paper furnishes some leads for that purpose.

An Examination of the Causes of Productivity Stagnation in the 1990s

Tomohiko Inui

In this paper we analyze supply-side factors behind the sluggishness of Japan's economic growth starting in the early 1990s. We find two primary causes. First, within the service sector, the rate of productivity improvement of the construction and entertainment industries declined in the 1990s. Second, there were many industries even within the manufacturing sector that saw their rate of productivity improvement slide. Many industries within the service sector have been expanding their output as a result of Japan's demand structure shift toward the service sector, and this sector's impact on the economy as a whole is becoming more important. Furthermore, the Japanese production structure's move toward the service sector is expected to continue. This is in part because of the changes in the structure of demand and the manufacturing sector's shift to overseas production, as can be observed in Japanese companies' increase in foreign direct investment in recent years. In that regard, improvement of the service sector's productivity will become increasingly important in the future in order to raise the productivity of the Japanese economy as a whole. Some industries within the service sector are highly regulated industries, and it is also conceivable that these regulations could be impeding productivity improvements. Findings of empirical analysis conducted to demonstrate the link between regulations and the service sector's productivity suggest that recent productivity gains in several service industries have been due to deregulation. Additionally, it is primarily the service sector that is making IT-related investment, and there is a need to consider the impact that investment has on boosting productivity. This is an issue that we would like to address in the future.

With regard to the connection between R&D expenditure and productivity in the manufacturing sector, data that is more accurate and reliable than conventional data was used to ascertain the link between these two in this study. It was thereby confirmed that expenditure in R&D has been playing a significant role in the improvement of manufacturing productivity, even during the recent recession period from 1995 through 1998. It was also learned, however, that companies' average rate of return on R&D investment could be lower than in the 1970s. Moreover, the study's findings with regard to the impact of R&D on productivity differ from the results of existing research. According to this study, disparities among individual companies in terms of R&D's impact on productivity could be more significant than disparities among different industries. That is to say, the study's results suggest the strong possibility that good or poor R&D management on the part of an individual company is linked to whether its productivity improvement is good or poor. We also found the R&D's contribution to the productivity improvement in small and

medium-sized firms is low and we believe there is a need to move forward with further consideration regarding impediments to productivity improvements in the case of smaller companies.

Technology-Related Diversification of Camera Manufacturers: The Case of Pentax Corporation

Masayoshi Iijima

As a manufacturer specializing in high-end cameras, Pentax has until now pursued a path focused on single-lens reflex cameras. The company has been able to expand its profits by improving the functions of single-lens reflex cameras and upgrading its products.

Poor business conditions in 1965 dealt an enormous blow to camera manufacturers whose line-ups consisted chiefly of mid-range and mass-market camera equipment. But the impact on Pentax was light thanks to the fact that it was concentrating on high-end equipment. Camera manufacturers subsequently reinforced their activities oriented toward high-end equipment. One after another they entered the arena of single-lens reflex cameras and then proceeded to strengthen their export operations. Intense competition developed among Japanese camera manufacturers not only at home but also overseas.

The wide-scale use of electronics in cameras starting in the 1970s seriously threatened the supremacy of Pentax. The company subsequently pursued diversification. Because of the high profitability of its single-lens reflex cameras, Pentax lagged behind other companies in this respect.

As in the case of other camera manufacturers, the process of diversification at Pentax occurred chiefly in technology and market-related spheres. Specifically, it entailed moving into eyeglasses in 1972, information processing equipment in 1973, medical and industrial equipment in 1977, new ceramics in 1983, and electronic endoscopes in 1987.

However, an examination of present-day sales figures for the different divisions of Pentax indicates that its camera business still accounts for 50% of its total sales. The company's reliance on its camera operations continues. In this respect Pentax differs from companies such as Canon and Olympus that have diversified to a much larger extent away from cameras.

Distribution Structure of the Domestic Camera Industry during the 1970s and 1980s

Tohru Kaizuka

Up until the early 1960s, distribution of cameras was limited mainly to wholesalers. However, a combination of several factors, including a drop in prices due to the 1965 economic downturn, a shift towards large discount stores from the 1970s, and the maturing of the camera market, led Olympus, Minolta, and Canon to set up domestic retail subsidiaries from the late 1960s into the 1970s. Asahi Optical (now Pentax) had already set up Asahi Optical Sales in 1955 and Nippon Kogaku (now Nikon) retained its network of four major wholesalers through to 1988.

