

President's Speech

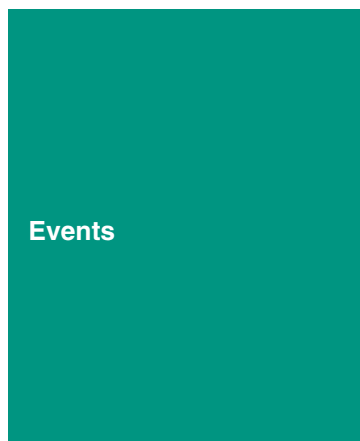
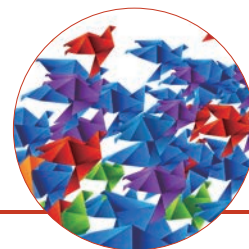
On the Evolution of the “One Village One Product” Movement and *Michi no Eki* from Oita to the World

by Masahisa Fujita

RIETI-IZA World of Labor Policy Symposium

Reforming Labor Market Institutions to Promote Elderly Employment

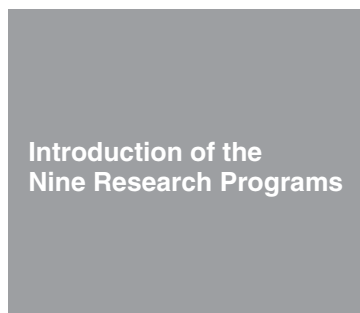




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RIETI's public relations magazine *RIETI Highlight* is published quarterly, featuring RIETI's most recent activities with the objective of disseminating research outcomes to a wider audience. This special edition has been edited in English in order to reach our international readers.

Chairman's Message

The global economy is expected to maintain its sluggish pace as there is increased uncertainty in the outlook for market expansion, triggered by the slowdown of the Chinese economy and low commodity prices. In Japan, labor shortages and wage increases are indications of solid economic performance while the sluggish global economy is stagnating, particularly in the nation's manufacturing sector.

The Japanese economy is expected to maintain its slow but steady recovery. However, continued sound economic growth hinges on not only economic trends in major economies around the world, but also many structural factors including the demographic challenges of the aging population, labor market structure that affects employment and wage, industrial and trade structures, and the frameworks of social security and public finance.

The Research Institute of Economy, Trade and Industry (RIETI) was established in 2001 as a policy think tank for undertaking policy studies, and pursued a third medium-term plan covering the period from fiscal year 2011 to fiscal year 2015. In the process, we actively conducted a broad range of research and hosted/co-hosted symposiums, both of which involved themes from our three Priority Viewpoints (*) covering international trade, currencies, corporate competitiveness, human capital, and innovation, while observing the advancement of the domestic and international economy which were affected by a complex mix of factors.

(*) RIETI's third medium-term plan focuses on reflecting the following three Priority Viewpoints:

- (i) Incorporating global growth of the world economy;
- (ii) Developing new growth areas; and
- (iii) Responding to changes in society and creating new economic and social systems for sustainable growth.

In 2015, we produced a number of empirical analysis results on legal and economic issues surrounding foreign exchange, finance, and trade both at home and abroad. We also conducted research on the promotion of innovation, productivity and management of Japanese firms, and women's empowerment. International symposiums were organized in conjunction with numerous overseas research institutes and think tanks to deepen international research exchange.



The new medium-term plan period starts in April 2016. RIETI will continue to explore basic analysis on the economy and industries so as to contribute to the development of desirable economic systems and policies that facilitate them. At the same time, we are committed to undertaking research in line with new trends, such as the impact of artificial intelligence (AI) in our economy and society. In the process, further efforts will be directed to symposiums and partnerships with researchers and research institutes from Japan and overseas.

RIETI Highlight 2016 includes timely features and individual articles, presenting the results of our research on domestic and global economic issues and reporting on symposiums, as we have done in the past. At the same time, it features researchers' essays written from diverse perspectives and carries the results of research cooperation with overseas research institutes.

In Japan, the government has initiated the second stage of Abenomics, and reached a general agreement on the Trans-Pacific Partnership (TPP), accelerating moves toward economic revitalization. Embracing the new mid-term plan period, RIETI will broaden its scope of research and communicate the results in *RIETI Highlight*.

中島厚志

Atsushi Nakajima
Chairman, RIETI

About RIETI

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. RIETI endeavors to analyze and research various policy issues from a medium- to long-term perspective, thereby accumulating the necessary knowledge to formulate and recommend policy options.

On the Evolution of the “One Village One Product” Movement and *Michi no Eki* from Oita to the World

addressed by **Masahisa Fujita**

President and CRO, RIETI / Professor, Konan University /
Adjunct Professor, Institute of Economic Research, Kyoto University



RIETI, Taiwan Institute of Economic Research (TIER), and Korea Institute for Industrial Economics and Trade (KIET) held a workshop on regional revitalization on October 27, 2015 in Oita prefecture, Japan. Regional revitalization is a key issue for the world economy. Ensuring that rural, isolated communities have opportunities for economic and community development is an urgent need. In his opening speech, RIETI President Masahisa Fujita referred to a unique Japanese approach to this problem—the “One Village One Product” grassroots movement which originated in Oita prefecture and coupled with “michi no eki” roadside stations. Through One Village One Product, communities identify and pursue unique local products and market opportunities, differentiating themselves from others and creating a long-lasting, independent source of business and revenue. Michi no eki serves as a venue for locally-branded agricultural products to be marketed and sold, thereby spreading their appeal, and provides a center for information and cultural exchange, health care, and community development. The benefits of this approach were discussed in his speech.

Roots of the One Village One Product movement

- Oita prefecture is the birthplace of the One Village One Product (OVOP) movement. It began as a grassroots movement to address economic concerns stemming from its fairly remote location surrounded by mountains. The epicenter of this movement was the town of Oyama in the early 1960s which established the slogan “Let’s go to Hawaii by planting plum trees and chestnut trees!” Oyama aimed to differentiate itself from the common agricultural practices of growing rice and wheat. In the 1990s, this movement evolved by combining with *michi no eki* roadside stations in the 1990s as a platform to sell and market its agricultural products.
- This model led to a new perspective on development strategy presented at the 2007 World Bank Conference (Annual World Bank Conference on Development Economics Global 2007).
- This perspective focused on “Brand Agriculture” as a catalyst for economic development. Traditional concepts of economic development begin with agriculture, and then move on to manufacturing before reaching the service industries. However, such traditional model is not ideal in every situation, especially in peripheral or land-locked regions where traditional agricultural products may be difficult to grow and maintain and

the local population is poor. Creative nature-based industries are the key in these areas, driven by innovation and smart branding.

Traditionally, the agricultural sector has focused on the following points: producing generic products or staple agricultural products (wheat, rice and soybeans); aiming for constant returns (annual harvests); and leveraging labor and capital. However, the Brand Agriculture approach emphasizes aspects such as differentiating products, establishing economies of scale and scope, and encouraging innovation in branding and marketing. It is through this approach that greater growth and regional economic autonomy can be achieved.

Evolution of the OVOP movement in Japan

The OVOP movement started spontaneously in the 1960s, as grassroots movements occurred in relation to changing government regulations regarding rice production. A pivotal legitimizing event occurred in 1979, when Morihiko Hiramatsu, then governor of Oita prefecture, named the movement “One Village One Product.”

Governor Hiramatsu identified three principles for the movement. The first was creating products with appeal stemming from their local roots, thereby differentiating them from non-branded products. The second was emphasizing self-reliance and creativity, through which independence could be realized. Not relying on the government for handouts or aid was a key point. The third principle was developing human capability and fostering people with an independent, creative spirit and a drive for hard work.

OVOP initiatives in Oita prefecture have seen enormous growth over the years. In 1980, there were about 143 products under designated OVOP initiatives, with sales of just under 40 billion yen. By 2001, there were 336 designated OVOP initiatives focused on local specialties, including agricultural, fishery and forestry products, and handicrafts. Sales in the same year were about 140 billion yen, a significant figure which had a major benefit on the local economies and communities.

