

Summaries

Network Externalities, Compatibility, and Product Differentiation

Shinji Kobayashi

This paper studies the product compatibility decisions and price competition of firms in a differentiated duopoly with network externalities. We explicitly consider both positive and negative network externalities. We analyze games in which duopolistic firms determine product compatibility choices in the first stage and undertake price competition in a vertically differentiated industry with network externalities in the second stage. We derive subgame perfect equilibrium for the games and demonstrate that the larger the strength of the network externality, the higher equilibrium prices and profits become. We also show that at subgame perfect equilibrium, the firm producing a higher-quality product chooses the lowest compatibility level when negative network externalities exist. Moreover we examine the case in which the network externalities are symmetric and show that if the level of the network externality is larger, the firm producing the higher-quality product will earn a larger profit.

The Study of Project Transfer Information to System Engineers: A Model Building

Yoshiki Nakamura

For private enterprises, the use of advanced information systems has become increasingly important and essential. Generally speaking, the process of introducing an information system starts with original planning, goes through preparation for “requirement for a proposal,” testing, and finally actual system installation and software maintenance. When the system is installed and software maintenance starts to take hold, users will often make changes when faced with problems or call for additional functions. In rare cases, the system may even have to be completely rebuilt. The need for rebuilding the entire system is mostly encountered when attempting to repair bugs or due to other significant system-wide problems. These days, system repatriations usually cost more than software development. What is more, they cause engineers to become too involved in system maintenance and reparation to initiate new projects, thereby missing new business opportunities for the company.

One of the major objectives of this paper is to focus attention on the timing of engineer replacement. We hope to propose the best or optimal timing for a change in maintenance personnel with a view to facilitating and providing materials for further discussion.

Keywords: Information system development, software maintenance, expansion scale, data analysis, simulation

Examples of the Impacts of Standardization in the Design of Information Systems

Nozomi Omiya

As the sophistication of information infrastructure has grown, information system development companies have been moving to automate program development and advancing new development approaches aimed at stabilizing quality and reducing delivery times and costs. These efforts, however, have focused on the development process, and the design process remains a labor-intensive undertaking. This paper examines examples of productivity improvements achieved through information system development approaches incorporating standardized design processes.

Data Analysis in Information System Maintenance

Hisashi Yamamoto

In recent years, information system development has come to involve greater and greater costs for software maintenance. This in turn has resulted in the emergence of various problems in software maintenance. One is that software development personnel have taken on the ongoing responsibility for software maintenance and, thus, remain involved with what was originally a development project. This ongoing involvement effectively reduces the size of the development staff and, because of the diminished ability to handle new development projects, results in the loss of business opportunities. It has also increased maintenance costs. In an attempt to determine a standard for timing a transition from development personnel to maintenance personnel, data on software assistance requests were analyzed. This paper reports on the results of this analysis.

The Improvement of Standardization in Information System Development: Construction and Application of Systems Applying Design Component Repositories

Yukio Maruyama

In recent years, information system development has been characterized by increasingly complex functions and system sizes. At the same time, however, the period of time allotted for development is becoming shorter and shorter. Against that backdrop, improvements of productivity and quality for information system development have taken on increasing importance and it has become necessary to meet demands in these fields with ever greater speed. In this paper, we propose the method of construction for information system applying a design repository aimed at improving productivity and quality in each information system development phase. Moreover, the proposed system was applied to experimental data management system with biochemistry experiment, and performance measures of experimental data management before and after introduction of the proposed system were compared. The results indicated that introduction of the proposed system led to improvements in both productivity and quality with regard to the actual data.

Current Status and Future Issues in the use of Chinese Software Companies for Offshore Development Work

Masaaki Ohba

Japan's information industry has grown through offshore development in the form of outsourcing to software firms in China's coast. This outsourcing is based on the advancement of network technology together with a mutually beneficial relationship founded on differential labor conditions in Japan and China and development cost deflation. Along the way, development standardization to increase productivity and assure quality has played a significant role. This paper uses the results of a study performed in China to analyze and discuss specific examples illustrating the current status and future issues facing Chinese software firms.