The manufacturers did not, however, set out to construct manufacturer-based *keiretsu* affiliation structures by setting up retail subsidiaries. Relationships with dealers continued, and in any case the manufacturers were not in a position to dictate to the major discounters. In fact, the advent of the retail subsidiaries resulted in greater diversification of distribution channels in the camera market. Since the manufacturers did not control the means of distribution, the establishment of retail subsidiaries did not ultimately help to reduce distribution costs.

Conversely, the shift towards retail subsidiaries led to the creation of distribution affiliations in other diversified departments. In the photocopier market, for instance, manufacturers moved aggressively to expand sales and service networks, setting up retail subsidiaries, and developing distribution affiliations due to the special nature of plain paper copiers. Nikon, previously reliant on a network of wholesalers for distribution of camera products, was one of the first to set up affiliation structures for distribution, including retail subsidiaries.

In the camera market, the establishment of retail subsidiaries was little more than a reaction to the increasing dominance of the large discount stores and did not lead to the development of integrated affiliation structures. In the home appliances market, meanwhile, the rock-solid affiliation network that had been in place since the 1950s began to crumble in the 1970s following the proliferation of non-*keiretsu* distribution channels such as discount stores and supermarkets. The diversification of distribution channels for home appliances had begun.

Thus, the establishment of retail subsidiaries by the camera manufacturers was not an attempt to create *keiretsu* affiliations designed to maximize shared profits among distributors and other affiliates, such as those set up by home appliance manufacturers during the 1950s. Rather, the camera manufacturers were trying to diversify distribution channels and move away from their traditional reliance on wholesalers.

The Development of Canon's Training System

Masao Kogure

This paper begins by detailing the creation of Canon's production system. This does not mean that the paper simply tells the story of the origins of the company's current management system. Rather, it is an account of what occurred as Canon diversified its business. Despite encountering setbacks, the company evolved into a leading global business. This evolution was largely the result of the company's in-house training system, as human resource development was positioned as an important pillar of Canon's diversification strategy. It is therefore important to outline this system when discussing Canon from the 1970s onward.

Canon's unique training and development structure was initiated after World War II. The company began to hire new graduates on a regular basis in 1950, and it implemented a systematic training system for its new employees in 1953. The company's human resources department took the lead in this endeavor. Through the 1960s, as the company's focus shifted from high-end cameras to mass-market cameras, Canon created an employee training system geared toward mass production and quality improvements. The systematization of this training structure progressed in the 1970s when Canon incorporated internal and external systems for assessing skills. The chief spheres of training were camera manufacturing and assembly, lens polishing, management training, and the training of research and development staff.

In the mid-1970s, though, as cameras rapidly entered the age of electronics and started to be equipped with multiple functions, the nature of Canon's manufacturing and assembly technologies also underwent a sudden metamorphosis, and the use of microelectronics and automation advanced. Moreover, Canon further diversified its business by making cameras and office equipment, particularly copy machines, the platform of its operations. This consequently caused a major shift in the sorts of skills and technologies that were required. In the realm of assembly, for example, the focus shifted away from cameras to electronic devices and copy machines. The categories of employees who received training also underwent a change in the 1980s as stepped-up quality control and cost-cutting efforts became necessary. Canon then started to carry out education and training programs for not only its own workers in Japan but also the employees of affiliated companies and business partners as well as its overseas workforce. This sequence of events also applied to the training of its engineers. The company gave its engineers diversified training in an array of technology and effectively utilized its engineers in multiple fields. This development structure and the company's exchanges of technology are hallmarks of Canon.

Offshore Camera Production in Asia

Satoshi Numata

Within the context of corporate strategy, this paper examines motivations for offshore production by Japanese camera manufacturers as identified in prior research. The analysis covers the period from the mid-1960s to 1985 and focuses specifically on Asia in light of the concentration of Japanese camera manufacturers in the region.

Case studies of offshore production by Canon and Pentax reveal the primary motivation was to increase price competitiveness. Both manufacturers were using offshore production for exports. But whereas Canon was using its offshore facilities for production of 35 mm LS models, Pentax was producing 35 mm single-lens reflex cameras.

The study also considers the case of Olympus, which did not shift production offshore during this period. Olympus opted instead to concentrate on building up domestic production facilities, being unconvinced of the necessity for or viability of offshore production.