One representative example of an OVOP project—the Irodori Project—can be found in the remote mountain town of Kamikatsu in Tokushima prefecture. Kamikatsu had relied on mandarin orange production for its economy. However, there was inclement weather one year with heavy snowstorms that caused the orange trees to perish. In response, a special project was developed, focused on making *tsumamono*, or garnishes used for traditional haute cuisine Japanese dishes. The market for this project may not be large, but it is very specialized, meaning that the operators of the Irodori Project have the market cornered. Through the success of this project, the local economy has grown strong, with median annual income from the project at about two million yen per member. In addition to the economic benefits, there are also social benefits. For example, while most project members are elderly, at an average age of 67 years, they are active and healthy, with per capita medical expenditures at 260,000 yen, significantly lower than the average.

Emergence of *michi no eki*

Michi no eki, or roadside stations, is an initiative started by the Ministry of Land, Infrastructure and Technology (MLIT) in 1993. In the first year of their implementation, there were 103 such facilities opened. In 2015, there are now more than 1,050 all over Japan, focused mainly in the rural areas. Outside of Japan, both concepts of OVOP and *michi no eki* have been adopted by countries all over the world, including Thailand, China, Turkey, Kenya, Malawi, Yemen, and Mexico. International adoption is being guided by the MLIT, the Japan Bank for International Cooperation (JBIC), and the World Bank.

According to a World Bank report, *michi no eki* is “an excellent tool for the third generation of infrastructure interventions which seek to optimize regional development and integration and enhance the multi-sectoral and multipurpose dimensions of infrastructure investment” (T. Yokota, World Bank report 35683, 2006). They create a variety of locally-founded benefits which lead to speedy and sustainable regional development.

The concept of *michi no eki* is unique to Japan for three reasons. The first, and most significant, is that the products that are on sale have been designed, developed, and manufactured by local communities, thereby ensuring that the economic benefits directly affect the local community. The second is that, through this system, business opportunities are provided for local residents. The third is the existence of a venue for the provision of public services, including health care, education and training programs, and cultural activities, in addition to commercial services for locals and visitors alike. They are designed with three overlapping support pillars in mind: creating a refreshing venue, using local charm and good design to spread the appeal of the region to visitors; serving as information and cultural centers for marketing, promotion, and commercial activities; and community development, empowering women, the elderly, the poor and other groups whose economic potential is often not reached.

Conclusion

Brand Agriculture, also referred to as creative nature-based industry, has massive potential for regional revitalization. As a grassroots movement, it encourages the active involvement of local residents, thereby leading to the economic and social benefits of this approach to directly affect them. *Michi no eki* plays an essential role in the movement. They provide a venue and outlet for locally-branded agricultural products to be marketed and sold, thereby spreading the appeal of the region to visitors. In addition, they provide a center for information and cultural exchange, health care, and community development.

However, there is no “one-size-fits-all” approach to implementing these projects. It is therefore essential that local communities identify potential markets and products, leveraging their unique resources for maximum economic and social benefit.

RIETI-IZA World of Labor Policy Symposium Reforming Labor Market Institutions to Promote Elderly Employment

May 26, 2015



As societies around the world age, economies are struggling to adapt. One way to keep economies healthy is by increasing labor, which also means keeping older workers in the labor force for longer. But what challenges do these workers face? What kind of legislation is in place to help older workers as they start winding down their careers? And do the policies meant to prevent age discrimination actually end up disenfranchising other groups, such as women or youth? International experience and evidence and possible implications for Japan and much more were discussed during the RIETI-IZA World of Labor Policy Symposium.

Opening Remarks



Masahisa Fujita

President and CRO, RIETI / Professor,
Konan University / Adjunct Professor,
Institute of Economic Research, Kyoto
University

According to an estimate by the Organisation for Economic Co-operation and Development (OECD), the aged dependency ratio (ratio of the number of people aged 65 and over to the number of people aged 15 to 64) will exceed 60% in such nations as Japan, Spain, Italy, and Greece. This means that every six aged persons will be supported by 10 working-age persons, moving ever closer to a “*kataguruma* (shoulder-riding) society” where a single working-age individual must each shoulder the full burden of supporting an elderly person.

Today, at this symposium, we will hear expert insights on the effects that policies to promote the employment of the elderly in the United States, Europe, and Japan have had on job opportunities for them and other age groups in these countries. After these presentations, we will discuss what Japan can learn from other nations’ experiences when considering its future policies to promote elderly employment. I hope today’s symposium will be a good opportunity to disseminate the research results on the promotion of elderly employment conducted at RIETI and IZA and to provide materials for policy formation.

Opening Remarks and Introduction of “IZA World of Labor”



Alessio J. G. Brown

Director of Strategy and Research
Management, IZA

The Institute for the Study of Labor (IZA) is an independent research institute focusing on the analysis of global labor markets and is also the largest research network in economics. On the basis of our research and the resulting evidence, IZA experts also provide evidence-based scientific policy advice, which is the central aim of IZA World of Labor.

Scientific guidance is essential for economic policy being successful and promoting welfare. Evidence-based policy making adopts solid evidence rather than ideology into policy making to promote good public policies. Evidence-based scientific policy advice consists of providing viable options and highlighting their implications such that policy makers can make evidence-based, but ultimately their own, decisions.

To provide appropriate advice, not only must the advice be independent, but also it must be based on prior independent, internationally competitive, and peer-reviewed research. It requires adherence to strict scientific ethics rules and standards

as well as disclosure of conflicts of interest. Data access is also essential, though policy programs need to account for data collection before implementation. The need for independent scientific evaluation is still too often ignored at the time of implementation of policies. Thereby, evidence-based policy making is forced to prove itself repeatedly.

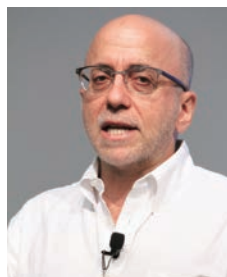
The relationship between science and policy making faces an additional central challenge: academic science generally is not targeted immediately at policy advice. Consequently, while empirical evidence on many issues is available, often it is not relevant or usable immediately to policy makers. This is where the IZA World of Labor (<http://wol.iza.org>) fills an important gap: as an independent service provider for evidence-based policy making, it “translates” the existing evidence and makes it transparent. IZA World of Labor condenses the available state-of-the-art knowledge on key labor market issues in a practical format and derives functional policy recommendations and insights of value to society from the existing evidence.

By making our knowledge freely accessible to a global audience including journalists, economics students, and the interested public, we aim to contribute to promoting evidence-based policy making.

Keynote Speeches

I

Age Discrimination Laws and Age Discrimination in the United States



David Neumark

Professor of Economics, University of
California, Irvine / Research Fellow,
IZA

All developed countries struggle with aging societies, especially with getting seniors to work more and support pensions. But to what extent is age discrimination a problem?

Older unemployed workers take a lot longer to find jobs, and there are prevalent negative stereotypes about older workers. Other evidence also suggests that age discrimination plays a role in U.S. labor markets. The United States has passed laws to stop it, which likely boosted employment rates of older individuals by about 4%, probably by preventing the workers from being fired. In effect, those have been anti-termination laws, not hiring laws.

The law is less effective with regard to hiring because it is largely enforced in the courts. First, penalties for firms are also decided based upon the economic damages that are done, and these damages can be low in hiring cases. In contrast, firing a 55-year-old is quite costly due to the need to replace health insurance and lost pension accruals. Second, the strongest discrimination suits are class action suits, but it is hard to identify an affected class in hiring cases. This is potentially problematic because substantial increases in the employment of older workers probably have to come about through hiring into “post-career” jobs.

I will now discuss two studies on age discrimination. The first measures whether stronger laws are more effective in assisting older workers increase labor supply. The United States has changed Social Security, bumping up the age at which full benefits are received and providing lower benefits for earlier retirement. But does age discrimination diminish the effect of that change in policy? This can be measured in the United States due to variation across states in age discrimination laws. Stronger laws do increase the responses of older workers to changes in Social Security.

