

# RIETI Highlight

2009  
VOL. 26  
*Special Edition*



## Our research Our challenge

**Economics and Economic Policy amid the Global Economic Crisis** by Keiichiro Kobayashi

**Japan's "Flexicurity" Approach** by Kotaro Tsuru

**Seeking the Differences in R&D in Japanese and U.S. Companies** by Sadao Nagaoka

**The Internationalization of Japanese Firms** by Ryuhei Wakasugi

Masahisa Fujita  
President and Chief Research Officer, RIETI

# RIETI Highlight

2009  
VOL. 26  
*Special Edition*

**About RIETI & On the cover** . . . . . 1

## Column

**Economics and Economic Policy amid the Global Economic Crisis**  
Keiichiro Kobayashi, Senior Fellow, RIETI . . . . . 2

**Japan's "Flexicurity" Approach:  
Reforming labor market institutions with a focus on security, training, and flexibility**  
Kotaro Tsuru, Senior Fellow, RIETI . . . . . 5

## Research Digest

**Seeking the Differences in Research and Development in Japanese and U.S. Companies**  
Sadao Nagaoka, Faculty Fellow, RIETI . . . . . 8

**The Internationalization of Japanese Firms: New findings based on firm-level data**  
Ryuhei Wakasugi, Faculty Fellow, RIETI . . . . . 14

## BBL Seminar

**"The Financial Crisis and Corporate Governance"** Franklin Allen . . . . . 20

**"The Challenge of Codification in English Legal History"** David Lieberman . . . . . 22

## Symposium & Workshop

CEPR-RIETI International Workshop **"Trade and the Financial Crisis"** . . . . . 24

DRC-RIETI Workshop **"The Growth of Chinese Industries in the Global Economy"** . . . . . 26

## Book Review

**"Productivity in Asia"** reviewed by Bart van Ark . . . . . 30

## Data

**AMU and AMU Deviation Indicators for East Asian Currencies** . . . . . 32

### What is RIETI Highlight?

RIETI's public relations magazine "Highlight" is published quarterly, featuring RIETI's most recent activities including: symposia and workshops, book reviews, and columns written by research fellows, with the objective of disseminating research outcomes to a wider audience. This special edition has been edited in English in order to reach international readers.

In this issue, we will focus on our collaborative activities with research institutions and researchers overseas, into which RIETI has invested much time and effort, introducing research findings directed toward solving various economic issues from a global perspective.

# About RIETI

---

---

## What is RIETI?

The Research Institute of Economy, Trade and Industry (RIETI), an incorporated administrative agency, was founded in April 2001, as a government-affiliated policy research institute with a certain degree of independence from the administrative authorities to carry out study, analysis and research on various policy issues from a medium- to long-term perspective, thereby accumulating the necessary knowledge to formulate and recommend policy options.

## Research themes and fellows

RIETI has set up an overall framework of research themes to respond to policy-making needs. Within this overall framework, research fellows undertake their own research in an unfettered atmosphere, building organic linkages with other current research. For the realization of a flexible and interdisciplinary research environment, fellows with diverse backgrounds are engaged in research at RIETI. In addition to fulltime fellows, RIETI also appoints part-time fellows consisting of Faculty Fellows who concurrently hold positions at universities, and Consulting Fellows who concurrently hold positions at government agencies and other organizations.

### Framework of research themes for FY2006 to FY2010

#### Major Policy Research Domains

- I. Maintaining economic dynamism under the adverse demographic conditions of low fertility and aging population
- II. Promoting innovation and strengthening international competitiveness
- III. Formulating Japan's strategy in response to globalization and deepening economic interdependence in Asia
- IV. Compilation of the history of Japan's trade and industry policy

#### Adjacent Basic Research Areas

- A. Institutions related to financial and labor markets, and new corporate law and governance
- B. Regulatory reforms and evaluation frameworks for deregulation
- C. Compilation of micro panel data on firm activities, trade, energy, and the elderly; and model building and operation

## RIETI's mission and strength

RIETI seeks to provide an efficient and effective theoretical foundation and knowledge network to the policy-making authorities. Addressing a broad array of domestic and international issues as an institute where researchers can simultaneously pursue academic studies and policy research, RIETI is capitalizing on its strength of enabling studies based on valuable empirical data. Operating in this dynamic environment, RIETI aspires to become a platform for creating and exchanging wisdom.

## On the cover: Masahisa Fujita (President & CRO, RIETI / Professor, Konan University)

---

Dr. Fujita's expertise includes urban and regional economics, regional development, spatial economics and international economics. He obtained his Ph.D. in regional science from the University of Pennsylvania in 1972. Prior to his current position, he was a professor at the Regional Science Department, University of Pennsylvania (1986–94) and a professor at the Department of Economics, University of Pennsylvania (1994–95). He is a member of the American Economic Association, the Japanese Association of Theoretical Economics, the Econometric Society, and the Regional Science Association. Selected publications include *Economics of Agglomeration* (written with J F Thisse, Cambridge University Press, 2002) and *The Spatial Economy* (written with P Krugman and A Venables, MIT Press, 1999).



# Economics and Economic Policy amid the Global Economic Crisis



## Keiichiro Kobayashi

Senior Fellow, RIETI

### Profile

Dr. Kobayashi joined RIETI as Fellow in 2001 and has served as Senior Fellow since 2007. He has extensive experience in macroeconomics research in areas such as endogenous growth theory, business cycles theory, financial crises, and bad debt problem. He received a Ph.D. in economics in 1998 from the University of Chicago. He was guest editorial writer at the Asahi Shimbun News Paper from 2002 to 2007. He received the Nikkei Economics Book Award (2001) and the Osaragi Jiro Critics Award (2002) both for the publication of *Trap of the Japanese Economy* (co-authored with Sota Kato, published from Nikkei Inc. in 2001, in Japanese).

The current global economic crisis has demonstrated the close relationship between the stability of the financial system and macroeconomic growth and stability.

In order to correctly analyze the crisis and formulate effective policy responses, it is necessary to create a new framework of thought within the field of macroeconomics that can link macroeconomic movements to the stability of the financial system and discuss them in an integrated manner. When thinking in terms of such a framework, global economic recovery policies will consist not only of public expenditure and coordinated monetary easing among affected countries, but also the prompt implementation of policy measures capable of stabilizing the financial system.

### » The challenge for macroeconomics

In the minds of many economists, the global economic recovery and the stabilization of the financial system are seen as two distinct and separate events. However, treating these two events separately was also a problem in the consciousness of Japanese economists and commentators

during the 1990s, and may in fact be considered a significant problem inherent in the framework of modern economics. Currently, the standard view may be described as follows:

*“For the economy to recover, the only acceptable policy response is Keynesian policy (fiscal policy and monetary policy). The disposal of non-performing assets and the injection of capital are necessary in order to stabilize the financial system, but this has no direct relationship to the macroeconomic recovery. On the contrary, when economic recovery is realized through fiscal and monetary policy, there will be a decrease in nonperforming assets, thus eliminating the need for policies specifically designed to stabilize the financial system.”*

The experience of Japan in the 1990s, however, seems to indicate that such expectations are mistaken. Proof may be seen in the case of Sweden, where an asset bubble burst around the same time as in Japan, but in Sweden policymakers designed a fast-track economic recovery through a surgical nationalization of the banks.

Currently, signs of economic recovery are beginning to appear and fears of the crisis overwhelming the world economy are starting to fade, but if the policy responses of U.S. and European governments toward the disposal of nonperforming assets begins to lag behind as a result, the financial systems of Europe and the U.S. will once again be vulnerable to recurring financial crises (something that Japan repeatedly experienced in the 1990s).

There have been people in Japan, the U.S., and Europe who have recognized that resolving the issues affecting the financial system is a necessary precondition of economic recovery, but this recognition has been based purely on empirical principles. The theoretical structure of economics has not been used to address both macroeconomic performance and the stability of the financial system in an integrated manner (perhaps this is why economists are of the opinion that no relationship exists between the economic recovery and the stabilization of banks).

For example, it is well known that the banking sector is not considered to have a central role in economic activity, either in the standard neoclassical economic growth model or in the New Keynesian model. In addition, the issue of nonperforming assets is invariably viewed as a microeconomic issue related to the banking industry.

In fact, the crisis we are currently experiencing may call for a change in the theoretical structure of macroeconomics. In order to analyze the current crisis, a macroeconomic approach that encompasses financial intermediaries at the center of its models is necessary. In particular, there is a need to focus attention and research on the conditions that cause payment intermediation in the financial system to malfunction. Perhaps this kind of macro-model can be created through developing the framework of the monetary theory of Ricardo Lagos and Randall Wright. Moreover, this new macroeconomic approach should provide a framework for discussing the cost and effectiveness of three different kinds of policy—fiscal policy, monetary policy and the stabilization of the financial system—in an integrated manner that also considers the relative weights to be given to all three. This is necessary because the fragility of the financial system exerts a major macroeconomic impact on the global economy, as seen below.

## » The vicious macroeconomic circle produced by nonperforming assets

The fragility of the financial system and the accumulation of large volumes of nonperforming assets have major short- and long-term effects on the macroeconomy.

In the short term, as seen in the months following the Lehman shock, a confidence crisis causes the economy

to rapidly deteriorate. Whereas risky assets had previously been traded as a means of payment, the confidence in such assets for settlement purposes is lost once such a crisis occurs, causing a sharp rise in the demand for liquid assets such as bonds and cash/deposits. As a result, the markets are depleted of liquidity and trading is inhibited in real terms, with aggregate demand plunging. Falling aggregate demand pulls down asset prices, which weakens the balance sheets of financial institutions and further exacerbates the confidence crisis.

In the long term, a phenomenon occurs that I have named the balance sheet trap, based on the experience of Japan in the 1990s.<sup>1</sup> In this phenomenon, as nonperforming assets increase and the soundness of financial institutions' balance sheets decline over the long term, credit transactions stagnate between all kinds of economic entities, suffocating the supply network between companies. Due to the deterioration of the balance sheets of financial institutions, companies increasingly lose trust in each other with regard to the execution of payments, and this inhibits the development of the division of labor between companies. As the development of the division of labor is a major source of productivity growth, the balance sheet trap inhibits the rise in productivity of the entire economy, which causes asset prices to fall further and balance sheets to deteriorate even more.

When the fragility of the financial system has a major negative impact on the performance of the macroeconomy through the confidence crisis and balance sheet trap, macroeconomic policies such as fiscal policy and monetary easing are not capable of bringing about an economic recovery, instead they only buy time and alleviate the pain of the economic downturn. Public expenditure maintains employment temporarily, eases the abruptness of the change and buys time, but it will unlikely be the solution to the fundamental problem. Monetary easing policies may make up for the lack of liquidity and soften the economic downturn, but they will not eliminate the nonperforming assets and capital deficits that are plaguing banks, and thus will not dispel the sense of insecurity in the markets. The true light at the end of the tunnel for the global economy will not be seen until the financial system is stabilized through a rigorous disposal of assets and the temporary nationalization of banks.

## » The necessary policy package

The Geithner Plan, which proposes establishing a fund consisting of public- and private-sector funds to buy nonperforming assets from financial institutions, will probably not work. A similar type of fund was created in

<sup>1</sup> For further details, please refer to "Financial crisis management: Lessons from Japan's failure," VoxEU website column ([www.voxeu.org/index.php?q=node/2483](http://www.voxeu.org/index.php?q=node/2483)), October 27, 2008

Japan in the mid-1990s with funds from the banking industry designated for the purchase of nonperforming debts, but little process was made in disposing of the debts. The fundamental problem lies in the banks, which are holding the nonperforming assets but have no intention of selling them to the newly established fund at reduced prices. The public-private fund, in order to buy the nonperforming assets with taxpayer money, must pay the correct price that reflects the value of the assets (which will be prices even lower than book value). For the banks holding the nonperforming assets, it makes more sense to hold onto them until the economy recovers to see if the nonperforming assets are eventually miraculously transformed into prime assets, rather than selling them immediately at low prices and a certain loss. This phenomenon has been referred to as the “gamble for resurrection” (Diamond and Rajan, 2009, made a model of this based on the risk-shifting effect). It is precisely why attempts to dispose of nonperforming assets were unsuccessful in Japan over a 15-year period stretching from the early 1990s to the mid-2000s.