Will Khorgos Become the Shenzhen of Western China?

Wu Yiliang

Regarding the economic development of the New Silk Road region, Tadahiro Tsuji, et al (2008), Wu Yiliang (2009), Tadahiro Tsuji (2009), and Riku Yugun (2009) have all expressed the view that as the transportation competitiveness of the New Silk Road grows, industrial agglomeration will occur in existing major cities and a succession of new cities will emerge, give rise to industrial agglomeration, and lead to urbanization. This, it is believed, will result in the formation of “beads-type” cities along the New Silk Road, and promote economic development for the entire region. It has also held that areas in the “neighborhood of border area” will be the most conducive for the formation of new cities.

Based on these prior studies, this paper analyzes the growth possibilities of Khorgos, which is being developed on the New Silk Road. In so doing, it also examines views regarding the formation of “beads-type” cities along the New Silk Road.

The conclusions of this paper can be summarized as follows. Khorgos, which sits on the border between China and Kazakhstan like the “neighborhood of border area”, has much in common with Shenzhen. And Shenzhen’s development success offers important hints for the development of Khorgos. Khorgos has every possibility of giving rise to industrial agglomeration if the city’s geographic advantages can be capitalized on. And, while it is still premature to expect that Khorgos could develop into a major city on the order of Shenzhen, Khorgos could very likely emerge as a significant new city. It seems reasonable, therefore, to view Khorgos as a potential “Shezhen of western China”.

The Role of the Caucasus on the New Silk Road

Mitsuo Honda

The research described in this paper is an extension of our previous work on the relationships between the Central Asian countries and Japan, China, and South Korea. Its research contribution is an economic discussion of the positions of Azerbaijan, Armenia, and Georgia – three countries in the southern Caucasus region – vis-a-vis the New Silk Road. Though it is no exaggeration to say that these three countries have only very thin relationships with Japan, our ultimate goal is to use understanding of the industrial conditions in the southern Caucasus region and the trade relationships (in particular understanding of the goods traded) between this region and Japan and other parts of the world to investigate possibilities for the beads-type (as in a string of beads) development of countries along the New Silk Road.

In general, the aim of our research undertakings is to use local studies and data to solve problems. For the present study, however, our desire was to gather data that would support a future local study by using data we have gathered to note observations about countries of the Caucasus region where local studies have yet to be performed. To begin with, we used existing data to develop a picture of the economic and geographic characteristics of Azerbaijan, Armenia, and Georgia. We then used actual trade data to document characteristics of each country and the region. Located near the center of the Eurasian continent, these three countries have complex and diverse natural environments and ecologies and, except for Georgia, are landlocked. All three countries are transitional economies facing difficult geopolitical and institutional issues. And the data clearly indicated that, with insufficiently developed domestic markets, winning access to markets in other countries, including ones in their immediate neighborhood, is an urgent priority for each.

For the present study, we had hoped to use observations of the domestic economic conditions and trade structures of Azerbaijan, Armenia, and Georgia to describe relationships to the areas in which Japan enjoys comparative advantage and then consider the roles Japan could play in relation to each of the three countries. The volume of quantitative data we were able to gather, however, was insufficient for economic analysis. Nevertheless, we were able to reaffirm that, though not moving with the speed or scale of China, which is also on the Silk Road, the steady economic development of the Caucasus and Central Asia is well worth researching based on geographic location. As a result of our study we determined that the development of both of these regions, which are characterized by transitional economies, depends on the successful resolution of two points: 1) Achieving sufficient separation from prior systems and 2) Overcoming resource dependency given the presence of countries now experiencing unprecedented

independence.