The second study is about the Great Recession in the United States, when older workers' unemployment durations shot up dramatically. Age discrimination claims filed during that time spiked and remained high. In this case, in the states with stronger laws, unemployment rates and durations went up relatively more. It seems that the laws tend to fail during a severe recession, making it more costly to hire an older worker perhaps because with uncertain labor demand, firms have to worry about having to terminate an older worker and being sued for age discrimination.

Overall, the evidence suggests that stronger age discrimination laws could enhance the ability of older workers to retain and find jobs, and make other policy reforms intended to lengthen work lives more effective.

II

What/How Dismissal Regulation Affects the Elderly Employment and Youth Employment



Juan F. Jimeno

Head of the Research Division, Bank of Spain / Research Fellow, IZA

Europe's demographic situation is not as severe as that of Japan, but it already has the highest unemployment and highest youth unemployment. Nearly no one older than age 65 works in Europe. Aging is the most intense in Japan, but its elderly employment rate is the highest. Regarding labor market policies for promoting employment of older workers, Europe has more to learn from Japan than vice versa.

Figure 1: Youth Unemployment Rate

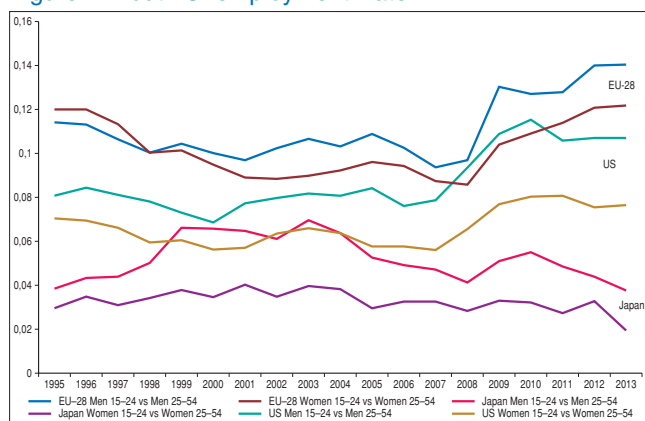
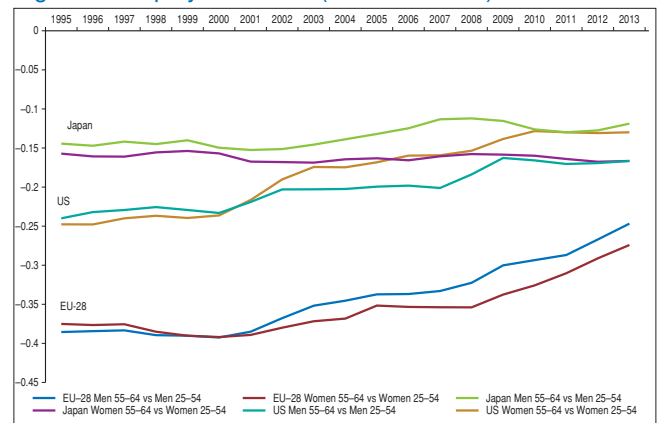


Figure 2: Employment Rate (Older Workers)



What evidence is there to propose changes in labor market policies? One study reflects on labor market flows in different countries during the financial crisis. The most interesting part was the countries where unemployment increased significantly. In Spain, increases in job destruction for older workers were much lower compared to young workers. Less-educated young women were the worst off of all.

The data can be analyzed to find whether differences are across countries or population groups, and if they are related to labor market institutions. Very simple regressions are performed to understand how the effects of labor market institutions on job creation and destruction differ across population groups.

If employment labor legislation is very stringent, there is less job destruction. With less destruction, young workers are less protected than older workers. Temporary contracts make it easier to dismiss young workers than older workers. The differences are not large, but still show how different labor market institutions across European countries may affect job creation and destruction.

These simple regressions provide some idea of the effects of legislation on job destruction of different population groups. Similar regressions were performed for unemployment benefits, as well as wages and union density, and the level at which collective bargaining takes place. The same results were found from unemployment to employment and job creation, depending on the institutions in place.

The relationship between wages and productivity might cause labor market policies to make those flows particularly intense. Most labor markets have seniority-based pay systems, but employment protection protects those with more seniority, meaning that older workers typically have more bargaining power than younger workers. Thus, wages tend to increase with seniority. Since productivity declines with age, that means firms have a serious imbalance between wages and productivity. That should give firms incentive to hire younger workers, but employment protection is too stringent. Young workers are hired largely on temporary contracts, and are much cheaper to dismiss. The current effects of employment protection on youth unemployment are particularly high.

Employment opportunities and benefits must be neutral. A firm should internalize the societal costs of dismissal, such as with employee training and unemployment benefits. Another

important factor in dismissing workers could be the stigma that a firm will draw. Dismissing workers was not a problem before because enough social insurance was available, but mandatory retirement is not the way.

The fact that incentives to invest in skills are different makes older workers less attractive to firms. But for transferring specific human capital to younger cohorts, all workers are useful; there is no better method of transfer.

III Relations between Employment Situation and Legislative Reform of Elderly Employment



Ayako Kondo

Associate Professor of Economics,
Yokohama National University

When looking at trends in the labor participation rate and the employment-to-population rate of men in their late 50s to 60s in Japan, one recent feature is the rise in the employment-to-population rate in the early 60s age group. This is the result of a policy change, and, although the labor participation rate has also increased, the rise in the employment rate has been even larger.

As for women, both the labor participation rate and the employment rate are lower than that of men in all age groups, with a significant proportion of women working either part-time or in their family business. However, the employment rate is on an upward trend in all women age groups. Another notable point is that the gap between their employment-to-population rate and the labor participation rate is smaller than that of men, which means that the unemployment rate is lower.

When comparing the employment rates of people in their 60s or older, Japan's figure is higher than that of other nations, with the rate for men in their early 60s in particular standing out considerably higher. This phenomenon is related to the Elderly Employment Stabilization Law (EESL). The employment rate of men aged 65 or older is also high, with one out of four in this group still working. Women's employment rate is relatively high too. Despite the comparatively low employment rate among younger women in Japan, the rate is almost the same as that of the United States in older age groups, and higher than that in European nations except Sweden.

Table 1: Employment Rates of Elderly, selected OECD Countries (as of 2011)

	Male age 60-64	Male age 65-	Female age 60-64	Female age 65-
Japan	70.9	27.6	44.2	13.1
United States	54.7	21.3	47.2	13.1
United Kingdom	55.1	11.9	34.2	6.3
Germany	52.2	6.6	36.3	3.1
France	20.4	2.8	17.4	1.4
Italy	29.5	5.6	12.8	1.3
Sweden	68.4	15.7	58.5	8.0
Korea	69.6	39.6	41.3	21.4

Source: OECD Database

Table 2: Timings of Policy Changes by Cohort

Cohort born	Age until which employers are legally obliged to continue employment	Eligibility age for full pension benefits
1938	60	60
1939	60	60
1940	60	60
1941	60	61
1942	60	61
1943	60	62
1944	60	62
1945	60	63
1946	63	63
1947	64	64
1948	64	64
1949	65	65

Why is the employment rate so high? There are two main reasons. First, the pensions for self-employed workers are not very generous. Many say that they continue working out of necessity because it is impossible to live only on the national pension. Second, a relatively large number of people also choose employment for reasons other than money, such as health benefits, sense of fulfillment, and social participation.

In the 2000s, the EESL was revised following a reform of the pension system (which raised the eligibility age for the employees' pension). Both changes had the biggest impact on men in their early 60s who were in full-time employment until the mandatory retirement age of 60.

In addition to the raising of the pension age, a change was implemented in the in-work pension scheme in April 2005. Previously, if a pensionable person was employed in a job that would entitle them to join the employee pension scheme and received remuneration, their pension was cut by 20%. The change ended this fixed-rate reduction, and it is thought that this also encouraged more elderly people to take up employment.