Nothing short of political pressure exerted by governments on the financial institutions holding nonperforming assets through extreme methods, such as strict asset evaluations, will break this deadlock. With regard to the package of policies required to accomplish this feat, a number of practical lessons can be learned from the experience of Japan.

For starters, the policy chiefs responsible for the regeneration of the financial system should be outsiders, rather than financial industry insiders including people associated with the Treasury and the Federal Reserve Board (FRB). Financial regeneration only made progress in Japan after the position of minister in charge of finance was assigned to the economist Heizo Takenaka, who had only loose connections to the financial world. In addition, the first president of the Resolution and Collection Corporation, which actually made progress in the disposal of nonperforming assets, was originally a prosecutor. The top officials of the Industrial Revitalization Corporation of Japan were also management consultants who had never been involved in the banking industry or the Ministry of Finance. Similarly, the top policy chiefs for financial regeneration in the U.S. should not be selected from Wall Street insiders, but instead from university economists, people associated with the judiciary, people associated with investigative organizations, people associated with the military and so on, in order to create a structure capable of resisting political pressure from Wall Street.

Authorities with a high degree of independence from the financial world will also be needed to repeatedly administer strict asset evaluations for financial institutions —strict to the point of being considered excessive.

Only the most rigorous asset evaluations will create the necessary situation where financial institutions are not tempted to “gamble for resurrection,” and thus remove the nonperforming assets from their balance sheets.

Finally, in coordination with the strict asset evaluations it will be necessary to create a structure for deploying sufficient amounts of capital to meet the capital needs of undercapitalized financial institutions. In other words, the government needs to secure a sufficient framework of public funds (probably another \$1 trillion) so that it can make use of these funds whenever it sees fit. In the present U.S. political situation, the biggest problem lies in securing public funds.

Japan was also confronted with this problem, as bailing out banks with public funds was considered politically taboo in the mid-1990s. The Japanese government waited three years before finally intervening. During this time, however, the severity of the nonperforming debt problem became untenable, sending the Japanese economy into financial panic. Ultimately, the government was forced to inject more than ten times the amount of public funds into the banks than had initially been required in the mid-1990s. Based on the experiences of Japan and other countries’ financial crises, U.S. policymaking authorities and politicians must convince U.S. citizens that it is imperative to take immediate action in preparing an additional framework of public funds.

### » A question for future economic consideration

In the ongoing economic policy disputes, economic recovery is invariably discussed in terms of policy devices involving public expenditure and monetary easing, while the stabilization of the financial system is only considered possible with the design of new financial regulations capable of preventing recurrence (once we manage to come out of the current crisis). But when will we emerge from the current crisis? It seems unlikely that we will come out of it soon.

Designing and implementing policies capable of disposing of nonperforming assets and stabilizing the financial system should not be left to financial community insiders. It will probably be necessary to inject additional government resources (taxpayers’ money) for financial stabilization going forward. We need to openly discuss what form these public fund injections should take. Financial system stabilization policies including the disposal of nonperforming assets and capital injections for financial institutions (temporary nationalization) must be considered alongside fiscal policies and monetary easing, with a new consciousness that these also constitute macroeconomic policies. We need to switch to a new paradigm of economic thought.

# Japan's "Flexicurity" Approach:

Reforming labor market institutions with a focus on security, training, and flexibility



## Kotaro Tsuru

Senior Fellow, RIETI

### Profile

Dr. Tsuru joined RIETI in 2001 and serves as Senior Fellow. His expertise covers Japan's corporate governance, financial system, bank behavior, employment system and political economics. Prior to his current post at RIETI, he was Research Economist at the Institute of Monetary and Economic Studies, Bank of Japan (2000-'01); Staff Economist, Economics Department, OECD, Paris (1995-2000); and Government Economist, Economic Planning Agency of Japan (1984-'95). He received a Ph.D. in Economics from the University of Oxford. His major publications include *Fiscal Reforms of Japan: Redesigning the Frame of the State* (written and edited with Masahiko Aoki, published from Toyo Keizai Inc. in 2004, in Japanese), *Labor Market Institutions Reform in Japan: Changing the Way People Work* (written and edited with Yoshio Higuchi and Yuichiro Mizumachi, published from Nihon Hyoronsha in 2009, in Japanese).

The Japanese economy has been falling at a far greater rate since last fall than ever imagined amid the spreading impact of the global financial crisis. Japan's gross domestic product (GDP) contracted at an annualized rate of 12.7% during the third quarter (October-December) of fiscal 2008, which was the sharpest drop recorded among developed countries. Employment conditions have been worsening just as rapidly. The initial rounds of job cuts preyed on non-regular workers, resulting in growing job losses among dispatched factory workers and fixed-term workers in export-oriented industries, and are now emerging as a major social problem. If the real GDP for fiscal 2009 (April 2009 through March 2010) declines by 3% or more as forecast by private-sector research institutes, the unemployment rate could rise to above 5.5% (see note).

A hurried and poorly thought-out policy response under such conditions could do more harm than good. For instance, assigning blame for the job turmoil to the dispatch services responsible for placing factory workers, and attempting to protect workers by banning such services could aggravate the unemployment situation even further by narrowing the scope of available job opportunities. In order to properly respond to the current situation, the government needs to develop both a short-term and long-term vision, i.e., it needs to implement emergency stop-gap measures in the short term while redesigning and reforming relevant institutional mechanisms over the long term. As one specific step toward achieving these goals, I would like to propose a Japanese version of the "flexicurity" approach that revolves around the following three words: security,

training, and flexibility. These three policies complement each other like the proverbial three arrows that work together to strengthen one another.

Flexicurity, a term coined by combining the words "flexibility" and "security," refers to an employment and labor policy approach under which a government seeks to achieve greater labor mobility by weakening employment protection and enhancing unemployment insurance, thus facilitating displaced workers' reentry into the workforce through proactive measures such as job training. Denmark's flexicurity model is one of the most well-known cases.

## » Is flexicurity necessary?

Why do we need to pursue the flexicurity approach now? Because growing job uncertainty amid rapidly worsening employment conditions have dampened household consumption and investment spending to the point where it is now contributing significantly to the economy's downward spiral. This negative cycle must be stopped. And to achieve that end, it is imperative for the government to make a strong commitment to ensuring social security so as to provide people with security.

Security in this context means taking immediate action to boldly expand and upgrade the safety nets protecting non-regular employees, who have been the hardest hit by the sharp downturn of the economy. The government has announced plans to lower the eligibility threshold, from a minimum scheduled employment period of one year to six months, for participating in the unemployment insurance program. But this change is not enough. Scheduled employment periods are problematic because they are subject to the judgment of employers. There is an incentive for employers to underestimate such periods to the point where they fall below the threshold, thus releasing employers from the obligation to pay out unemployment insurance premiums.

Unemployment insurance should be available to all employees in the same manner as workers' accident compensation insurance, irrespective of their scheduled employment period. At the same time, the government needs to review and alter the eligibility requirements for

other social security programs—including employee pensions and medical insurance—that effectively restrict the participation of part-time, fixed-term workers. Indeed, it should design an institutional framework that enables the integrated administration of all these social security programs, including unemployment insurance.

## » Greater security must come with training and flexibility

However, if safety-net related measures become too generous in an isolated way, they may trigger a moral hazard for workers and produce an unintended side effect by increasing the rigidity of the labor market. We must not forget the long-term structural unemployment experienced by European nations in the 1970s when they pushed themselves toward the goal of becoming welfare states following the oil crisis. Long after their economies had recovered from the oil crisis, European countries continued to suffer from high jobless rates due to the prolonged unemployment of young, unskilled workers. When providing greater security, the government needs to design and implement an institutional framework that is sustainable over the long term and that incorporates the elements of training and flexibility that are described below.

Training involves the implementation of active labor market policies, such as re-training to facilitate reemployment for individuals who have lost their jobs, providing employment subsidies, and establishing public job-placement services. By looking at the relationship between unemployment benefits and government expenditures on active labor market policies (both measured as a percentage of GDP), we can see that countries providing greater unemployment benefits spend more on active labor market policies in order to prevent the occurrence of moral hazards.

Japan has a lot of room to maneuver in raising expenditures on unemployment benefits and active labor market policies, which are substantially lower than those in European countries. However, we must keep a cautious distance from those who are advocating active labor market policies as if they were a panacea. While acknowledging the potential positive effects of such policies, the Organization for Economic Cooperation and Development (OECD) has



noted that many that have already been implemented have proven to be unsuccessful. According to the OECD, in order to improve the efficiency of job matching and enhance the work experience and capabilities of individuals, it is imperative to identify and implement an appropriate combination of policies.

Meanwhile, an empirical study from Sweden has shown that the most effective means of facilitating the reemployment of displaced workers is by providing subsidies to companies that hire such workers as regular employees. The Swedish study also found that the rate of success in terms of reentry into the workforce was actually lower for people who either had been working in the public sector on a fixed-term contract or had received training not related to a specific company, than it was for those who had not taken advantage of any such programs. These findings indicate that actual work experience with a private-sector company has the greatest appeal to potential employers. Thus, generally speaking, high expectations should not be placed on government intervention in education and training.

One noteworthy segment of active labor market policies encompasses those focused on activation, which entail policies designed to increase incentives for displaced workers to find new jobs. In implementing their activation programs, European countries such as the Netherlands and Switzerland have undertaken a carrot-and-stick approach by providing job-finding support through periodic interviews with job counselors on one hand, while at the same time restricting unemployment insurance benefits for those who do not attend job training or other participatory programs. These can serve as useful reference points for Japan.

Lastly, flexibility refers to measures for increasing the versatility and mobility of the aggregate labor force with respect to both the labor market and individual work styles. One way to explain the prolonged structural unemployment in Europe from the 1980s onward is the “insider-outsider” theory. According to this theory, “insiders”—incumbent regular employees whose jobs are protected by membership in labor unions—have strong bargaining power and therefore their wage rates do not decrease even in bad times, whereas “outsiders” are unemployed workers who cannot find jobs even when they are willing to work

for lower pay. Under this situation, unemployment tends to last for prolonged periods and the human capital of displaced workers deteriorates, which further mitigates the influence of outsiders on the labor market. In other words, unemployment becomes structurally self-reinforcing as displaced workers find it increasingly difficult to make their way out of the unemployment pool.

## » How to prevent a rise in structural unemployment

When non-regular workers, particularly fixed-term workers, lose their jobs in Japan, it weakens outsiders’ influence on the labor market. There are concerns that this situation may lead to greater polarization between regular and non-regular workers, between the employed and unemployed, and aggravate the rigidities of the labor market. In order to suppress rising structural unemployment, we must begin by preventing real wage increases that are attributable to insiders’ bargaining power. For instance, work-sharing results in higher hourly wages if the aggregate amount received by employees remains unchanged despite a reduced number of hours worked. It should be noted that this policy has the effect of prolonging unemployment for outsiders.

Given the seriousness of the problem of disparities between regular and non-regular workers, the need to review and overhaul the treatment of regular workers, including not only wage systems but also social security and other fringe benefits, is inevitable. To start with, the preferential treatment of fringe benefits should be corrected. Reversing the polarization of the labor market is eventually going to require the entire institutional system, including the job security system, to be overhauled so that new measures can be implemented to equalize the benefits available to both regular and non-regular employees.

Note: According to a recent analysis in which Okun’s law was applied to the Japanese economy (Takao Komine, “Keizai Kyoshitsu,” *Nihon Keizai Shimbun*, February 11, 2009), a 1 percentage point decrease in the real GDP growth rate translates into a 0.3 percentage point rise in the unemployment rate.

# Seeking the Differences in Research and Development in Japanese and U.S. Companies

The R&D Process in the U.S. and Japan: Major findings from the RIETI-Georgia Tech inventor survey  
Commercialization and Other Uses of Patents in Japan and the U.S.: Major findings from the RIETI-Georgia Tech inventor survey



■ DP No.09-E-010 / DP No.09-E-011 ■ Sadao Nagaoka / John P. WALSH

<http://www.rieti.go.jp/jp/publications/dp/09e010.pdf>  
<http://www.rieti.go.jp/jp/publications/dp/09e011.pdf>

## Sadao Nagaoka

Research Counselor and Faculty Fellow, RIETI  
Professor, Institute of Innovation Research,  
Hitotsubashi University

### Profile

Professor Sadao Nagaoka earned his B.E. in Engineering from Tokyo University and later a Ph.D. in Economics from the Massachusetts Institute of Technology in 1990. He joined the Ministry of International Trade and Industry in 1975 and in 1986 was seconded to the World Bank. He has been a professor of the Institute of Innovation Research, Hitotsubashi University, since 1997 and concurrently held the position of Director from 2004 to 2008. Selected publications include "Assessing the R&D Management of a Firm in Terms of Speed and Science Linkage: Evidence from the US Patents," *Journal of Economics & Management Strategy*, Vol. 16, No. 1, Spring 2007.