The Possibility of Economic Development for Central Asia with Reference to the Dynamic Catch-up Model

Tadahiro Tsuji

With the collapse of the former Soviet Union and the unpredictable forms that ensuing independence took, the economies of Central Asia fell into chaos and, as of the first half of the 1990s could rightfully have been in a state of stagnation. Since 2000, these economies have seen better times and experienced vigorous development. However, because the development has relied on skyrocketing international prices for the oil, natural gas, and rare metals found in abundance in some Central Asian countries, it cannot be relied upon to continue. The key to engendering long-term, stable economic development lies in the degree to which autonomous economic development mechanisms can be implanted in these countries.

This paper examines the question of how the countries of Central Asia can catch up to developed countries amid increasing fragmentation in the global economy. In prior joint research, my research partners and I obtained results clearly indicating the need for the “bead-type” (as in a string of beads) formation of industrial city clusters in building an autonomous economic development mechanism. Complementing that work, this paper considers the need and possibilities for adopting the dynamic catch-up model to take part in the dynamism of the global economy.

The results of this paper clearly show that Central Asia still suffers from inadequate infrastructure and, on this point, unquestionably lags even developing regions in Eastern Europe. This paper succeeded in clearly identifying one area in which the countries of Central Asia should focus their efforts in order to promote economic development.

Gravity Model Analysis of Domestic Air Traffic between Cities in China

Naohiko Ijiri

China's construction of transportation infrastructure is proceeding at a rapid pace in response to the country's economic growth, and volumes on overland, marine, and air traffic continue to grow. Usage especially of new highways, high-speed railways, and air routes that shorten transportation time is on the rise. Usage of air transport services has exhibited particularly high growth, with traffic expanding rapidly not only at airports in Beijing and Shanghai but also at coastal and inland airports, as well. In 2008, passenger volume at Beijing Capital International Airport approached that of Haneda Airport, while passenger volume at Shanghai Pudong International Airport pulled even with that at Narita International Airport. In terms of the volume of freight handled, Shanghai Pudong pulled ahead of Narita to take the number three position behind number-one Memphis International Airport in the US and Hong Kong International Airport. This paper uses a gravity model to analyze the factors impacting domestic air transportation flows in China. Its estimation results support the use of a gravity model and are consistent with prior research analyzing air traffic flows in other countries. Estimation results for air freight transportation differed slightly from those for air passenger transportation, but it can still be said that, as in Japan where air transport accounts for 30% of total exports, air freight transportation in China has grown to a significant level. A new theoretical model is needed to analyze the economic factors affecting air freight transportation volumes in different geographic areas. The development of a model that would enable more precise assessments of the economic impacts of air transportation infrastructure merits future attention.

A Study of the Experiences of East Asian Emerging Countries and the Dynamic Catch-up Model

Riku Yugun

Since the latter half of the 1990s, the invigoration of economic ties across East Asia has reduced barriers to international trade and direct investment, and the global production activities of private firms and trade involving the resulting components and intermediate goods have given rise to a new international division of labor. Considering also the rise of the Chinese economy, we have seen an increasing “Asianification” in which Asia economics, particularly these of East Asia, are evolved into not only production base for export but also the market for consumption, the end of the era in which Japan led – and other Asian countries followed in – a “flying geese”-type of industry relocation, and the dawn of a new phase of development for East Asian economies.

The “flying geese” model is effective an explanation of economic development of East Asia that was revealed until the first half of the 1990s. Since the latter half of the 1990s, however, a new catch-up process has taken hold among East Asian emerging countries amid new global economic trends, indicating the need for a new development description approach that can replace the “flying geese” model whose pillar is the international shifting effect through the industrial relocation. This paper proposes a generalized dynamic catch-up model based on the East Asian experience since the latter half of the 1990s. This dynamic catch-up model takes a perspective different from the one in which the advancement of one country takes place through the international shifting of industry. It focuses on the three aspects of agglomeration, global production activities of private firms and infrastructure network building as they relate to global economic dynamism and the mechanism for forming a new international division of labor. It also clearly describes the process of how emerging countries gain access to the globalization of economic activities and relate that into economic growth for themselves.