Another significant change was the revision of the EESL in 2006. Because the pension age was raised in 2001, the EESL was revised to fill the gap between the pension age and the mandatory retirement age. This revision took effect in April 2006, five years after the eligibility age started to rise. This revision can be viewed as a formalization of the already common practice of spontaneous continued post-retirement employment into an explicit compulsory requirement. These changes had a particularly significant impact on male employees who were working in large-sized companies.

There is no clear evidence yet as to whether these measures to protect elderly employment have a negative impact on other age groups. Although based on insufficient data, research suggests that elderly employment protection does not affect the employment of new graduates. However, according to my own research, the possibility that such elderly re-employees are replacing middle-aged or older female part-time workers cannot be denied.

When considering effective policies, it is essential to analyze the potential impact on the supply of female labor. With the ongoing population decrease, it is important to increase the female labor supply in order to secure a sufficient labor force, and this aspect deserves continued attention. It is also necessary to accumulate appropriate data to verify the impact on corporate productivity.

Panel Discussion Promoting Employment of the Elderly: Evidence-based Policy Making

Introduction

Changing the Japanese Way of Working through the Introduction of Limited-type Regular Employment Practices

**Kotaro Tsuru**

Chair of Employment Working Group, The Regulatory Reform Council, Cabinet Office / Program Director and Faculty Fellow, RIETI / Professor, Graduate School of Business and Commerce, Keio University

“Limited-type regular workers” are barely discussed here in Japan. Understanding the Japanese employment system and the relationship between wages and tenure is crucial. Teamwork is a defining feature, as well as horizontal information sharing.

However, the Japanese system has a blind side: unlimited scope of duties. Temporary workers are obliged to accept the same conditions as permanent employees, such as location transfers and overtime. Limited-type regular workers have clearly-defined job duties but for lower wages. More importantly, there are no legal restraints in employing such workers.

Our human resources departments are very different. An unlimited scope of duties has profound implications for work-life balance in Japan. Permanent workers are difficult to dismiss, thus temporary workers are preferred; their contracts are tenuous, but the duties are the same. Their overtime hours are extremely demanding, and women have faced considerable obstacles in maintaining their professional careers.

Some Japanese still view employee dismissal as strict and do what they can to have workers voluntarily quit. But wages rise with tenure, not productivity; so employees have an incentive to stay, even under negative pressure and harassment. Mandatory retirement has also changed, with all employees wishing to work after age 60 being free to continue. Japanese companies face many difficulties.

Discussion

**Moderator:
Daiji Kawaguchi**

Faculty Fellow, RIETI / Professor of Economics, Hitotsubashi University / Research Fellow, IZA

The elderly employment rate is quite high in Japan, which may give a false impression that there are no problems with elderly employment. In fact, problems relating to elderly workers in Japan almost always center upon the sustainability of pension accounts. The Japanese government has raised the pension eligibility age to 65 for the national pension, and, by 2025, other pension schemes will be in line. Some policy makers argue that the gap between the retirement age and pension eligibility age would create problems

and have proposed policy interventions to prevent them.

Some argue that government intervention is not necessary because the rising pension eligibility age encourages elderly workers to seek employment to secure their incomes. On the other hand, while Japan has legislation preventing age discrimination, there are many loopholes that make the law virtually ineffective; for example, targeting new graduates for recruitment is still legal. How should we assess the current scheme?

Some argue that legal intervention to increase elderly employment might reduce opportunities for other workers such as youth and women; therefore, the elderly employment stabilization law may stifle opportunities for disenfranchised groups.

I would like to invite the panelists’ opinions on these issues.

Neumark: Presumably, Japanese firms employ mandatory retirement because it works for them. The issue isn’t that people stop working at age 60 or 65, but rather that it is what happens after.

Tsuru: In Japan, it is essential to consider why wages decline so significantly after retirement. It is a very striking difference, in our seniority-based wage system.

Jimeno: In Europe, seniority-based wages are the norm, but the situation is completely different. Europe does not share the same sort of assumed wage-profile as in Japan, and there is no mandatory retirement. In fact, Europe has the opposite problem: workers retire too early and older worker employment rates are too low.

Kondo: Right now, with workers accepting huge wage cuts at age 60, they can receive enormous subsidies from unemployment insurance. It is not ideal, but it is a good compromise. Whether it is necessary to make the wage profile flatter and to raise mandatory retirement age, or implement age discrimination legislation, or otherwise keep things as they are, is a matter of debate.

Tsuru: Introducing a mid-career, limited-type regular worker system could be a solution. They could learn many different jobs and master various skills. Accordingly, their wages should depend on the job, not ability. Japan has to change anyway, so it should shift to a system with a better work-life balance. The Japanese employment system worked well before, but it is now in decline. As the system adjusts, non-regular workers hold a very unstable position in terms of job security, which has become a social problem.

Neumark: Our discussion has focused on the phenomenon that workers get a sort of extension of mandatory retirement, and make a lot less as a result. However, one possibility is that there is quite a bit of age discrimination in hiring. Essentially, the firm makes a very low take-it-or-leave-it offer, which the workers take because they have no other option.

We also should not lose sight of the fact that increasing employment of the elderly is not the only option for increasing



the number of workers. The situation of women in Japan is quite abysmal relative to other developed countries. The other option to look at is immigration.

Jimeno: Europe learned that there must be many ways to deal with problems. Countries using different margins of adjustment did much better in the financial crisis. Germany adjusted hours, productivity, and so on, and it did not experience a spike in unemployment. Spain only adjusted temporary employment, and unemployment rose significantly. For elderly employment, some workers with very high skills and value to their firms could be rehired with the same or higher wage. By providing unemployment benefits for low-productivity workers, firms would internalize the social costs of mandatory retirement if workers cannot find a new job. That sort of additional instrument could benefit the situation.

Neumark: What could be done more to learn about the potential impact of the Elderly Employment Stabilization Law (EESL) on other groups of workers, such as women? If the employment rate for middle-aged women rose from 40% to 70%, that is a significant amount of labor.

Kondo: If policy aims to increase the labor force, then female employment has a much greater margin than that of the elderly because elderly employment rates already are relatively high. Also, although the EESL currently does not have much negative

effect for workers other than middle-aged female part-timers, if the government instead mandated firms to increase the mandatory retirement age, then the substitution effect might work in a completely different way, and side effects will spring up somewhere else.

Jimeno: It is important to increase both female and elderly participation rates. If benefits are not reduced, then they must be kept relative to productivity, which implies a doubling of the employment rate; that is impossible. To minimize the cutting of benefits that would make the welfare state sustainable, employment of women and older workers must be increased.

Neumark: In the face of the high dependency ratio, increasing both elderly workers' employment rates and those of female workers are important.

Jimeno: In many European countries, before the crisis, employment of older workers was increasing and unemployment of youth was decreasing. During the crisis, the situation was reversed: both employment rates of older worker and youth unemployment increased.

Tsuru: Japanese companies determine beforehand the number of new graduates that they take on every year. They prefer hiring new graduates, so the effect of rehiring elderly workers is already small. Companies must work on hiring different workers. The roles that elderly workers will play is different.



See also: <http://www.rieti.go.jp/en/events/15052601/handout.html>

Q&A

Q1 What would be the impact of introducing robots or artificial intelligence on employing the youth or elderly?

Neumark: People have worried for ages that mechanization and technology would destroy jobs, but that hasn't come to fruition. It can affect the wage distribution, but probably does not destroy jobs on net.

Jimeno: This time could be different due to a deficit of demand generated by high savings and low investment. Labor income distribution could become polarized.

Kondo: It would become an issue of distribution. Innovation would improve productivity, so people can work less with more output. If distribution is not an issue, it benefits everyone. Wages would have to improve as well.

Q2 This is regarding RIETI President Masahisa Fujita's opening remark, where he said that significant institutional reforms are needed to attain an active labor force participation of the elderly. Are there any proposals for reforms?