The key to economic growth is in research and development (R&D). Is there a difference in the approach to R&D between Japan and the U.S.? And what issues does Japan face? Using approximately 5,600 patents held by Japanese and U.S. firms, a project team led by RIETI Faculty Fellow, Sadao Nagaoka, in collaboration with Professor John Walsh from the Georgia Institute of Technology, conducted a survey on the R&D process for the purpose of comparing Japanese and U.S. companies. During our interview, Professor Nagaoka told us the details of this survey, which led to the publication of two discussion papers and shared his long-term perspective for the R&D strategy of Japanese companies.

**– What are the purpose, overview, and characteristics of your survey?**

The purpose of research and development is to create knowledge and commercialize its outcomes in markets as new products or new production processes. However, as the essence of R&D is knowledge, we do not have effective data to measure it. Therefore, we conducted a survey on a project basis to accurately comprehend R&D processes in Japan and the U.S. In the past, surveys on R&D had often been conducted on a company-by-company basis, but as there are cases where the same company conducts R&D in different industrial areas and with different objectives, we felt we could grasp the actual situations more accurately by understanding the different background of each R&D project and check it with the content of inventions created as a result. The targets were “triadic patents” of relatively good quality, which have already been patented in the U.S. and are applying for patents in Japan and Europe. We conducted the survey in Japan and the U.S. in 2007 and obtained data on 3,658 patents in Japan and 1,919 in the U.S. At the same time, we surveyed non-triadic patents in Japan as well, but used only triadic patents for the comparison between Japan and the U.S.

**R&D in “strengthening existing businesses” is more pronounced in Japan**

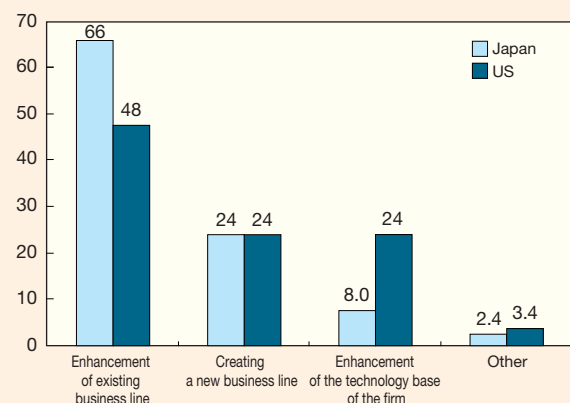
**– As for the premise for patents, what characteristics did you find in Japan and the U.S. with regard to R&D?**

First of all, with respect to the objectives of individual R&D projects, we divided them into four categories: 1) “enhancement of existing businesses,” 2) “creating new business line,” 3) “enhancement of the technology base

of the firm,” and 4) “other.” We asked those surveyed under which category their R&D projects falls. **Figure 1** shows the results. Although the most popular answer in both Japan and the U.S. was 1) “enhancement of existing businesses,” the percentage was higher in Japan than in the U.S. at 66% and 48%, respectively. In addition, though the percentage of respondents who answered 2) “creating new business line” was the same in both Japan and the U.S., there was a major difference as to who conducts R&D in the creation of new businesses. Also, when tallying the percentages of the four objectives by the size of company (four categories: large, medium, small, and smallest), we obtained the result that the percentage of R&D with the objective of “creating new business line” is highest among the smallest companies in the U.S. It is conceivable that this result reflects that U.S. entrepreneurs launching new businesses tend to undertake active R&D.

Another notable finding was that the percentage of R&D with the objective of enhancement of the technology base of the firm is only 8% of overall R&D in Japan, while it is 24% in the U.S. Although the characteristic of attaching importance to the target of enhancing the technology base of the firm, going beyond the scope of existing businesses, exist in almost all industrial sectors in the U.S., it is particularly noticeable in sectors such as semiconductors, information and telecommunications, software, and optics.

**Figure 1 Business Objectives of the Research (%Yes)**



**Note:** More than 95% of the samples in both countries are from the inventors affiliated with business firm. Based on the common technology class weights.

### —What are the reasons for such differences?

I think the R&D financing system has something to do with these differences, and the role of researchers is also significant. In the survey, we looked into the attributes of researchers and discovered that the percentage of researchers with a Ph.D. was 45% in the U.S. and 12% in Japan. As researchers with a Ph.D. in both the U.S. and Japan tend to constitute a greater portion in R&D for “enhancing the technology base” in comparison with R&D for “strengthening existing businesses” and “creating new business line,” it seems that the U.S., which is capable of meeting such needs, ended up focusing more on the enhancement of the technology base.

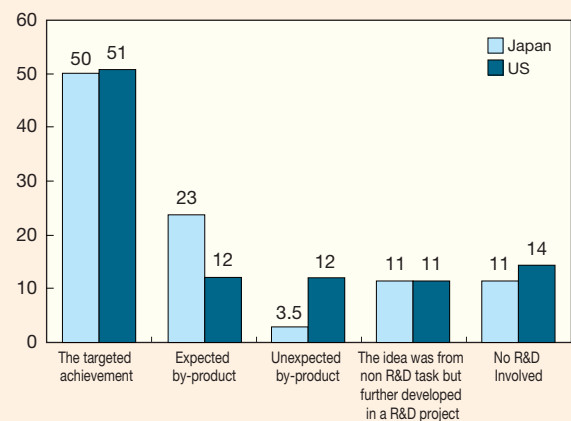
## Rate of serendipity of inventions is higher in the U.S.

### —Did you find any other characteristics in R&D processes through which inventions are born?

Inventions created by R&D projects do not always turn out as originally expected. Serendipity refers to unexpected outcomes (inventions that were not initially anticipated), which are also very important. **Figure 2** shows the results of asking which of the following five categories the content of an invention falls under: 1) “the targeted achievement,” 2) “expected by-products,” 3) “unexpected by-products, i.e., serendipity,” 4) “ideas coming from other than R&D but further developed in a R&D project,” and 5) “No R&D involved.” The result shows that although half of the inventions turned out “the targeted achievement” in both Japan and the U.S., cases in which inventions were created as 3) “unexpected by-products” were 3.5% in Japan and 12% in the U.S., while cases in which they were 5) “No R&D involved” were 11% in Japan and 14% in the U.S. Overall, the U.S. demonstrates a higher tendency toward serendipity, and it seems reasonable to assume that this is related to the difference in research objectives

between Japan and the U.S. as described above. That is, the U.S. focuses more on research to develop seeds that are not directly linked with a present business.

**Figure 2** Invention Process (Targeted v. others)



**Note:** Based on the common technology class weights

### —What kinds of differences did you find in values of inventions?

In the survey, we asked inventors what position ([1] top 10%, [2] top 25% or above, [3] top 50% or above, [4] lower half) they thought their inventions were placed in the technological fields of their inventions. Though this is a subjective assessment, it seems to be a dependable one, given that it is consistent with other evaluation figures, such as citation frequency by other patents. In both Japan and the U.S., there is a tendency that the smaller the company is, the higher the percentage of inventions ranked in the top 10% becomes, in other words, the larger the economic value of the inventions becomes. In contrast, the quality of inventions made by university researchers greatly differs in Japan and the U.S. In the case of Japanese universities, inventions ranked in the top 10% account for only 9.4% of the total, while the ratio jumps to 30% at U.S. universities.

Another difference between Japan and the U.S. is the percentage of inventions in the top 10% accounted for by small companies of 100 employees or less. Although

inventions in the top 10% made by inventors at small companies in Japan account for only 10% of the total, this makes up 21% in the U.S. As a result, important inventions created by universities and small companies make up approximately one quarter in the U.S.

The survey results as described above suggest that the stronger focus of R&D on the enhancement of technology base of a firm independent from existing businesses is one of the causes of the high performance of R&D in the U.S. The results also highlight the picture in the U.S. that such kinds of R&D are undertaken actively, not only by large corporations, but also by small companies and universities.

## 60% of patents are commercialized in both Japan and the U.S.

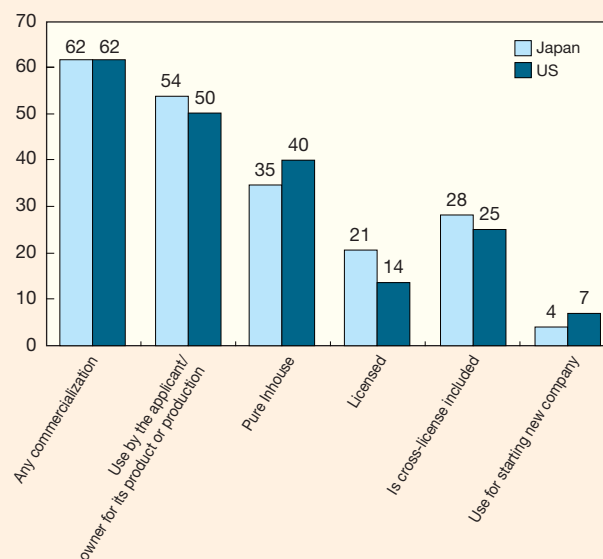
### —Why did you emphasize the commercialization of inventions in the survey?

For inventions to receive high appraisal in the market, or have a specific economic value as new products or production methods, becoming much more than mere inventions, they need to be commercialized. Commercialization refers to inventions actually being used in economic activities in some form, including cases in which they are used for the benefit of another company, through licensing or the founding of a company, and in some cases they are used purely for the businesses of the original inventor company.

As shown in **Figure 3**, 60% of inventions are commercialized in both Japan and the U.S. either through internal use, license or a startup. With regard to the internal use by the applicant, when we compare the percentage of inventions used only internally in Japan and the U.S., conditional on their internal use, the percentage is 65% (=35%÷54%) in Japan and 80% (=40%÷50%) in the U.S. This suggests that inventions are used more exclusively in the U.S. than in

Japan. Interestingly, despite the more exclusive use of inventions in the U.S., the percentages of invention use are the same in both Japan and the U.S. This seems to reflect that an exclusive use can give a firm a greater incentive to develop the new use of an invention.

**Figure 3** Commercialization of the Invention



**Note:** pure in-house= used by the applicant/owner only for its internal use (neither license nor the use through a startup), based on the common technology class weights.

Meanwhile, as invention use is expected to differ depending on the original R&D objectives with which they were made, we looked into how they are used in Japan and the U.S. for each of the three R&D objectives: 1) “strengthening existing businesses,” 2) “creating new businesses,” and 3) “creating a new technological base.”

We resultantly confirmed three points: (1) In the U.S. a high percentage of inventor companies utilize their own inventions in R&D with the purpose of 3) “creating a new technological base” (43% in the U.S. and 28% in Japan). (2) Overall, the ratio of licensing tends to be lower in the U.S. than in Japan (8%-19% in the U.S. and 17%-23% in Japan). (3) However, regarding inventions in R&D with the purpose of 2) “creating new businesses,” the percentage of inventor companies’ own use of commercialized inventions is lower in the

U.S. than in Japan (75% in the U.S. and 88% in Japan), which suggests that they are being used for licensing and the launching of new businesses under an exclusive contract. Behind this seems to be the fact that the market for the exchange of necessary technologies through the founding of companies and licensing is better developed in the area of new businesses in the U.S.

## “First mover advantage” and the patent system

### —What are inventions that are not commercialized?

Inventions that are not commercialized account for slightly less than 40% in both Japan and the U.S., and the percentage of commercialization declines according to the objectives of R&D; 1) “enhancement of existing businesses,” 2) “creating new business line,” 3) “enhancement of the technology base of the firm,” (Figure 3).