Dynamic catch-up is a hypothesis drawn mainly from the experience of emerging countries in East Asia. However, considering that the East Asian experience has applicability to countries in Central Asia and other regions, its new catch-up process brings into focus new catch-up possibilities for landlocked regions traditionally seen as having little hope of autonomous economic development. This paper, therefore, emphasizes the need for new development strategy initiatives to realize those possibilities.

Pattern of Trade in Central Asia and Analysis of the Determinants of Export

Takaaki Maeno

The countries of Central Asia are located near the center of the Eurasian continent, between East Asia, with its production network anchored by a process-level division of labor, and the EU, which is expanding eastward. This paper focuses on the international trade of Central Asian countries, analyzes how their trade structures have changed since independence, and uses the gravity model to examine export determinants. It finds that export determinants for Central Asian countries can be explained to some extent by the gravity model. More specifically, as empirical results, it finds that there is a positive relationship between economic factors in the form of production capacity and income level as measures of market size in both countries in a two-country model and exports, and a negative relationship between geographic distance or remoteness, and exports. This result is consistent with the theory of a simple gravity model. In other words, exports increase proportionally with production capacity in both countries in a two-country model, and inversely relative to trade cost. From the perspective of income level, it was found that exports flow to regions with high incomes – in other words, large markets. Given their location between East Asia and Europe it is thought that Central Asia has untapped potential as an overland hub linking those two regions. Central Asia, however, is made up of countries that are landlocked and thus suffer from trade costs that are extremely high compared to those of countries with sea coasts. This implies that countries considering engaging in trade with the countries of Central Asia face trade costs that are very high relative to the sizes of existing and potential markets, and that trade volumes would be relatively small. In analyzing the trade structure of Central Asia, it is necessary to address trade costs in detail. A study, therefore, that takes into account factors like infrastructure in Central Asia and adjacent countries, and not just the simple trade cost variables used for this paper, is called for.

The Globalization of China's Retail Industry — Impact of and Prospects for the Open-Door Policy

Yasuo Sone

China's opening of its retail industry to foreign competitors got off to a tentative start in the 1990s. When the country joined the WTO at the beginning of the 21st century, the presence of foreign competitors in its retail markets started to swell rapidly, particularly in coastal areas, and is now spreading to central and western cities as well. As the foreign presence increases, the diversification of business categories and the concentration of large-scale stores run by local retailers have accelerated. The entry of foreign retailers has definitely contributed to the Chinese government's strategic goal of shifting to a consumption-driven economic growth. It is also stimulating individual local retailers, some of whom are striving to create retail businesses that can compete with foreign rivals. Looking ahead, competition between local and foreign retailers is likely to intensify.

The entry of foreign retailers has had some negative impact, such as pushing some local retailers out of market competition and expanding regional disparities in development. However, because of its commitment, made when it entered the WTO, China has already passed the point of no return in terms of opening its retail industry to foreign companies. The development of China's retail sector is being seen as a means of rectifying global economic imbalances, since shifting to a consumption-driven economic growth is likely to reduce China's foreign trade surplus.

In recent years, Japanese companies have been more vigorous in developing chains of large-scale commercial facilities in China. A further expansion into new types of retail operations could offer numerous, as-yet untapped business opportunities for them. The development of China's retail sector will certainly be an important factor contributing to the development of Japanese companies and to the medium-and long-term growth of the Japanese economy as a whole.

The Impact of Production Abroad on Japanese Parent Firm Performance: Empirical analysis by overseas investment purposes

Tomohiko Inui

This paper examines the impact of Japanese firms' overseas investment on their domestic performance. Most of the previous studies done to date found that overseas expansion has minimal impact on domestic performance and, in particular, have observed no "hollowing out" effect with regard to domestic employment. This paper, however, looks at the possibility that such results have been obtained based on analyses paying insufficient attention to factors like the purposes driving overseas expansion. Our analysis, therefore, considers the industry of the Japanese parent company (manufacturing or non-manufacturing), the type of activities undertaken at the overseas investment location (manufacturing or non-manufacturing), and the type of overseas location (high-income country or low-income country). The reason for focusing on heterogeneity in overseas activities is the possibility that investment purposes could differ between developed and developing countries, and the possibility that different investment purposes could result in different impacts on Japanese parent companies.