Tsuru: It is simply an issue of human resources management. Everyone still thinks that the current employment model and wage profile are good, especially at large companies. They aren't sustainable, but there is too much momentum behind them. Twenty years ago, companies used temporary workers, but that has spiraled out of control. Japanese people themselves must change and cope.

Neumark: What could the government actually change with legislation? If rigidity prevents firms from reforming, the rigidity must be identified and we need to ask what the government can do about it. A single firm can't make the change—it's a coordination problem.

Q3 Can you explain more about limited-type regular workers?

Tsuru: The same labor and wages should be realized first to promote mobility in the labor market, otherwise disparity could further expand. Japan has yet to see the growth of a market for non-regular employment. How someone is treated within an organization should be examined as a matter of course. If there is a reasonable explanation of the differences, it is not necessarily bad, but disparities among workers must be minimized.

Servicification of Manufacturing:

Facts and reflections on policy implications

June 29, 2015

Richard E. **Baldwin**

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International production unbundling and the ICT Revolution have transformed manufacturing. Starting from the 1990s, the service value-added content of all manufactured exports has risen substantially, while the manufacturing share has decreased substantially. This is servicification. Faced with this trend, Professor Baldwin addresses that G7 policymakers should: stop thinking manufacturing exports, and start thinking service inputs into manufactured exports; stop thinking “good sectors” and start thinking “good jobs” linked to manufacturing, many of which will be in service sector jobs; stop thinking of domestic factories as the industrial base, start thinking of the service sector as the 21st century industrial base; and start thinking about cities as 21st century “factories.” At this BBL Seminar, he provides statistical determinants of the servicification of exports and policy implications concerning servicification.

Introduction

My paper is based on a paper titled, “Unveiling the Evolving Sources of Value Added in Exports,” and is part of an Institute of Developing Economies-Japan External Trade Organization (IDE-JETRO) project. The basic idea is to find the statistical determinants of the servicification of exports. The paper I presented here in 2014 looked at facts; this one looks at determinants with regression analysis. But first I’d like to put today’s talk in a more general setting and explain servicification and the “Smile Curve.”

Servicification and the Smile Curve are related, and, in some sense, servicification is one of the less complex and better defined aspects of the Smile Curve. Servicification specifically focuses on the idea that value added from the service sector is more important in manufacturing output than it had been in the past. I believe that such change is due to changes in globalization or in the ways in which globalization has changed production: value added has shifted away from fabrication toward service value added.

Globalization behind servicification

The argument that globalization changed around 1990 can be

seen empirically. The G7’s world gross domestic product (GDP) share, world trade share, and manufacturing share all started to fall rapidly around 1990. Using Asian data, we can see that this happened all around the world at essentially the same time. Globalization should be thought of as two processes, not the traditional one where trade and communication costs come down, national economies come together, and globalization proceeds as each nation specializes in its own comparative advantage sector. The second process is qualitatively different and perhaps more important recently.

Evolution and unbundling of cost constraints

Three types of costs separate national economies. The first is transportation cost. Clustering occurs at the micro-level (factories) when transportation costs were greatly reduced by the Steam Revolution and postwar trade liberalization. The second cost is communication costs. The third cost is the face-to-face costs, i.e., the cost of moving people to hold meetings or fix machinery. In short, these are the costs of moving goods, ideas, and people. Globalization has not been a gradual reduction of all of these barriers at the same pace. The costs fell at different times, so the world came up against different constraints and acted differently as each constraint being relaxed.

In the pre-globalized world, all three costs were very high,

causing almost the entire world economy to resemble village economies, in which most people consumed items that were made very near where they lived. The first big phase shift was the Steam Revolution, which radically lowered the cost of moving goods. This was the first unbundling: production and consumption were unbundled, so nations could specialize their production, focusing on their comparative advantage sectors. Countries started producing things that they wouldn't consume with the excess exported, and people were consuming things that weren't produced locally, so trade boomed.

Globalization as seen through the lens of trade theory attempts to argue that when the cost of trade declines, free trade results, economies specialize, and consumption patterns converge, but production patterns diverge as people specialize in their comparative advantage sectors.

However, removing the cost of moving goods did not make the world flat. In fact, it led to increased clustering within nations. Instead of goods being produced in cottage industries, after this change, industrial districts and the like emerged. The world came to face the communication and face-to-face constraints, causing production to cluster in very small areas to reduce the impact of these remaining constraints.

Stages of production inside factories were coordinated by the two-way flows of goods, services, information, investment, training, quality checking, and so on. The stages needed to be conducted within an area of tight geographical proximity so that there could be coordination. This is the same reason that within companies and government offices and universities, people involved in the same processes tend to be physically close, say on the same wing and floor of a building.

The next phase transition was the information and communications technology (ICT) revolution, which radically lowered the cost of moving ideas. This better and cheaper communications made it possible for companies to physically separate some of these stages. This happened within nations as well as across nations. Detroit, for example, was the hub of auto factories in the United States, but now many auto part factories are spread out across the U.S. South to take advantage of lower wages and because they can use ICT to coordinate over distance.

This is the “second unbundling” where factories unbundled stage by stage, much as economies unbundled sector by sector in the 19th and 20th centuries. This allows firms to put some of the stages in low-wage countries, but in order to keep the process unified, the offshore factories also receive the headquarter economy's technology. Offshoring is not just moving a stage geographically and using the destination's technology and know-how. It involves moving the technology and know-how as well and using the destination's labor, capital, etc. This intrinsically brings know-how, etc. to the destination country. The types of flows that once happened only inside factories in rich countries are now crossing national borders, so the nature of trade changes radically.

There's one remaining high cost: face-to-face cost. Again, we lowered another cost and things spread out more, but it is still not a perfectly flat world. Offshoring is very regionalized.

German and French companies do most of their offshoring in Europe, while those from Japan, Korea, and others do most of it in East Asia. That's because face-to-face cost is still expensive, e.g., to move skilled technicians or managers to the stages that have been offshored. So, there is one more unbundling left. When we get much better virtual presence technology, it's possible that offshoring will spread further.

There are three basic differences in the second unbundling. The first is that not just goods but also factories are crossing borders. If the Trans-Pacific Partnership (TPP) only lowers the cost of moving goods, then Japanese factories will have better access to foreign markets and production will increase in Japan. Thinking about the TPP in the first globalization process, there's no particular reason for servicification or offshoring. To understand the TPP, you need to understand that the second unbundling is also happening: factories, ideas, know-how, capital, and people move.

Changes in the global economy

Know-how is making radical changes in the global economy. China went from 3% of global manufacturing to 18% in 20 years by combining G7 know-how with Chinese labor and Chinese institutions, which revolutionized manufacturing and created a combination of high tech and low wages.

In essence, the technological boundaries are redrawn. We are very used to thinking of Japan as a high-tech nation and China as less so, for example. When flows all occurred within a factory or country, this was true. Now, with global value chains, companies' know-how is crossing borders or, at a minimum, flowing within a global value chain. Technological boundaries are specific to global value chains rather than to countries.

The second major change is denationalization of comparative advantage or the competitive advantage of nations. A nation's competitiveness depends on a mix of different nations' sources of excellence. As an example, modern products from Apple Inc. depend on a combination of the company's know-how, Chinese labor, and Taiwanese management.

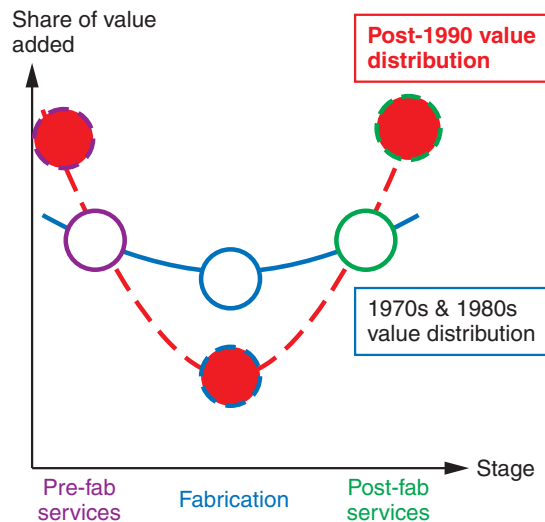
The third, another new phenomenon, is that globalization is hitting with a finer degree of resolution, so the global impact is more sudden, individual, unpredictable, and uncontrollable.