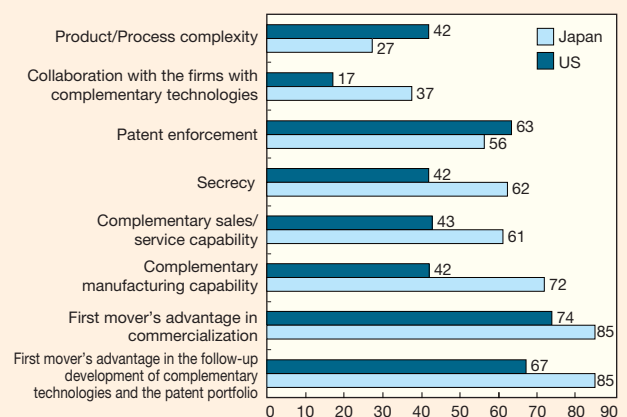
When a company does not have a policy of licensing inventions that are not commercialized to other companies (blocking patents), two main reasons can be inferred. One is that the company may consider the commercialization of inventions when circumstances have changed, although it has not yet made that decision at that moment. The other is that the company may consider that it will not commercialize inventions, irrespective of changes in circumstances. The survey results show that both types of companies exist in similar numbers for all types of inventions with the R&D objectives of 1) “enhancement of existing businesses,” 2) “creating new business line,” 3) “enhancement of the technology base of the firm. At least in the case of the former type of company, there is a possibility of inventions being commercialized depending on their judgment.

When commercializing inventions, it is also important to have a broad perspective beyond the use of patent protection. The reason companies decide to use, or commercialize inventions is basically to ensure a profit. However, the protection of patent rights is not the only means to ensure profit from an invention. In preceding studies, there are quite a number of examples that cite the so-called first mover advantage (FMA) as a more important element.

### —What strategies do companies consider important in trying to appropriate the economic surplus from the inventions?

Figure 4 shows the percentage of companies that answered “important” to each of the appropriation factors; complementary abilities necessary for commercializing inventions, secrecy of inventions, complexity of products and manufacturing processes, as well as the protection of rights under the patent system and FMA. In the figure, the percentage of companies answering “important” or “very important” is highest in FMA in both Japan and the U.S., followed by complementary capabilities for sales and manufacturing in Japanese companies. By contrast, the percentage of companies that emphasize the enforcement of patent rights is relatively high in U.S. companies. Although

**Figure 4** Appropriation Strategies (% high)



**Note:** Based on the sample of the inventions already commercialized internally and on common technology class weight

we have already confirmed that the tendency of using inventions exclusively is stronger in the U.S. than in Japan, it may be possible to presume that such tendency for the U.S. companies to place weight on the exclusive license of inventions is connected with this finding.

## Moving toward frontier-type R&D

### —From the survey results, what implications did you obtain as to the role of R&D in business or related government policies?

As the survey clearly shows, R&D in Japan attaches importance to the “strengthening of existing businesses.” It is expected that in such research the rate of return will decline as the businesses mature. Meanwhile, U.S. companies focus on the cultivation of technology base and the development of seeds for new businesses, irrespective of existing businesses. Japanese companies, too, need to shift to frontier-type R&D in the future. To that end, an increase in researchers with a Ph.D may be necessary as in the U.S.

In terms of the players in R&D, it has been identified that

the role taken by small companies and universities in the U.S. is different to that in Japan. In the U.S., small companies and universities function as more important players for the important inventions. In Japan, while the necessity for policy support has been recognized for some time, R&D financial issues, such as how to secure risk money providers, remain important.

There is also an institutional issue of patent protection. As the survey result for the U.S. shows, stronger exclusiveness does not necessarily impede the creation and commercialization of inventions but, to the contrary, can play a role of facilitating commercialization by improving the rate of return of intellectual property. It may be necessary to also look at the institution from such a perspective in Japan.

### —What is the future direction of your research?

As one example, I would like to undertake a deeper analysis on the differences between R&D researchers in Japan and the U.S. While I have highlighted the difference in the level of education between the two nations, other issues, such as how companies provide incentives to researchers, are likely to be important points of further analysis. In addition, the issue of collaboration between different companies has also become important. Given that this type of research has already accounted for more than 10% in both Japan and the U.S. and, at the same time, many of the patents from such R&D are jointly owned in Japan, this issue is expected to become more important in the future.



Nagaoka & Walsh, co-author of the paper, making a presentation at RIETI's seminar

# The Internationalization of Japanese Firms:

New findings based on firm-level data



■ DP No.08-E-036

■ Ryuhei Wakasugi

<http://www.rieti.go.jp/jp/publications/dp/08e036.pdf>

## Ryuhei Wakasugi

Research Counselor and Faculty Fellow, RIETI  
Professor, Institute of Economic Research,  
Kyoto University

### Profile

Professor Ryuhei Wakasugi, with a Ph.D. in Economics from Tokyo University, is currently a Professor at the Institute of Economic Research at Kyoto University. He became a Professor, Department of Economics at Yokohama National University in 1992, where he later went on to become Dean, Department of Economics (1998-2000) and Vice-President (2000-2003). Selected publications include "Offshoring and Trade in East Asia: A Statistical Analysis" (with Banri Ito and Eiichi Tomiura), *Asian Economic Papers*, 7(3), 101-124, 2008.

Though numerous studies exist on Japanese firms operating businesses internationally through export and foreign direct investment (FDI), few empirical studies have comprehensively described the real features of such firms. A research team, composed of RIETI Faculty Fellow Ryuhei Wakasugi and other researchers, conducted a multifaceted analysis to form an overall picture of internationalized Japanese firms, using individual data of firms operating businesses overseas, and sought to make a comparison with pioneering firm-level analyses on European firms. In this interview we spoke to Professor Wakasugi about the results of this analysis published in the paper by his research team, "The Internationalization of Japanese Firms: New findings based on firm-level data."



### **—In writing this paper with what mindset did you approach the problems?**

Previous studies in the area of international trade have discussed internationally operating firms using representative firms, based on the assumption that they are all identical in structure. However, firms are heterogeneous. Since international business activities, such as export and overseas investment, are costly, it can be assumed that only firms that are profitable even after incurring such costs are engaged in export and FDI. Theoretical studies are deepening their analyses by modeling how only such high productivity firms are able to participate in international activities such as export and FDI.

Also, from an empirical aspect, there is an accumulation of studies in the U.S. that discuss the relationship between export and enterprise characteristics such as productivity, capital, skill intensity and scale of employment, and, based on findings from studies that incorporate the entire European Union as their subject, it is becoming apparent in Europe that international trade and FDI are conducted by a limited number of high productivity firms. In contrast, only a few studies have sought to grasp a comprehensive feature of Japanese firms engaged in export and FDI in the same manner as in the United States and Europe.

It was at this point that I was suggested by the Centre for Economic Policy Research (CEPR), a think tank in the United Kingdom with which RIETI has launched research cooperation, to conduct a project in Japan similar to that in Europe and I decided to undertake a study that seeks an accurate portrait of internationalized Japanese firms.

Detailed data of individual firms, i.e. individual data, are essential for these studies, and we undertook an analysis using the Basic Survey of Japanese Business

Structure and Activities and the Survey of Overseas Business Activities because we were able to obtain micro-level data from these statistics.

However, through the exchange of research, it has become clear that Europe and the U.S. are more advanced in terms of developing data. Particularly in Europe, certain countries like France, arrange data by firm, destination, and item, showing which firm exports what item to which country.

Through our study, which explores the characteristics of Japanese firms compared to their European counterparts, I also had the impression that the data needed to undertake such analysis were better prepared in Europe than in Japan. Behind the efforts being put into the development of data in Europe seems to be the consensus in the EU that policies to support the activities of international firms in export and FDI are necessary and therefore an environment for making essential statistical data available to the researchers has been in place since the integration of the EU.

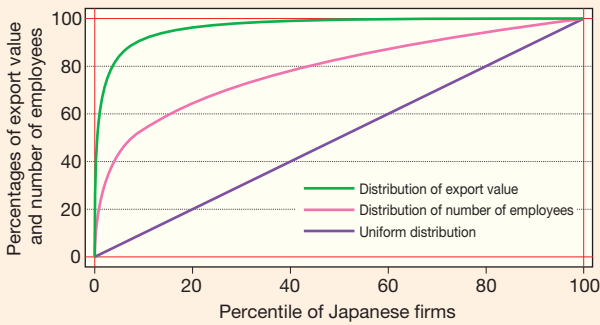
### **Firms in top 10% account for 90% of total exports**

#### **—What percentage of total trade and investment does the small number of highly productive internationalized Japanese firms account for?**

**Figure 1** shows that export manufacturing firms in the top 10% account for 92% of the total export value in 2003. Export manufacturing firms are characterized by a high ratio of leading firms to total exports, with those in the top 5% accounting for 85% of the total and a small group of firms in the top 1% making up 62%. The figure also indicates that although the trend of concentrating on higher tier firms can be observed in its number of employees, the degree of concentration of higher tier firms is even stronger in the total export value.

**Figure 1** Share of export value and the number of employees of higher tier export firms

(Japanese manufacturing firms with 50 or more employees, 2005)



**Note:** On the horizontal axis, firms are lined up from the left in the order of export value. The vertical axis shows the percentages of the cumulative export value and cumulative number of employees. The figure shows that the greater the deviation from the straight line in the middle, the more concentrated in higher tier export firms the export value and the number of employees are.

**Source:** Calculated by the authors based on the “Basic Survey of Japanese Business Structure and Activities” from the Ministry of Economy, Trade and Industry (METI)

The trend concentrating on higher tier firms is not a temporary phenomenon, in fact it barely changed during the period between 1997 and 2005. It is therefore reasonable to say that a limited number of firms have been undertaking a fairly large portion of exports for a long time. However, it is worth noting that the share of firms in the top 1% has been declining slightly in recent years, indicating that entry into export has been progressing.

Meanwhile, in Europe, the trend of a handful of firms playing a large role in exports is the same, and one research literature calls the small number of such large firms with high productivity, “The Happy Few.” This phrase is taken from the king’s speech in Shakespeare’s *The Life of King Henry the Fifth*, where he encourages his army, praising them as “the happy few.”

**– Before discussing the characteristics of internationalized firms, please give us your definition of an internationalized firm.**

We define firms that export or perform FDI as “internationalized firms.” Firms that do neither are “non-internationalized firms,” or “domestic-oriented firms.”

When discussing in chronological order, we exclude firms that have ceased export and FDI activities at some point in time from “internationalized firms.”

**Performance of internationalized firms substantially exceeds that of non-internationalized**

**– What are the characteristics of internationalized firms?**

We examined the performance of internationalized firms and domestic-oriented firms. First, we calculated how much the average values of export firms exceed those of non-export firms in five categories: the number of employees, added value, wages, capital intensity, and skill intensity. We checked whether the ratio of the average value of export firms to that of non-export firms (the “premium”) exceeded 1. Similarly, we also checked how much the average value of FDI firms exceeded that of non-FDI firms.

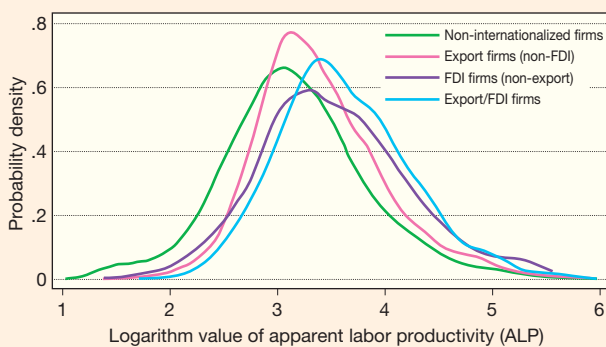
**Table 1** Premiums of export firms and FDI firms

| Country                         | Premium in number of employees | Premium in added value | Premium in wages | Premium in capital intensity | Premium in skill intensity |
|---------------------------------|--------------------------------|------------------------|------------------|------------------------------|----------------------------|
| <b>Premiums of export firms</b> |                                |                        |                  |                              |                            |
| Japan                           | 3.02                           | 5.22                   | 1.25             | 1.29                         | 1.58                       |
| Germany                         | 2.99                           |                        | 1.02             |                              |                            |
| France                          | 2.24                           | 2.68                   | 1.09             | 1.49                         |                            |
| Britain                         | 1.01                           | 1.29                   | 1.15             |                              |                            |
| Italy                           | 2.42                           | 2.14                   | 1.07             | 1.01                         | 1.25                       |
| Hungary                         | 5.31                           | 13.53                  | 1.44             | 0.79                         |                            |
| Belgium                         | 9.16                           | 14.8                   | 1.26             | 1.04                         |                            |
| Norway                          | 6.11                           | 7.95                   | 1.08             | 1.01                         |                            |
| <b>Premiums of FDI firms</b>    |                                |                        |                  |                              |                            |
| Japan                           | 4.79                           | 8.79                   | 1.26             | 1.53                         | 1.52                       |
| Germany                         | 13.19                          |                        |                  |                              |                            |
| France                          | 18.45                          | 22.68                  | 1.13             | 1.52                         |                            |
| Belgium                         | 16.45                          | 24.65                  | 1.53             | 1.03                         |                            |
| Norway                          | 8.28                           | 11                     | 1.34             | 0.87                         |                            |

**Source:** Figures of Japanese firms are calculated by the authors using “Basic Survey of Japanese Business Structure and Activities” by METI, 2003. For other countries, the figures are cited from Mayer and Ottaviano (2007).  
**Note:** Figures in the table are the premiums in each variable as the ratio of export (FDI) firms to non-export (non-FDI) firms. Figures in parentheses are the ratio of standard deviations. For Japan, data include only firms with 50 or more employees, and for France, Germany, Hungary, Italy and the United Kingdom, data include only large firms. For Belgium and Norway, data include all firms.