This paper uses micro data from both "Basic Survey of Japanese Business Structure and Activities" and "Basic Survey of Overseas Business Activities" to analyze the impact of direct overseas investment by Japanese firms on their domestic activities. More specifically, it examines productivity (both total factor productivity and labor productivity), value added, capital investment, and trade activities. For manufacturers, it finds that, even when analyzed from various perspectives, overseas production activities have had hardly any impact on their domestic performances. This result is thought to reflect the mutual offsetting of the impacts of horizontal and vertical overseas activities undertaken by Japanese companies and, ultimately, that such offsetting resulted in little impacts on domestic performances. For non-manufacturers, this paper finds that overseas expansion has had a small and positive impact on productivity and a negative impact on exports. Non-manufacturing overseas expansion has been pursued mainly by retailers and wholesalers. The findings of this paper suggest that internationalization improves the productivity of the distribution industry which is regarded as internationally low. The decline in exports can be interpreted as the result of an increase in local procurement at overseas host countries.

Labor Productivity Comparison between Market Economy in Japan and United States

Kwon, Hyeog Ug

In this paper, we provide a consistent international comparison of the labor productivity level and growth in Japanese and U. S. market economy over the period 1986–2004. The main findings are as follows: (1) There is a widening gap of labor productivity level between Japan and U. S. market economy. (2) The growth rates of labor productivity slowed down in Japan, comparing to that of the United States. (3) A major contributor to gap of labor productivity between Japan and U. S. market economy is non-manufacturing sector.

The Knowledge Spillovers from FDI and the Productivity Effect: A Study of Global Retailers' Entry to Asian Markets

Norie Yokoi

There are previous studies pointed to the knowledge spillover effect on local retailers and retail related companies from FDI by foreign-owned retailers, as retailers internationalize increasingly. Very little empirical analyses, however, has been performed to determine the types of knowledge spillover effects on host distribution economies and whether the spillover contributes to improved productivity. As such, it is no surprise that there is a dearth of research specifically on the knowledge spillover overseas from FDI by Japanese retailers and the spillover to Japanese market from FDI by foreign-owned retailers.

The purpose of this paper is to identify the types of knowledge spillover effect of FDI by foreign-owned retailers on their subsidiaries and even on host economies, and derive hypotheses for future empirical analysis of the effect. This paper focuses on the Asian markets including the Japanese market. It verifies an overview of the spillover effect and the issues in the Japanese retail industry and then defines, relying mainly on interview-based surveys of foreign-owned retailers operating in the South Korean, Malaysian and Chinese markets, the types of knowledge and their spillover effects on those markets.

The research results provide a number of the knowledge spillover effects of FDI by foreign-owned retailers on their subsidiaries through various channels such as distribution, IT, marketing, store management, human resource development, and business administration. They also describe the effects on their subsidiaries' business performances. Then these spillover effects expand their competing retailers as the competitors mimic the approaches of subsidiaries of foreign-owned retailers. It might suggest the effects on host distribution economy. Furthermore the results find that the knowledge spillover of FDI by a foreign-owned retailer on its subsidiary in one market affects the markets in other countries where the retailer have entered.

It's not defined yet in this study that how much time it takes or how much it cost for the knowledge spillover from foreign-owned retailers on subsidiaries and on host distribution economies, and also how much productivity is affected. Hence we would like to study these issues in further survey researches and to perform empirical analyses in order to generalize our research. Moreover, we would like to examine the hypothesis that the knowledge spillover of FDI by a foreign-owned retailer on its subsidiary in one market affects the markets in other countries where the retailer have entered, and to find out the relationship between the internationalization of retailers and their knowledge spillover effects on productivity.