The Smile Curve

To focus on the Smile Curve and the servicification of manufacturing, we look to see whether the second unbundling is associated with total servicification in general and foreign sourcing of service value added in particular.

The Smile Curve stylizes the production process into three major stages: pre-fabrication services, fabrication, and post-fabrication services. Fabrication is specifically the physical assembly or transformation of things. Apple Inc. in the United States is classified as a wholesale firm rather than as a manufacturing firm, and is not an exporter in the U.S. statistics. Uniqlo Co. Ltd.

Figure: “Smile Curve”: Distribution of Value



is a similar example in Japan—namely, a winning firm in the manufacturing sector whose success relies on service inputs, not fabrication inputs.

RIETI did one study in Japanese on this, but the three stages are mostly unstudied. Post-1990, the value went into the corners of the smile—services—at least in part because fabrication was commoditized. Instead of being done by high-wage workers in high-tech countries, it was done by high-tech, low-wage workers in low-wage countries, and value added was a cost accounting exercise. Economy-wide, such data are collected by sector rather than at the value chain stage, which is why a global Smile Curve hasn't been plotted out. The real problem is that one company's downstream is another's upstream, so this concept isn't very well defined in an economy. Our intuition with regard to global value chains and the Smile Curve has come from business studies focused on firms. We increasingly try to apply this firm-level intuition to an economy, which doesn't really work, as there is no well-defined chain of production at the economy-wide level.

Looking at the economy-wide Smile Curve, we focus on sectoral value added from the primary sectors, manufacturing sectors and service sectors, and focus on exports rather than production. The international dimension of the Smile Curve is one of its sub-themes: the fabrication stage goes to developing country factories and pre- and post-fabrication stages go to cities in developed countries.

Details of the Smile Curve analysis

If we consider a dollar of exports then, as a matter of an accounting identity, the dollar equals the cost of the value added, which is basically labor, capital, intellectual property, profit margin, etc., plus the cost of intermediate inputs. Then these intermediate inputs are themselves subject to the same accounting identity, so their dollar value can be broken down in the same way, between value added and intermediate inputs. Repeatedly applying this process and keeping track of which sector and country add the value, we can get a picture of where a dollar's worth of exports were really made. Ultimately, export value can be broken down into where something is made, in which sector and which country, and can then be totaled.

As an example, an output like an electric fan involves several input sectors—primary inputs, inputs from the manufacturing sector and from the service sector—so in essence, the fan is conceived as the sum of its inputs. In 1985, Japanese exports were mostly manufactured goods, and, of those, about 80% of the value added came from the manufacturing sector from all around the world but mostly in Japan. About 13% came from the service sector and 7% from the primary sector. However, in 2005, services share of value added had already more than doubled. This is the servicification of Japanese exports. It's not so much that the exported goods have changed but that the contribution of services to their value added content has increased. Translating that into differences, from 1985 to 2005, services increased by about 13%, manufacturing declined by 10%-15%, and primary declined as well, causing the graph of this to resemble a smile.

This is an extremely broad pattern. Using the Association of Southeast Asian Nations (ASEAN), for all countries from 1995 to 2005, the same smile pattern in both rich and poor countries can be seen. This Smile Curve phenomena is fairly recent and is likely related to the second unbundling.

The trend also looks the same pretty much everywhere when examined by sector instead of by country. Importantly, the value added to exports from the manufacturing sector has fallen while the value added from services has risen, for all products and all exporters.

Reasons behind changing services

The main point of this paper was to determine why services were changing. We have data by sector, country and year, on how much servicification has occurred, and we try to identify with what it is statistically associated.

Four possible reasons for this have been identified. The first is simple reclassification with outsourcing. The cost of a manufacturing company's non-manufacturing workers would be classified as manufacturing, but outsourcing their work would move the cost from the manufacturing sector to the service sector. Since we measure value added by cost, this would resemble servicification. For example, outsourcing general office work would cause this change. This reclassification is, in some sense, not real—it was only misclassified before. I suspect this is a huge factor but it is very hard to measure.

The second reason is that more services are embedded in the good itself; more design and technology. Uniqlo's HEATTECH involves a lot more technology than a typical t-shirt, and since it costs something and is rewarded with a markup, this counts as a service input into t-shirts. As products become more high-tech, they involve more design and technology, and their quality adjusted prices increase, which resemble servicification. There is a lot more software in automobiles now, from the service sector, etc.

Third, more services are involved in the production process. With domestic and foreign sourcing/outsourcing, more coordination and transportation services are required—more IT and more services. Production robots require far more services

than human workers. Medical costs aren't included for humans, but robot repair is included in services.

Fourth, a change in relative prices could be at work, i.e., commoditization of fabrication. Cheaper fabrication would reduce the share of value added coming from manufacturing and increase it everywhere else, as the shares have to add up to 100. A change in the relative cost of fabrication versus services would look like servicification because we are doing it in value terms. This is also a major factor, as we are combining high tech and low wages in nations like China, the cost of fabrication—and thus the value added stemming from fabrication—is reduced. As offshoring has affected fabrication more than services to date, the relative price change between fabrication and pre- and post-fabrication services is contributing to servicification.

Which service sectors are most important in providing export value added? The share of value added coming from transportation services has risen quite sharply in all nine covered Asian countries. Wholesale, retail, and other services also have come up often. But many others—for example, finance and insurance, unclassified services, telecoms, building, and government services—haven't changed much. Increases in transportation services, wholesale and retail, and other services have been seen in other countries as well.

Collapsing all of the service sectors together, we can see where the increase in servicification originates. Where does the additional services value added come from? Over time, the U.S. input of services into Asian manufacturing and exports has risen substantially, as has China's. Japan's input has risen slightly. The standouts, though, are Singapore, having to do with transportation, China, and the United States.

Empirical analysis

The question is what determines servicification. We will focus on three possible determinants: reclassification; change in the nature of production, especially global value chain production; and change in the nature of goods. The results are not highly satisfying, but this is a work in progress.

Is global value chain participation associated with more servicification, by product, by country, by year? We have to measure global value chain participation. We have three broad measures. The first is “importing to produce” which is the share of inputs used as intermediate goods. The second is “importing to export”—the share of inputs used in goods of the importing nation's exports. And the third, related to the second but on the selling side, is “exporting to re-export.”

We looked at the change in the service value added share by product, by country, by time, and then we compared it to changes in global value participation, plus controls, in order to try to find gross correlations between servicification and global value chain participation, using ordinarily least squares, the difference-in-differences approach. When we looked for total servicification, we couldn't find anything significant. I expect this is because it is dominated by reclassification.



Instead, we looked at foreign servicification, the purchase of foreign services in exports, which is slightly finer. Here, there is an interesting fact: there is no correlation between foreign and domestic servicification. This will be useful as they may have very different causes.

The first thing we found that seems to make sense is that the changes in “import to produce” in developing countries differ from those in developed countries. It looks like a Smile Curve. Developing countries that are particularly involved in global value chains tend to buy foreign service-inputs.

The interaction between outsourcing and services is statistically significant especially in plastic products and metal products but not so in some of the classic global value chains such as machinery, motor vehicles, and electronics. For other global value chain measures, it works even more effectively. Why should foreign service-value be associated with global value participation for these products? Perhaps because metal and plastic products are fairly simple, the foreign service is their design and marketing.

We have begun analyzing what foreign servicification is, and it does seem to be associated with global value chain participation, as the Smile Curve theory would suggest.