As **Table 1** clearly shows, the premium exceeds 1 in all of the five categories—number of employees, added value, wages, capital intensity, and skill intensity—in all countries, excluding only a few exceptions. In other words, export/FDI firms employ more workers, create higher added value, pay more wages and are more capital intensive and skill intensive than non-export/non-FDI firms.

**Figure 2** Distribution of labor productivity (ALP) of FDI firms, export firms, and non-internationalized firms in Japan (2005)  
(Japanese manufacturing firms with 50 or more employees)



**Note:** Apparent labor productivity (ALP) means sales per worker. The figure shows the distributions of apparent labor productivity (ALP) for non-internationalized firms, export firms (non-FDI), FDI firms (non-export), and export/FDI firms.  
**Source:** Calculated by the authors based on "Basic Survey of Japanese Business Structure and Activities" by METI

Secondly, as **Figure 2** shows, the productivity of domestic-oriented firms is the lowest, followed by firms that export or conduct FDI and the productivity of firms that do both is the highest. In the figure, the further right of center the distribution is located, the higher the productivity. Although labor productivity is used in the figure as an indicator of productivity, the same result would be obtained even if a different indicator was used (e.g. total factor productivity (TFP)).

The results coincide with a theoretical research finding that as export and FDI are more costly than domestic business activities, the productivity of firms needs to be high in order to make a profit as well as covering the costs.

### —Are there any differences in the characteristics between Japanese and European firms?

Although similar study results are obtained for both European firms and Japanese firms, **Table 1** shows that the difference in the performance between export/FDI firms and domestic-oriented firms is more evident in Europe than in Japan. For example, in FDI firms, the premium for the number of employees is 4.79 in Japan, but in Germany it is 13.19 and 18.45 in France; substantially above 10. Given such a large difference between Japan and Europe, there is the possibility that some other factors are at work, even though difference in productivity is an important factor for explaining the difference in performance between internationalized firms and domestic-oriented firms.

We may need to take into account, for example, that the destinations of export and investments of European firms are concentrated in other European countries which are relatively similar in character to the home countries where these firms are headquartered. However, in the case of Japanese firms, Asia, which comprises a high proportion of the destination of export and investments, is not necessarily similar to Japan. For example China, Japan's largest trading partner, is very different in terms of relative abundance in capital and technology. This implies a need for theory and empirical analysis that take these perspectives into account.

### Rising productivity is backed by advancing internationalization

#### —To what do you attribute the high performance of internationalized firms?

Internationalized firms have high enough productivity to cover the costs of investment and other international activities, and there are two explanations for this. One is the belief that out of the vast number of firms, only those achieving a high level of productivity are

capable of surviving. This is called a “self-selection” hypothesis. Here, productivity is measured using existing research outcomes, such as research and development, and technological innovations.

The other is an explanation based on the relationship that obtaining knowledge on foreign markets and absorbing technologies abroad through internationalization will lead to higher productivity in firms. This is called a “learning by doing” hypothesis.

**–What results did you obtain from your analysis of these hypotheses?**

Various empirical studies have been conducted regarding the causal relationship between the internationalization and productivity of firms. Although the self-selection hypothesis is widely accepted, evaluation of the “learning by doing” hypothesis has not yet been established. In this paper we added some further simple examinations to these hypotheses.

Using a group of firms not yet internationalized as of 2000 as subjects, we examined how the productivity of a group of firms internationalized (i.e. exported or performed FDI) in 2001 changed in comparison with another group of firms that remained domestic-oriented by using the data on changes in their labor productivity from 2000 to 2005. The result revealed a tendency for internationalized firms to have higher labor productivity compared with those not internationalized. Even though it is difficult to conclude that internationalization is the only reason for the difference in labor productivity between the two groups, it may possibly have some impact on the difference in productivity.

More rigorous study and discussion will be necessary to make further arguments. However, if advancement in internationalization can improve productivity, this will become a strong policy message because it means that internationalization is desirable for the overall economy

from the standpoint of improving the firms’ productivity, as limited resources need to be used effectively for productivity to improve.

**Number of firms moving overseas is influenced by costs of trade and investment**

**–You also analyzed the link between the internationalization of firms and the distance to investment destinations.**

We originally wanted to conduct a factor analysis of changes in trade value with partner countries by breaking them down into the number of firms moving to host countries and the trade value per firm. An analysis using trade value is possible in Europe because firm-level trade value data by partner country and category can be obtained. In contrast, such firm-level trade data is not available in Japan, so we kept an eye on the sales of overseas subsidiaries through FDI.

Dividing the reasons for an increase in local sales (sales turnover) of overseas sales subsidiaries of Japanese firms into an increase in sales per firm and an increase in the number of firms (overseas sales subsidiaries), we used a gravity model to analyze how elements such as the economic scale of a host country and the distance from Japan to a host country influence these components.

**Table 2** Impact of economic scale and distance  
(Results of estimates in gravity model)

|                             | Sales per firm | Number of firms that move to investment destinations |
|-----------------------------|----------------|--|
| <b>GDP (economic scale)</b> | 0.51***        | 0.6***   |
| <b>Distance</b>             | -0.24**        | -1.26***   |

For \*\*\* and \*\*, 1% and 5%, respectively, indicate the figures are statistically significant.

The result (**Table 2**) shows that the economic scale of a host country has an impact on the number of firms and sales per firm in a similar degree, while the distance from Japan to a host country has a significant effect on the

number of firms that move to investment destinations. In short, the difference in distance to investment destinations has an impact on total sales of Japanese firms by changing the number of firms that move to the host countries.

#### –Are there any distinctive differences by industry?

Looking at the trend by industry, the distance from Japan has a large (negative) impact on local sales for the electric machinery sector. Conceivably this sector, including parts manufacturers, has a strong tendency toward carrying out production in neighboring countries and sales in international markets. On the other hand, the influence of distance is considered to be relatively small in the automobile sector, even though it is the same basic industry, because of its strong tendency to sell products in the domestic market of countries of production, as in the case of the United States.

#### –What kind of policy implications can we obtain from these analysis results?

I think the reason why the distance from Japan has a predominant impact on the number of firms is that many Japanese firms conduct corporate activities, such as local selling and export, through direct investment in East Asia. More specifically, distance represents costs of trade between countries, and therefore our analysis also shows that the number of firms sharply declines if transactions between countries become expensive.



Presentation at RIETI's workshop

From the results of this analysis we can draw a policy implication that measures for creating an environment in which firms can do business freely at a low cost of trade will allow more firms to participate in the flow of internationalization.

#### –What issues are you looking at for your future research?

As I said before, productivity may not be the sole determinant of internationalization. For example, viewing a concentration of firms like a production area, it is conceivable that external economic factors, elements outside firms such as the accumulation of information and the education of human resources, could contribute to internationalization. Other external economic factors that could have an impact on internationalization include policies that eliminate financial constraints. I therefore believe that it is also important to advance our research while taking these factors into account.

Given that up until now there has been a tendency to argue that FDI is based on a Western-style notion of horizontal investment that assumes homogeneity of investment destinations, it may not be possible to apply this notion without modification for Japanese firms that make a number of investments in Asian countries with different standards from Japan. This may imply the need to devise ways for models to reflect the actual circumstances in Japanese firms.

In addition, by theoretically calculating the cutoff point that differentiates domestic-oriented firms from internationalized firms, we have realized the difference between European firms and Japanese firms. Examining the reasons for this is also an important issue.

# The Financial Crisis and Corporate Governance

May 26, 2009

■ Speaker: **Franklin Allen**

Nippon Life Professor of Finance and Economics,  
The Wharton School of the University of  
Pennsylvania



**Corporate governance, according to Professor Franklin Allen of the Wharton School at the University of Pennsylvania, is one of the least-understood factors that also played a role in the economic crisis. In a recent RIETI presentation, Professor Allen gave a brief, yet very thorough history of the crisis and the causes behind it, pointing out both the common culprits and some of the lesser-known contributors, such as various corporate governance practices.**

Conventional wisdom says that the crisis was caused by bad incentives in the mortgage industry. The change to the “originate and distribute” model in the last decade led to the securitization of mortgages. As time progressed, investment banks and other sponsoring entities sold off all tranches of securitizations, effectively relieving themselves of any incentives to oversee the mortgage practice and make sure that originators were properly screening mortgage candidates. However, the severity of the real effects of the crisis can be seen even in countries with relatively healthy banking systems. Today, more people recognize that the subprime mortgage problem was more of a symptom than a cause.

### **Where the crisis began**

The main problem was a bubble, first with stock prices and

then property prices. The monetary policies of central banks were much too loose. In the United States, low interest rates and tax incentives made mortgages more attractive than renting. This system caused home prices to increase more than inflation and even interest rate increases could not stymie the home-buying boom. This, however, does not provide a complete explanation because many other countries had price bubbles.

Global imbalances were another factor. In the Asian Financial Crisis of 1997, strong Asian economies like Thailand and South Korea got into trouble because they borrowed too much in foreign currency. After the IMF imposed higher interest rates and lower government expenditures on these Asian economies, Asian countries began amassing large reserves in their central banks. Asian economies found that it was difficult to invest these funds in anything but debt securities. This contributed to the surplus of funds worldwide, making it easier for people around the world to borrow money.

The huge GDP drops seen around the world can be explained by the fact that people, particularly in the U.S., made decisions based on the wrong asset prices for more than a decade. People in the U.S. concluded that since stock and housing prices would continue to increase, having a stock portfolio and a home would negate the need to save. The savings rate in the U.S. dropped to zero as a result. When the bubble burst, assets that people were depending upon to see them through old age were no longer sufficient.

## 🌐 Failures of the banking system

But why has the heavily regulated financial sector performed so badly? Bank regulation comes with certain costs and benefits. Benefits include stopping banking crises, as the lack of banking crises for the first 20 years of the post-war period attests to. Heavy regulations shielding banks from risk came to be regarded as a hindrance that kept the banking system from performing its basic task of allocating resources across different industries and playing the invisible hand of the market. From the 1970s onward, financial liberalization took place and crises soon returned.

There are three primary failures of the banking system. The first is inefficient liquidity provision. Private markets do not do a good job of providing liquidity because holding liquidity is costly. Central banks then scramble to provide liquidity with various ill-designed plans and thus exacerbate the problem. The second is mispricing assets. The basic concept of people stepping in to drive prices up or down depending on whether they are under or overpriced has broken down. Prices of triple-A rated tranches fell and investment banks doubled-up on them, which caused drops in prices and bigger losses. Such tranches' prices are still not known for sure.

The third and most serious market failure is contagion. Contagion is represented by the Fed stepping in to help J.P. Morgan buy Bear Stearns. It was thought that Bear Stearns' bankruptcy would have created a domino effect of bankruptcies due to how connected Bear Stearns was with so many other firms. The Fed did not want to take that risk and decided to save it. When Lehman Brothers failed, the government believed that there was no contagion risk. However, the Lehman failure ended up causing huge ripples in the economy because contagion was more complex than previously thought.

Central banks and governments hold too much to old views of what the crisis is about. There is a problem in believing that the crisis is primarily a problem of the banking system. The government is not doing the right thing by initially purchasing preferred stock and thus providing a de facto debt guarantee. The government has no control and the banks know they have a blank check to do what they want. The government needs to temporarily nationalize large banks like Citigroup and Bank of America, and then break them up and sell them off.

The real problem of the bubble bursting is that price adjustment takes a long time. It could take between two

and three years for prices to adjust completely in the U.S. Current government policies will have little effect on this problem and may, in fact, exacerbate it.