Finally, the study looks at how the government of Taiwan used export processing zones as a means of attracting direct investment, providing the basic infrastructure for corporate activity in order to reduce investment costs for foreign companies setting up operations in Taiwan. It shows how government policy in Taiwan was consistent with the Canon and Pentax corporate strategies at the time, thus providing the motivation for these companies to shift production offshore.

This study is the first to examine the motivations for offshore production among camera manufacturers by considering the full spectrum of factors: corporate strategies, macro-level factors identified in prior research, and government business policies for attracting offshore production. The paper also suggests that further investigation is required into this issue, which is relevant to the second generation of offshore production and to the camera industry as a whole.

Financial Structure of the Optical Equipment Industry: Analysis of the Industry's Capital Procurement and Utilization

Hiroaki Watanabe

This paper presents a portion of the findings of a Nihon University multidisciplinary research project entitled "An Economic Analysis of the Optical Technology Industry Underlying the IT Revolution: Diversification and Internationalization in the Camera Industry." The subject matter of this paper is an investigation into the actual conditions and special characteristics of the procurement of funds supporting the Japanese optical equipment industry's activities in the development of production technology, the development of new products, the industry's diversification trend and other aspects of its domestic growth, and moves into markets outside Japan including the development of operations overseas. The method used for analyzing the special characteristics of the optical equipment industry's capital procurement was to conduct a study comparing this activity with the entire manufacturing sector's demand for funds and sources of funding. The period covered by the analysis ranges from the conclusion of Japan's high-speed growth era in the early 1970s to the latter part of the bubble economy at the end of the 1980s. This paper presents a discussion of that time frame, which, taking trends in the economic climate into account, divides it into four phases. The gist of the discussion can be summarized as follows.

First, the optical equipment industry's demand for funds during the entire time span covered by the paper is distinguished by the way in which the funds were utilized. With the exception of the period of high economic growth, the industry used approximately 70% to 80% of its funds for tangible fixed assets and investment in plant and equipment and 20% to 30% of its funds for assets, including investment assets. It is noteworthy that the industry's weight of funds utilized for investments and other assets was higher than that in the case of the manufacturing sector overall.

Second, with the exception of the high-growth period, the composition of the optical equipment industry's sources of funds for fixed capital were approximately 60% internal reserves, about 30% capital funds and capital reserves, and around 10% corporate bonds. This funding structure's reliance on long-term debt can be termed low compared with the level of the entire manufacturing sector.

This paper presents a comprehensive examination of the optical equipment industry as a whole and was conducted using an array of materials produced by the Development Bank of Japan's Capital Spending Research Institute. These materials included a report published in March 2002 that examines Japanese industry over four decades on the basis of financial data for fiscal 1960 through fiscal 2000. Other discussion papers produced by the research group that prepared this paper feature

detailed analyses extending to the level of individual companies within the optical equipment industry, but this paper suggests that an even more in-depth analysis at the level of individual entities should be explored in the future.

A Study of the Line Company System in Information-Age Manufacturing Industries

Masaaki Ohba

This study examines the “line company” system, a new management structure being employed by Japanese manufacturing industries as society becomes increasingly information oriented. The line company method converts manufacturing departments, which have traditionally been managed as cost centers, into profit centers, while retaining and enhancing the effective aspects Japanese manufacturing management. This study begins by comparing and analyzing line company applications of several manufacturers, and then explains the function of the line company, what it does, how it has performed, and how it is assessed. It then describes how this management method has been implemented in the photographic film industry, addressing the reasons for implementation, each step involved, and the results achieved. Additionally, it clarifies 21st century manufacturing spin-off strategies and issues concerning the line company as a management method the supports companies at a fundamental level.

A Study of the Neural Company System as a Production Information Strategy

Naoshi Wakatsuki

In recent years, some manufacturing industries have begun to operate “line companies,” going a step beyond spin-offs. The line company system divides manufacturing departments, which are core company activities, into separate lines for management purposes and gives them clear revenue and profit responsibilities. While it has produced some results, there is a movement to network small companies to eliminate line company issues. This study goes beyond the scope of manufacturing departments to address company-wide activities, including sales, development, and technical departments, and presents a new management method for small organizations, the neural company concept, which clearly divides organizations into the smallest units so they can be freely reconfigured.