Policy responses and implications

Fabrication workers in Japan are competing with robots at home and abroad in China. Abundant jobs will probably never again exist for workers with low levels of education. Good manufacturing jobs will be in services, not fabrication, going forward. Therefore, excellent services will be a new source of comparative advantage in manufacturing.

Service excellence and diversities in cities are creating a new source of comparative advantage. In this world, a great diversity of services that can be recombined quickly is needed. You can find such services in rich countries' cities. In this sense, cities are the 21st century factories or industrial districts; that is, in the value added sense. Urban policy should be considered a part of industrial policy.

We should change the way we think about trade policies, development, and job creation. The analytic underpinnings are different: everything is crossing borders, not just ships. Low-skill jobs inevitably are going abroad.

Q&A

Q We see the Smile Curve in developed countries, but why don't we see an inverse Smile Curve in developing countries?

A

That is a puzzle. We expected an inverse Smile Curve when we first did this. Some of the more general trends, changes in relative prices, may explain that. The amount of services in all countries' exports in all sectors has gone up, so that would have to be accounted for with more general trends. That may be why the total change in servicification investigation did not work.

Q I'd like to pick up on something you skipped: trade policy. I agree with you that opening the market to foreign services is key to making the manufacturing industry competitive. Services are sensitive so we need to be sector-specific. In Japan, we need to know which sectors. The classification is not sufficiently fine-tuned. Could you contribute to improve this situation?

A

In these international input-output tables, the value added is presented in a rather aggregated level. The general trend is to make the value added more disaggregated, and ultimately to go to the firm level, then maybe we could help. In the meantime, perhaps you could use the service trade data to make a statistical connection between this aggregate, other services, and movement in the other aggregates, and assume that it stays the same and construct data. I will look for a correlation where those countries that started importing foreign services most exported more. That is most surely true.

Q You said that services are a very important factor in trade for G7 countries, including Japan. The creation of services is accomplished only by a small number of workers. We fear the effect on incomes and job distribution after the servicification society comes into existence. Do you have some ideas on that?

A

It is now superstar economics where a few people make all of the designs. That's a challenge for governments. I don't have a solution, but we have to recognize the changes, including servicification, which will put more stress on income equality. There are good jobs in other unrelated sectors as well. Interestingly, it is not high- versus low-skilled workers. In many countries, the middle-skilled workers are being hurt the most. High-skilled workers are helped by the fact that they can sell their skills around the world. Manufacturing jobs have been declining for 30-40 years, and those people have found jobs elsewhere, many of them in services. The responsibility should be allocated to governments, which are responsible for justice, and companies, which are responsible for efficiency.

Q Japanese people in general tend to be not good at English and are shy. Do you think that is an advantage or disadvantage in servicification?

A

Many services embodied in these exports are embodied inside a

Japanese process. The Japanese design and service are component before it leaves the country. The classic service export, like IT export, may require more English, but that's not really what I'm talking about—services embedded in manufactured goods. The effect of language differences is also being reduced by technology. Things get done in a Japanese office, but there also need to be a few people to communicate outside in English.

Q You mentioned that with increased servicification, cities and urban policy are important. What does that mean for the rural economy?

A

This is a source of problems for rural regions. The wrong thing to do would be to try to spread out the services so that they don't recombine. Rural-urban inequalities need to be addressed in other ways. Tourism is the key in rural Switzerland.

Q Many people working on productivity argue that intangible investment or capital is important for productivity and competitiveness. However, in current input-output tables, they are treated as intermediate inputs. Calculation would then overestimate the importance of services.

A

That is an acknowledged problem that they are trying to fix. On the one hand, the good thing is that where the value is added can be figured out, but to do that, aggregating and mixing things up are necessary. Where the intangibles are added or who is doing them aren't known, except through anecdotes. With the right data, it could be constructed, but it is very difficult.

Q What do you think about immigration? The working population of Japan is declining. With servicification, robots and China take on low-skilled jobs. Is there any need then for immigration?

A

I can't say much about immigration from my analysis today. I don't think you need many immigrants to work in Japanese factories. Employment and manufacturing will change in nature. Immigrants may be important in the service sector. All Japanese people should be utilized. Japanese women and older people should be utilized first.

Q I agree that the city is the 21st century factory. The Shinzo Abe administration, however, says that rural cities are important for Japan to maintain sustainable growth, and it has a policy to revitalize such cities. Is that a contradiction?

A

In England and the Netherlands, efforts are being made to boost up secondary and tertiary cities, so it is not about just one major city. But it shouldn't be pretended that cities with a population of under 10,000 people are where the export excellence is going to come from.

See also: <http://www.rieti.go.jp/en/events/bbl/15062901.html>

Positive and Negative Sides of Abenomics

September 30, 2015



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In order to revitalize the Japanese economy, Prime Minister Shinzo Abe implemented a package of economic policies, Abenomics, which includes bold monetary easing, fiscal policies, and growth strategies. Monetary easing and fiscal policies, in particular, brought about rapid depreciation of the yen and a strong stock market, which improved employment situations. However, the Japanese economy is still sluggish, and Japan has not yet achieved its two-percent inflation target. In this BBL Seminar, RIETI Faculty Fellow Mitsuhiro Fukao pointed out that there were two challenges Abenomics faced. The first one is that it is absolutely impossible to achieve a growth rate of 2% under a rapidly declining labor force. The second is the risk of aggravating the already serious problem of fiscal deficit over the long term.



Taking stock of Abenomics

Prime Minister Shinzo Abe put forward bold monetary easing, flexible fiscal spending, and a pro-growth strategy as the “three arrows” of his economic policy. Against this backdrop is the dire fiscal situation, i.e., huge fiscal deficit and a persistent increase in government debt. In order to restore fiscal health, the government needs to cut spending and raise taxes, but such measures have a dampening effect on the economy. The idea behind Abenomics is to offset that effect by easing monetary policy to prop up the economy. The Bank of Japan (BOJ) put this into practice by setting an annual inflation target of 2% and implementing massive quantitative and qualitative easing (QQE). The QQE program was meant to boost the economy, particularly by stimulating domestic demand. As it turned out, however, this goal was achieved through the significant depreciation of the yen.

Haruhiko Kuroda, who had been showing willingness to take more aggressive easing steps, was appointed as the governor of the BOJ. Under his leadership, the central bank embarked on massive buying operations with the outright purchases of Japanese government bonds (JGBs) as its key ingredient. In doing so, the BOJ sought to maximize the announcement effect by using a series of “two’s.” Specifically, in announcing the new

regime of monetary easing policy, the BOJ said it will achieve an annual inflation target of 2% within about two years by increasing the amount of its JGB holdings and the monetary base (banknotes and coins + commercial banks’ deposits held in current accounts with the central bank) by twofold in two years, and more than doubling the average remaining maturity of its JGBs by the end of 2014.

Some critics call the BOJ’s current monetary policy “helicopter money policy,” but such is not the case. The QQE is being implemented by means of an exchange of equivalents at market prices, with the BOJ purchasing securities such as JGBs and real estate investment trusts (REITs) from financial institutions in exchange for banknotes and current deposits at the BOJ. Indeed, the BOJ managed to push already low long-term interest rates further down by making outright purchases of JGBs on a massive scale.

The BOJ bought about 100 trillion yen of long-term JGBs in the two years from the end of 2012 to the end of 2014. Since the amount of JGB purchase by the BOJ exceeded the budget deficit in the two years, the BOJ absorbed JGBs held by financial institutions. This drove the market yields on JGBs down to extremely low levels. Meanwhile, the balance of current deposits held by commercial banks at the BOJ rose sharply to reach a level now well exceeding 200 trillion yen.



What increased as a result of quantitative easing is not the amount of banknotes in circulation but that of current deposits of commercial banks held at the BOJ. The BOJ pays no interest on required reserves of about seven trillion yen. However, the BOJ does pay 0.1% interest on excess reserves. Being able to be withdrawn on demand, such excess deposits are the safest means of investment with short-term money market yields.