## 🌐 Corporate governance

One factor that has not received much attention in the crisis but is very important for macroeconomic stability is corporate governance. Japan and Germany have had large GDP drops but their unemployment rates have been affected much less than other countries. Unemployment in the U.S. has increased steadily while Germany has increased nominally and Japan has remained relatively stable. The fear of unemployment in the U.S. causes people to reduce spending and save more, though fear of unemployment is not as much of a problem in France, Germany and Japan. One explanation of these differing employment trends is variations in corporate governance.

The Anglo-Saxon system of firing people and pursuing shareholder interests is a great system when times are good. Throughout the 1990s in the U.S. it was a great system for reallocating resources. However, in bad times it is very good to have a stakeholder system. Globalization has led to the U.S. becoming a dumping ground for foreign firms' employment reduction efforts. A full evaluation of stakeholder governance is needed in order to further promote it.

### Question & Answer Session

- ▶ **Q.** You listed the main causes of the financial crisis as the burst of the bubble. However, this is not the first bubble to burst in the U.S. There were bubbles bursting in the 1980s and 1990s. Why couldn't the U.S. learn from the mistakes it made in past bubbles?
- ▶ **A.** What is different in the U.S. is that it has not had a truly nationwide fall in property prices since the Great Depression. The Asian experience was never looked at to evaluate mortgage securities. Most Asian countries have had property price bubbles at some point in the last 20-30 years. The U.S. did not think it could happen and did not consider it a danger at all. Bubbles in the stock market are very different and do not do nearly as much damage as property bubbles because the way people hold equities is different from how people hold debt securities due to the fixed promises they represent in the financial system. Usually equity securities are not held against fixed promises, which is the big difference.

# The Challenge of Codification in English Legal History

June 12, 2009

■ Speaker: **David Lieberman**

Jefferson E. Peyser Professor of Law,  
University of California, Berkeley, School of Law



**The effort to codify areas of British and European law has gained new urgency under the efforts towards legal unification in Europe. Professor Lieberman at UC Berkeley made a presentation at RIETI on English legal history during the 17<sup>th</sup>-19<sup>th</sup> centuries to explore earlier proposals for the codification of law. In trying to explain the failures of previous attempts to codify England's law, Dr. Lieberman pointed out the importance of political obstacles rather than purely legal considerations.**

English law has always been divided into two principal component parts: common law or “lex non scripta” (unwritten law) and statute law or “lex scripta” (written law). The former comprised the legal “custom” of the kingdom, which had been refined and adapted over the centuries under the professional leadership of the common law courts. The latter was the legislation enacted by the sovereign authority of Parliament.

Common law and statute law were conceived as two distinct and separate branches of the legal system even though jurists observed many important ways in which their histories and functions were intertwined. Such a benign vision of the relationship between common law and statute was all but submerged by a professional orthodoxy that celebrated the achievements of the common law by measuring them against the failures of statute.

The case for common law's primacy drew in part upon the blunt reality that most of the leading parts of England's law, such as the rules and doctrines governing property and

obligations, were plainly the handiwork of the common law courts and not the sovereign legislature. The principal claims concerned the qualitative superiority of the common law. In contrast, the episodic record of legislative enactments had produced a large, confused and often redundant body of statute law. The case against the statute law operated on many levels, though the core presumption was that common law would continue to supply the basic form of law for England in the future.

The program for legislative reform favored by English jurists like Francis Bacon, frequently termed “statute consolidation,” followed directly from this diagnosis of the strengths of common law and the defects of statute law. Legislative consolidation addressed the legal uncertainty created by verbose and disorganized legal sources. Bacon's statute consolidation program constituted an expressly restricted exercise in legislative reform where the scheme's primary objective concerned the verbal expression and organization of English legislation. The scheme was not to be used as a vehicle for transforming unwritten common law into Parliamentary statute. He dismissed the latter approach as a “perilous innovation” that threatened the law's greatest strengths.

Over the course of the 19<sup>th</sup> century, major structural changes were made to the organization of English courts and to common law process through the vehicle of parliamentary legislation. The future Lord Chancellor Henry Brougham's six-hour speech on law reform to the House of Commons in February 1828 provided a convenient marker for the new ambition and publicity that attended the issue. Only a



few years earlier Home Secretary Robert Peel had secured legislation to repeal and modify many of the most extreme examples of excessive penal severity in the statute book, thereby realizing a reform objective that had been agitated in Parliament since the 1810s.

The remarkable survival of the native tradition of “statute consolidation” had as much to do with British politics as with historical continuities. For its opponents, codification was reinforced as a radical and foreign reform program at odds with the traditions of English jurisprudence. In contrast, “statute consolidation” offered a way to embrace legislative reform that acknowledged the need to order and compress the statute law while shielding the common law from parliamentary interference.

By the early decades of the 19<sup>th</sup> century, Britain had acquired its own native voice for systematic legislative codification in the jurisprudence of Jeremy Bentham. In explicit contrast to the conventional project of statute consolidation, Bentham’s code was designed to reform both the content as well as the form of the law, and to codify the entire legal order, thereby turning common law into legislation. The lawyers and judges zealously defended common law because the complexity of customary law, its arcane terms and cumbersome procedures, all served professional power and self-interest. The untrained community at large could never acquire satisfactory knowledge of an unwritten law and therefore was left to the mercy of lawyers and judges to discover what the law demanded.

By the 1820s, Bentham had become an ardent and controversial advocate of radical democratic reform. In his reform writings of this period, he linked codification to the project of fundamental democratic transformation of the social and political order. The uncodified common law, he argued at the time, figured as but one institutional element in a system of corruption in which hereditary and professional elites advanced their “sinister interests” through institutions and practices that frustrated the welfare of the general community.

The complex political and institutional considerations attending English law reform can be illustrated in the fates of two different 19<sup>th</sup> century efforts at criminal law reform. The more ambitious of the two was the 1833 Royal Commission on the Criminal Law., which operated for over a decade and produced eight voluminous Reports. Whereas the First Report of 1834 emphatically endorsed the codification goal to unify existing common and statute law into a single legislative enactment, the Seventh Report in 1843 revised this initial priority, emphasizing the greater coherence and sophistication of the common law treatment of crime compared with the statute law, and the need in

any legislation to preserve the superior achievements of the common law.

The second example of criminal law reform was the slightly earlier legislative efforts from 1826-1830, when Parliament enacted a series of Criminal Law Amendment Acts. The legislation moderated the capital sanctions created by previous statutes for many property offenses and achieved significant consolidation of the statute law. Home Secretary Robert Peel made the case for this critical “consolidation of the criminal laws” in a lengthy Parliamentary address in 1826 in which he invoked the testimony of Francis Bacon and emphasized the restrictive features of the proposed reform.

In summary, it is safe to say that legislative reform in England was never solely the story of the failure of one important legislative program: codification. It was additionally the story of the successful realization of an alternative, older and more limited legislative project: statute consolidation.

## Question & Answer Session

- **Q.** Japan has introduced a jury system as of April 2009. What is your feeling on this development? The Japanese system is based on the U.S. version, which uses a common law system.
- **A.** It is a difficult question because the “jury system” contains so many elements. Historically, there has been a succession of jury systems. Before the late 18<sup>th</sup> century, English jury trials in criminal cases were very rapid and (by modern standards) quite informal. One jury would deliberate over two to three days and decide dozens of cases. The common law jury was part of a larger system that relied on many unpaid and legally untrained officials —jurors as well as justices of the peace, constables, coroners, and so on.

The major change in the creation of the modern criminal jury trial is the dominance of the proceedings by professional counsel and the importance of the law of evidence and burden of proof. This version of the jury trial can require extreme amounts of time for individual cases. The wealth of the parties and the amount of resources and legal expertise they can bring to a case has a powerful impact on its outcome.

When it comes to the introduction of the jury systems in Japan and elsewhere, I feel the juries themselves are not the issue. The issue is whether the change in procedure will lead to extremely lengthy and lawyer-dominated trials, in which the relative wealth of the parties has a powerful impact on the outcome of disputes.

# Trade and the Financial Crisis

March 27, 2009



Richard Baldwin

## → Presentation 1

### Richard Baldwin

#### The collapse of global trade, murky protectionism, and the crisis: Recommendations for the G-20

---

Professor Baldwin, who recently published an ebook titled "The collapse of global trade, murky protectionism, and the crisis: Recommendations for the G-20," began by expressing his concern over the level of commitment world leaders placed behind their pledges made at the G-20 summit in November 2008. Baldwin also pointed out the fragility and interconnectedness of the world financial system and how those characteristics have shaped the crisis. Regarding the crisis denouement, he emphasized that uncertainty among investors and consumers is causing devastating effects on both manufacturing and global market for trade, which is experiencing a synchronized and severe collapse.

Baldwin laid out two potential scenarios, with the more likely one resulting in governments experiencing increasing difficulty resisting domestic protectionist pressures as the

CEPR and RIETI held a "Trade and Financial Crisis" mini-workshop to discuss the impact of the current financial crisis on trade and how to contain protectionism. The guest speakers included Professor Richard Baldwin, Graduate Institute and Policy Director of CEPR; and Ms. Naoko Munakata, Director of the Multilateral Trade System Department of METI; with Dr. Akira Kotera, Professor of International Law and International Economic Law at the University of Tokyo; and Dr. Keiichiro Kobayashi, RIETI Senior Fellow serving as commentators. The speakers' presentations and policy proposals were followed by an enthusiastic discussion.

crisis persists. The nightmare scenario, on the other hand, is one where countries that have relied both economically and politically on export-led growth might attempt to protect their domestic economies through measures that could cause retaliation from other countries. Baldwin concluded his remarks with a proposal for G-20 ministers to agree to five crisis-related policies: (1) Standstill commitments with surveillance by either the WTO and/or other independent bodies; (2) Development of exit strategies to remove any crisis-linked protectionism after the crisis has passed; (3) Getting Doha back on track, especially with a few additional concessions from the United States and EU; (4) Avoiding green protectionism; and (5) Institutionalizing the trade agenda in the G-20.

## → Presentation 2

### Naoko Munakata

#### Fighting against protectionism: The view from the frontline

---

Ms. Munakata next presented a summary along with her observations on the trade barriers that have been imposed or are under consideration in various countries. She explained

the trade measure surveillance role that METI and related organizations in the Japanese government had taken on since the turn of the year and noted that quick consultations with governments before barriers are introduced have been somewhat effective in alleviating trade-restrictive measures, especially in cases where producers in a host country would suffer adverse effects from more expensive imports.



Naoko Munakata

She also pointed out that anti-dumping measures, which are under negotiation in the Doha Round, have assumed additional importance given the current economic crisis. Regarding subsidies, which only rich countries can afford, countries have more room to deploy them under the pledge made at the November G-20 summit than to raise tariffs or other trade barriers. Munakata observed that transparency and peer pressure are important means of ensuring that the subsidies are both non-sector specific and nondiscriminatory.

Wrapping up her analysis of trade barriers, she illustrated the options at hand for fighting protectionism: monitoring and peer pressure, safe harbors, setting time limits for crisis-related trade measures, standstill pacts, and concluding the Doha Development Agenda (DDA). Munakata also emphasized the importance of the DDA as a comprehensive solution, and expressed concerns about the deteriorating support within the U.S., among members of Congress and industry leaders, for an early conclusion of the DDA. In her closing remarks, she noted that what needs to be done is clear, and the question is whether we can muster the political will to achieve those objectives.

## → Discussion

---

### **Professor Akira Kotera**

spelled out two points. First, he noted that one of the major differences between the 1930s' protectionist war and the present situation is the WTO, which was not around in the 1930s. The WTO has detailed regulations with a strong dispute



Akira Kotera

settlement mechanism that restrains the adoption of blatant protectionist measures. As a consequence, most measures are either tariff increases that fall within bounded rates or subsidies that have not been prohibited outright. Second, DDA is not an adequate forum to deal with a surge in protectionism because it is primarily a part of the permanent structure of the WTO. Instead, Kotera suggested that G-20 countries should agree on a temporary commitment not to raise current tariffs and to provide only subsidies that are non-discriminatory and market oriented.

**Dr. Keiichiro Kobayashi** made a short presentation on the financial crisis and focused on the vicious circle of the ongoing "balance sheet trap" that was also a problem experienced by Japan a decade ago. According to Kobayashi, the balance sheet trap occurs when the balance sheets of financial institutions become hampered by bad assets, which increases uncertainty and depresses domestic demand. The two options for dealing with the trap are expanding domestic demand in countries other than the U.S., and repairing the balance sheets of banks and firms in the U.S. by eliminating bad assets from the financial system. Remarking on the dispersion of bad assets throughout the world, Kobayashi concluded by emphasizing the importance of coordinated action among G-20 countries for the disposal of bad assets.

DRC-RIETI Workshop

# The Growth of Chinese Industries in the Global Economy

May 22, 2009



RIETI held an international workshop “The Growth of Chinese Industries in the Global Economy” in conjunction with the Chinese State Council’s Development Research Center (DRC). The workshop included discussions on the issues and prospects of Chinese trade and economy in the global recession and the recent research and development trends of Chinese corporations.

## ➔ Introduction

At the outset of the workshop, RIETI Faculty Fellow Ryuhei Wakasugi provided an overview of DRC-RIETI research, explaining its background, objectives and main research themes. Corporate activities, such as increased outsourcing by Japanese companies to China, have significantly contributed to the expansion of trade between Japan, China, and the United States in recent years, while economic integration between Japan and China is rapidly taking place at the micro level through cross-border direct investment and outsourcing by companies. Given these observations, Wakasugi pointed out the essential nature of firm-level analysis, for instance in examining the relationship between China’s economic growth and international trade. Accordingly, he said, the thrust of joint DRC-RIETI research is the empirical examination of firm-level data to determine to what extent the innovation and internationalisation of Chinese enterprises has contributed to the country’s economic growth.

## ➔ Session 1:

### Economy and Trade of China under Current Global Recession

#### China: Corresponding Measures to the Financial Crisis and Current Economic Situation

**Chen Xiao Hong**

(Director, Enterprise Research Institute, DRC)

The capital market of mainland China remains largely closed to outsiders, which had the positive effect of shielding the Chinese financial sector from the direct impact of the subprime loan problem. Nonetheless, the global financial crisis has dealt a significant blow to



Chen Xiao Hong

Chinese exports. In 2008, China’s overall exports logged a sharp year-on-year decline of 8.5%. But conditions differ from one industry to another. For instance, while machinery exports have dropped sharply, exports of labor-intensive goods such as clothes have managed to continue on

their upward trend. In addition to these external shocks, the Chinese economy is now going through a period of adjustment after overheating from 2004 to 2006.

In response to the financial crisis, the Chinese government has channeled loans on an unprecedented scale and committed to expenditures of 4 trillion yuan over the next two years primarily to support low-income people, improve the livelihood of people living in rural areas, develop infrastructure, and introduce new environmental measures. In addition, the government has also implemented structural tax reductions to shave 500 billion yuan from the annual tax burden, and formulated an industrial adjustment and revitalization plan designed to promote innovation and foster the competitiveness of Chinese enterprises in 10 key industries, including steel and automobiles.

Although the Chinese economy is showing signs of recovery, the prospects for exports and corporate earnings remain uncertain and warrant continued attention to the future course of the economy. The presenter's view is that China will be able to achieve its goal of 8% growth in gross domestic product (GDP) in 2009 because it is expected that: (1) Ongoing urbanization will generate enormous demand for housing and infrastructure in urban areas; and (2) Household consumption will increase following the establishment of a new and more extensive social security system that Chinese government leaders have attached great importance to.

## Global Recession and Trade Linkage between China and Japan

### Ryuhei Wakasugi

(Research Counselor and Faculty Fellow, RIETI / Professor, Institute of Economic Research, Kyoto University)

Following the outbreak of the financial crisis U.S. imports fell steeply, which affected countries across the world to varying degrees. Japan has been among the hardest hit, suffering a particularly large drop in its exports to the U.S. One big factor behind this is a profound decrease in U.S. automobile imports, which account for a significant portion of Japanese exports to the U.S. The negative U.S. demand



Ryuhei Wakasugi

shock to the automobile industry, which is Japan's leading export industry with a broad range of supporting industries, has had an extensive impact on the nation's industrial activity as a whole.

An observation of changes in Japanese exports to the U.S., in terms of the number of export items and the value per item, reveals that while the number of export items has been on a declining trend, the value per item has been increasing. This suggests that Japanese exports to the U.S. have become increasingly concentrated in a limited number of high value-added items. This tendency may have backfired when U.S. demand trended downward following the financial crisis, thereby amplifying the negative impact of the U.S. demand shock.

Japan-China trade, while being different from Japan-U.S. trade in its comparative advantage, is characterized by expanding vertical intra-industry trade. It is conceivable that the negative U.S. demand shock may be affecting Japan-China trade by way of such intra-industry trade. Japan-China trade is highly integrated at the individual company level.

Behind the financial crisis and its ensuing shock waves that have pounded global trade lie cumulative current-account deficits and under-saving in the U.S., current-account surpluses in China, and income surpluses in Japan. With a sizeable middle class expected to emerge from East Asia in the coming years, the region will transform itself from the factory of the world to the consumer market of the world. Although Japan needs to pay due attention to its trade balance that has recently turned to a deficit, correcting the

global macro imbalances is imperative in preventing the destabilization of world trade.

Japan and China should be playing key roles in providing capital, technology, and markets for growth throughout the entire region of East Asia. There are a number of potential research topics in the areas of trade and investment between the two countries, which are experiencing economic integration at the micro-economic level.

## → Session 2:

# Growth of Chinese Industries

## **Innovation of Chinese Firms: Mechanism, performance, and strategy**

**Chen Xiao Hong**

After the launch of enterprise reform in 1978, private enterprises became a driving force behind innovation in China. In addition to the national innovation system and policy, innovation efforts are now being undertaken by individual entrepreneurs and enterprise managers on their own initiative due to the demand and competitive pressure in the market. However, the market environment surrounding innovation differs significantly from sector to sector, and the level of innovative capability varies widely among leading Chinese enterprises. For instance, in the steel industry, the Baogang Group boasts strong capabilities in technology development, but Chinese enterprises in the information technology sector remain underdeveloped in terms of innovative capability. Lack of financial resources often constrains innovation in industries where innovative activities would require enormous investment.

Chinese enterprises continue to lag behind foreign companies in innovative capabilities. Spending on research and development (R&D) by leading Chinese enterprises is lower than that for their foreign counterparts, both in absolute terms and as a percentage of sales. Until the late 1990s, Chinese enterprises' innovative activities had been geared primarily toward product development with very few basic research activities carried out. However, from then onward Chinese enterprises have been building

R&D capacity, prompting many enterprises to conduct applied research and expand their innovation networks overseas. In 2006, the Chinese government introduced a policy to promote market-oriented innovation led by individual enterprises. The policy, which is modeled after one implemented in Japan, calls for large-scale investments over the next several years.

Chinese enterprises' innovation strategies are primarily directed toward integration- and improvement-type innovation. A market-oriented approach, the commitment of top management, and effective governance are the keys to successful innovation strategies.

## **Introduction of Chinese Enterprises' R&D activity**

**Xu Zhaoyuan**

(Assistant Research Fellow, Enterprise Research Institute, DRC)



Xu Zhaoyuan

R&D investments by Chinese enterprises have been increasing 20% per year over the past several years, and it is expected that their contribution to the economic growth of China will further increase in the coming years. As of 2006, China's R&D expenditures stood at 1.4%

of GDP, which is lower than the member countries of the Organization for Economic Cooperation and Development (OECD) but higher than the three other BRICs countries, namely, Brazil, Russia and India. Large- and medium-sized private-sector enterprises account for 57% of total R&D expenditures in China. Recent years have witnessed a marked increase not only in R&D investments, but also in expenditures for technology innovation and absorption accompanying such investments.

Both of the datasets used for this joint research with RIETI were collected and aggregated by the National Bureau of Statistics of China. One dataset covers state-owned and non-state-owned large- and medium-sized enterprises

with sales of five million yuan or more (i.e., statistics of “above-scale” industrial enterprises in China). The statistics represent only about 20% of the total number of enterprises, but account for nearly 90% of China’s industrial production and almost 70% of employment in the industrial sector. The other dataset provides data on science and technology activities—R&D investments, technology purchases, etc. —by large- and medium-sized enterprises classified into 39 different industries, 31 geographic regions, and different types of ownership structure with the number of observations totaling nearly 2,500 per year. The statistics show that R&D investments by foreign-funded enterprises are generally around the same level, in terms of a percentage of sales, as those of domestic enterprises.

## How do Chinese Industries Benefit from Knowledge Spillovers?

### Naomitsu Yashiro

(Consulting Fellow, RIETI / Associate Professor, Institute of Economic Research, Kyoto University)

### Banri Ito

(Fellow, RIETI / Lecturer, School of Economics, Senshu University)



Naomitsu Yashiro

R&D investments have been expanding rapidly in China in recent years. Although about 70% of such investments are made by domestic enterprises, the proportion attributed to foreign companies has been rising sharply. This joint research is intended to measure the

extent to which the R&D investments of Chinese enterprises have been contributing to the economic development of China and what spillover effects foreign companies’ R&D activities have had on Chinese industry, thereby helping China formulate policies vis-à-vis foreign direct investment and R&D.

The spillover effects of foreign companies in China have been subject to many studies. But very few have taken



Banri Ito

into account the significant presence of “foreign” companies from Hong Kong, Macau and Taiwan, a characteristic unique to the Chinese economy, or differences in spillover effects between Chinese-foreign joint ventures and wholly foreign-owned enterprises.

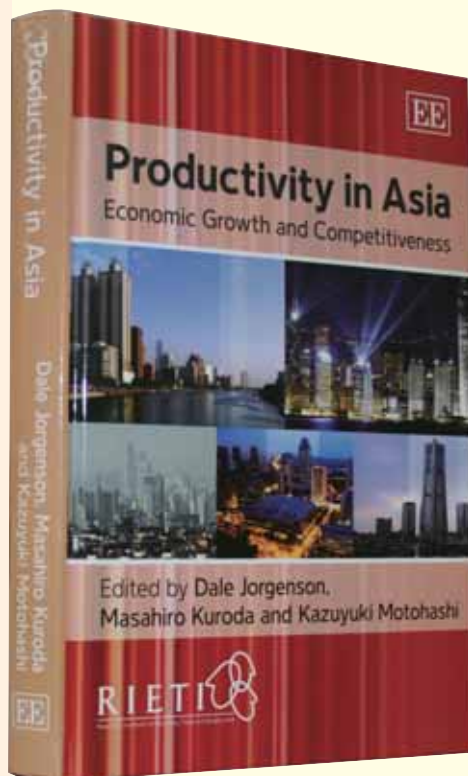
In addition to considering these factors, this research has divided foreign companies’ activities into two categories—R&D and production—and examined spillover effects with respect to each type of activity to discern which types of spillover effects are derived from which activities of foreign companies.

Estimation results show that R&D activities of Chinese-foreign joint ventures, particularly those affiliated with Hong Kong, Taiwan and Macau companies, have spillover effects on the productivity of the domestic industry. Foreign companies from other regions (primarily OECD countries) have been intensifying their R&D investment in China in recent years. However, in terms of these companies’ spillover effects on domestic industry in China, production activities have been found to be more important than R&D activities.

## → Discussion

Enthusiastic discussions took place on the following topics:

- The current state of the labor market and income disparities in China, and the government’s policy responses thereto;
- Japanese industrial cooperation for the development of the Chinese economy;
- The actual state of technology absorption by Chinese enterprises through the acquisition of foreign companies;
- Medium- to long-term potential for spillovers from the R&D activities of foreign companies from OECD countries; and
- Problems arising from macro imbalances between China, the U.S. and Japan.



## Productivity in Asia – Economic Growth and Competitiveness

Dale Jorgenson, Masahiro Kuroda  
and Kazuyuki Motohashi

EDWARD ELGAR Publishing

Reviewed by **Bart van Ark**

University of Groningen and the Conference Board

Economic growth and competitiveness in Asia has captured the interests of analysts, researchers, policy makers and business leaders for a long time. Over the past half century, the subsequent episodes of Japan's growth success, followed by the rapid rise of the four East Asian "tigers" (South Korea, Taiwan, Singapore and Hong Kong), the growth boom in Southeast Asia, and most recently the rapid acceleration of the Asian "dragon" (China) and the "elephant" (India), has brought forward the same questions over and over again: What are the sources of boom and bust in the region? And, what lessons are there to be learned for other countries inside and outside the region?

While many studies on Asia's growth miracles and failures have been undertaken, leading to a range of competing explanations, a comprehensive statistical framework to analyze the sources of growth over time and between countries has been missing. While all countries in the region have national accounts at different levels of detail and accuracy, a production account allowing productivity analysis at industry level, such as laid out in, for example, the OECD Productivity Manual (2001), has not been available for the region so far. This study, prepared by a consortium of researchers who organized themselves in

the "International Comparisons of Productivity among Asian Economies" (ICPA) projects, represents an important milestone on the way towards a comprehensive, international system of KLEM accounts, measuring the growth and contributions of capital (K), labor (L), energy (E) and materials (M) to gross output for East Asia. Productivity growth (called, total factor productivity growth) is measured as the residual output growth beyond the weighted growth of the inputs.

An important feature of this book is that all chapters provide results at the level of 32 sectors. This greatly helps to get better insights in the contributions of structural change to economic growth. Following a summary chapter, the first part of the book consists of five chapters providing the productivity accounts for Japan, U.S., China, South Korea and Taiwan. The chapters obviously represent different levels of sophistication of the accounts. In particular in the case of China, the large changes in the national accounting system have created important challenges for the authors to develop a consistent productivity account over time. As the authors stress, more work is needed to develop, for example, adequate producer prices to come up with more reliable real output series by industry in China.



The second part of the book includes a chapter with industry-level purchasing power parities for Japan, South Korea and Taiwan relative to the U.S. using the industry-of-origin approach to output which develops ratios of unit values between countries. The results of the chapter are used as an input in the final chapter, which provides measures of relative levels of total factor productivity (TFP), using the dual approach to growth accounting by obtaining TFP levels from the relative price levels of output and inputs. Such relative measures are useful for studying the sources of competitiveness between countries.

The studies provide a number of important insights. For example, the productivity slowdown in Japan during the 1990s appears to have been ubiquitous across almost all sectors, with the exception of communications and other services. Almost all U.S. industries have shown faster productivity growth, in particular machinery, construction and trade. Strikingly, even electrical machinery, which includes the electronics industry, has shown slower productivity growth in Japan than in the U.S.

The productivity accounts for China show that there have been increasingly large contributions of inputs (notably intermediate inputs) to output growth over time, and that the role of TFP has already been slowing significantly during

the 1990s. These results are striking in the light of the large role that has generally been ascribed to reallocations between enterprises of different ownership types. An update of the results into the 2000s will have to show whether the slow TFP growth in the 1990s (only 0.5% per year) was an anomaly, in part related to, for example, the loss of competitiveness due to the Asian financial crisis; or that Chinese growth has been more input driven than often assumed. Another interesting result is the relatively high level of China's TFP at about 60% of the United States, and only slightly below the level in South Korea. The authors explain this result from the success of market-based reforms and catch-up (p. 230), but also stress the need for more scrutiny of the price comparisons.

As the authors indicate, recent development in the growth accounts literature have provided new avenues for explaining differences in productivity growth and level across industries and between countries. Notably the analysis of the contributions of differences in the use of information and communication technology (ICT) and research and development (R&D) has been shedding new light on the sources of growth. Recent new initiatives in growth accounts in Japan, China and India will represent a new generation of growth analysis. This volume provides an important foundation on which these new studies can build.

## Productivity & Data

RIETI has engaged in the revision and update of the Japan Industrial Productivity Database (JIP database), which was created to analyze Japan's economic growth and industrial structural change, in collaboration with Hitotsubashi University's "Research Unit for Statistical Analysis in Social Sciences" project.

The JIP 2009 database contains annual data on 108 sectors covering the entire Japanese economy from 1970-2006 that can be used for total factor productivity (TFP) analysis. The database includes detailed information on sectoral capital service input indices and labor service input indices. It also contains information

on real capital stocks and the nominal cost of capital by type of capital and by industry, annual nominal, and real input-output tables, and supplementary tables that include statistics on trade, outward FDI, and Japan's industrial structure. All real values are based on 2000 prices.

JIP Database is also used for a basic component of the STAN that was developed by OECD for the analysis of member states' industrial structures and productivity.



## AMU and AMU Deviation Indicators for East Asian Currencies

“AMU (Asian Monetary Unit) and AMU Deviation Indicators” are calculated by Eiji Ogawa, Faculty Fellow of RIETI and Professor of Graduate School of Commerce and Management at Hitotsubashi University and Junko Shimizu, Associate Professor of School of Commerce at Senshu University, as a part of the Project on “The Optimal Exchange Rate Regime for East Asia” headed by Takatoshi Ito, Faculty Fellow of RIETI and Professor of Economics at the University of Tokyo. The AMU is jointly organized by RIETI and Global COE project “Research Unit for Statistical and Empirical Analysis in Social Sciences” of Hitotsubashi University.

The monetary authorities of East Asian countries have been strengthening their regional monetary cooperation since the Asian currency crisis of 1997. This monetary cooperation after the crisis resulted in the Chiang Mai Initiative (CMI), which was established by the ASEAN + 3 (Japan, South Korea, and China) as a network of bilateral and multilateral swap arrangements to deal with currency crises in member countries. Under the CMI, the monetary authorities conduct surveillance to prevent currency crises in the future.

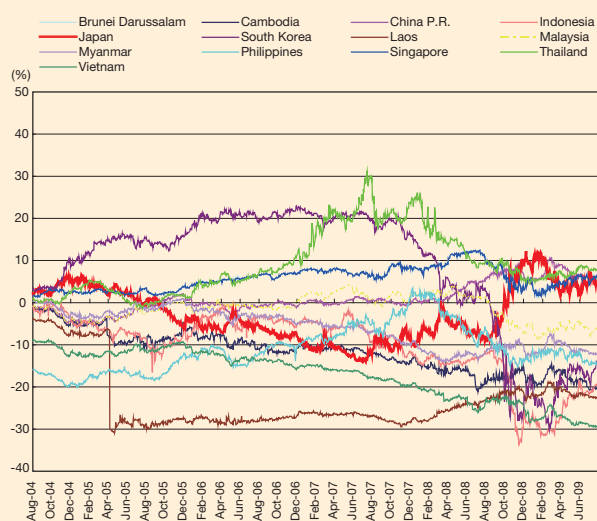
As one of the new surveillance criteria, RIETI research project “The Optimal Exchange Rate Regime for East Asia” proposes to develop an Asian Monetary Unit (AMU) and AMU Deviation Indicators for East Asian currencies. These should contribute to coordinated exchange rate policies in East Asia, thereby enhancing the monetary authorities’

surveillance capabilities. The AMU is calculated as a weighted average of East Asian currencies according to the method used to calculate the European Currency Unit (ECU) adopted by EU countries under the European Monetary System (EMS) prior to the introduction of the euro. The AMU Deviation Indicators for each East Asian currency are measured to show the degree of deviation from the Benchmark Rate for each of the East Asian currencies in terms of the AMU.

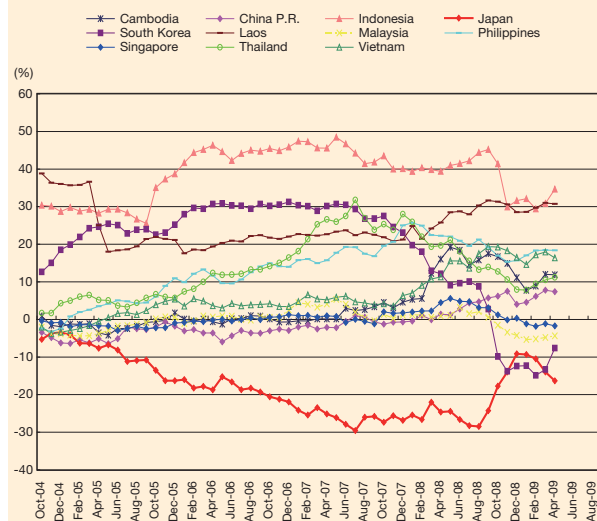
On the RIETI website\*, Nominal AMU Deviation Indicators on a daily basis and Real AMU Deviation Indicators, which are adjusted for differences in inflation, on a monthly basis are provided.

\*<http://www.rieti.go.jp/users/amu/en/index.html>

**Figure 1. Nominal AMU Deviation Indicators**  
(benchmark year=2000/2001, basket weight=2004-2006, daily)



**Figure 2. Real AMU Deviation Indicators**  
(benchmark year=2000/2001, basket weight=2004-2006, monthly)



# AMU-cmi and its Deviation Indicators become available on our website!

Following the agreement on the Chiang Mai Initiative Multilateralization (CMIM) on May 3, 2009 in Bali, Indonesia, which was to raise the amount of the CMIM from \$80 billion to \$120 billion and to strengthen the regional surveillance mechanism for monitoring the regional and global economic situation, the Project developed a new currency unit called the "AMU-cmi" and its Deviation Indicators.

The characteristics of the AMU-cmi are as follows:

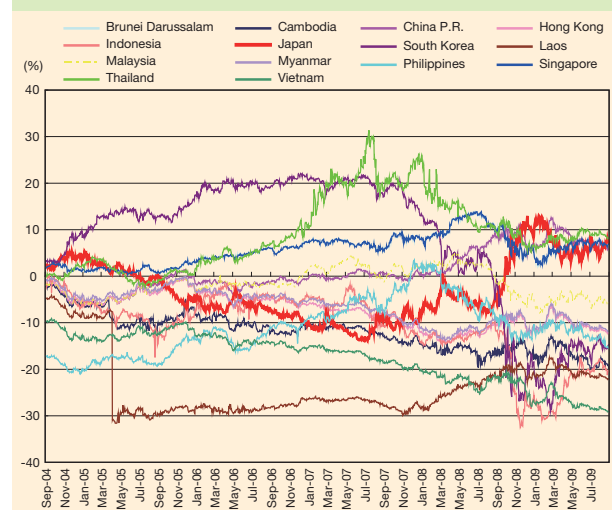
1. The basket share of AMU-cmi is based on the individual country's contribution proportion of CMIM.
2. The Hong Kong dollar participates in the composition currencies of AMU-cmi.

For more information please visit

<http://www.rieti.go.jp/users/amu/en/index.html>.

The results are available from September 1, 2009.

**Figure 3. Nominal AMU-cmi Deviation Indicators**  
(benchmark year=2000/2001, basket weight=2009, daily)



## Forthcoming Publication

Research results of FTA study group, headed by Professor Shujiro Urata, Faculty Fellow of RIETI, will be published from World Scientific Publishing in fall 2009.

Book Title: *Free Trade Agreements in The Asia Pacific*

Edited by: Shujiro Urata (RIETI/Waseda University) and Christopher Findlay (University of Adelaide)

Price: US\$95

### Table of Contents

- Chapter 1 An Analysis of the Restrictions on Foreign Direct Investment in Free Trade Agreements (*S Urata & J Sasuya*)
- Chapter 2 Assessing the Economic Impacts of Free Trade Agreements: A Computable Equilibrium Approach (*K Abe*)
- Chapter 3 Impacts of Japanese FTAs/EPAs: Post-Evaluation from Initial Data (*M Ando*)
- Chapter 4 Market Access in FTAs: Assessment Based on Rules of Origin and Agricultural Trade Liberalization (*I Cheong & J Cho*)
- Chapter 5 On the Comparison of Safeguard Mechanisms of Free Trade Agreements (*A Kotera & T Kitamura*)
- Chapter 6 Services in Free Trade Agreements (*R Ochiai et al.*)
- Chapter 7 On the Use of FTAs by Japanese Firms (*K Takahashi & S Urata*)
- Chapter 8 Impacts of Free Trade Agreements on Trade Flows: An Application of the Gravity Modeling Approach (*S Urata & M Okabe*)



### Publisher's comment

"Free Trade Agreements (FTAs) have proliferated in East Asia as regional economies rush to catch up with the rest of the world — but what difference do they make? This book answers that question by providing an up-to-date assessment of the quality and impact of FTAs in the region. Featuring a collection of papers originally written for the prestigious Research Institute of Economy, Trade and Industry (RIETI) in Tokyo, it presents contemporary analysis and insights into the evolution of recent FTAs. The book is suitable for use by trade policy negotiators, policy analysts, and people developing business strategies in organizations, as well as graduate students and researchers in the field."



<http://www.rieti.go.jp>

Research Institute of Economy, Trade & Industry, IAA