In terms of the real effective exchange rate—an index constructed as a weighted average of exchange rates between the Japanese yen and the currencies of Japan's key trade partners adjusted for price changes—the competitiveness of Japanese goods and services is at its highest level recorded since 1973. Go out for lunch and you can see just how low prices are in Japan relative to those in other developed countries. You can have a decent lunch for 700 yen to 800 yen in Tokyo, but good luck getting one for 2,000 yen in Western Europe. As such, Japan's price competitiveness has been boosted greatly thanks to a weak yen and low prices.

Under the current currency situation, Japanese manufacturers find themselves at a significant advantage over their foreign competitors in export markets. Some non-manufacturers have been benefiting from a weak yen and low prices as well. In particular, the Japanese tourism industry has been enjoying a sharp increase in the number of inbound travelers and their shopping sprees, as a weaker yen makes Japan an attractive tourist destination where they can stay, shop, and enjoy leisurely activities cheaply.

An increase in Japan's outbound foreign direct investment (FDI) by Japanese firms also contributed to the weakening of the yen. The BOJ's aggressive easing coincided with a contraction in Japan's current account surplus due to a significant rise in energy imports. Those factors together led the yen to depreciate. So, the timing was perfect for Abenomics, and the trends in international capital flows at the time provided a significant tail wind for the monetary easing. Furthermore, less aggressive easing by the U.S. and European monetary authorities, which came just as the BOJ was strengthening its easing stance, also helped weaken the yen.

With prices continuing on a downward trend, Japan's real gross domestic product (GDP) has been edging up steadily. Indeed, Japan's growth performance over the past 20 years has not been as bad as many people might believe, with the growth rate of real GDP per capita fairly comparable to that of the United States. People have been unable to sense improvement in the economy as nominal GDP has been mostly flat all those years. In real terms, however, their livelihood has improved to the extent that prices have gone down.

Now, let's take a look at changes in the GDP deflator. Falling import prices since mid-2014 have been pushing up nominal GDP, giving a temporary hike to the GDP deflator.

Meanwhile, excluding imports, the GDP deflator is now beginning to bottom out. Although overall consumer prices have been growing only marginally because of falling import prices, the prices of domestic products have been showing a slow but steady growth, and I believe that the so-called "core-core" consumer price index (CPI), which excludes energy and food, will be able to sustain an inflation rate of about 1%. In other words, as far as the domestic economy is concerned, Japan is now moving out of deflation into modest inflation.

Although the Nikkei 225 Stock Average remains far below levels observed during Japan's bubble period, the market capitalization of the first section of the Tokyo Stock Exchange (TSE) is now reaching a level comparable to the peak set in the bubble period. So, I think that Japanese stock prices are currently at a relatively high level. However, the number of listed companies is on the rise, and, as a result of massive direct investment overseas, Japanese companies today have much greater earning power than they used to. The aggregate value of listed stocks reflects those facts. In this sense, the rise in the market capitalization, even to a level on par with the peak in the bubble period does not pose a sign of strong overheating. Rather, it can be said that the Nikkei 225 Stock Average has been somewhat underestimating the value of Japanese stocks.

Turning to corporate earnings, which underpin stock valuations, we can see that Japanese companies' earnings have been showing strong growth as a share of GDP, achieving a level beyond that observed in the bubble period. However, capital spending by the corporate sector has been kept very low relative to that of retained earnings and growing only marginally. In other words, despite increased profits and strong cash flows, Japanese companies have been making little net capital investment (i.e., capital investment in excess of depreciation), resulting in a marked improvement in their financial positions. They have been active in investing overseas but not in Japan, and this is posing a big problem for the Japanese economy.

Risk factors for the Japanese economy are long-term in nature

Risk factors for the Japanese economy can be defined as long-term challenges. First, the postponement of the planned consumption tax rate hike by 18 months (from October 2015 to April 2017), though having a somewhat positive impact on the economy in the short term, poses the risk of aggravating the already serious problem of fiscal deficit over the long term.

Second, a contraction in Japan's working-age population portends a worsening labor shortage in the future. In the coming years, we will see a severe shortage in the number of medical and healthcare workers. We need to pay attention to the risk of loss of productivity which may result from an increased caregiving burden on the working generation.

Third, the current economic policy depends too much on monetary easing. Under the QQE regime, the BOJ is effectively underwriting government debt and its current goal is to increase the outstanding balance of JGB holdings at an annual pace of 80 trillion yen (BOJ release dated October 31, 2014). Meanwhile, Japan's overall fiscal deficit (central and local governments' deficits plus deficits in public social security funds) is expected to amount to 31 trillion yen per year (forecast by the International Monetary Fund as of April 2015).

I think that the government's decision to postpone the consumption tax rate hike was a mistake. It is quite regrettable that Prime Minister Abe failed to use the precious legacy left by his predecessor, Yoshihiko Noda of the Democratic Party of Japan (DPJ) who had paved the way for raising the consumption tax rate from 5% to 10% at the cost of splitting his party and losing the subsequent general elections. Without raising the consumption tax rate, Japan's fiscal situation would be unsustainable.

It is also imperative to reinforce the growth strategy. The current growth strategy, which constitutes the third of the original three arrows of Abenomics, lacks power and it would be difficult to achieve a GDP target of 600 trillion yen, a new goal set by Prime Minister Abe in his recent announcement of new three arrows. As determinants of Japan's potential growth rate, we can cite two major factors: working-age population growth and productivity growth. Over the next 20 years, Japan's working-age population (between 15 and 64 years old) is expected to decrease at an annual rate of slightly below 1% or by 17% in total (based on the medium-variant projection by the National Institute of Population and Social Security Research as of January 2012). This presents a dire future.

We often hear that Japan's productivity is particularly low in the non-manufacturing sector and that improving it to a level comparable to that of the United States would bring Japan's overall productivity to a level nearly comparable to that of the United States. But I am skeptical. Two sectors excluded in an international comparison of productivity are healthcare services

and education. Those who have lived in the United States would know that both healthcare services and education are extremely expensive there. Tuition for Harvard University is approximately seven times higher than that for private universities in Japan, and the cost of attending graduate schools is nearly tenfold more expensive in the United States than in Japan. Things are very much the same for the cost of healthcare services. I dare say that not a single Japanese who has done little research on the reality of healthcare services in the United States would want to replace the Japanese healthcare system with that of the U.S. system. So, if we include those two sectors, where the United States has low productivity, the livelihood of the Japanese people is not that much different from that of the American people. I believe that Japan's productivity has reached a level close to that of the United States.

In advanced countries that are roughly on par with the United States in the level of national income per capita, the growth rate of productivity as measured in terms of GDP per capita generally stands at about 1.5%. Meanwhile, in the United States, the population has been growing at a pace of about 1%, which is attributable to higher fertility as well as significant inflows of immigrants. The potential growth rate of the United States is estimated to be 2% to 2.5%, of which one percentage point is contributed by population growth. In contrast, the potential real growth rate of Japan, where the working-age population is on the decline by 1% annually, is estimated to be around 0.5%, and perhaps raising it to about 1% is as much as can be achieved with government measures to promote workforce participation of women and elderly people.

In order to achieve a sizable increase in Japan's potential growth rate, the government needs to implement powerful measures to address the population decline. Increasing fertility should be the backbone of those measures. However, even if we manage to raise the fertility rate immediately, it would take roughly 20 years before today's newborns join the workforce. Therefore, Japan should pursue a pro-immigration policy, defining it as a pillar of the growth strategy.

Positive and negative effects of accepting immigrants

What I have in mind is a policy that promotes immigration with a special focus on Japanese language proficiency. By actively accepting immigrants with high Japanese language proficiency, Japan can increase its potential growth rate while keeping out the negative effects that immigrant inflows might have on its economy and society. Specifically, the government should issue a five-year working visa to foreign nationals who have passed the Level N1 Japanese Language Proficiency Test (JLPT), and those who have worked peacefully and paid taxes properly should be granted permanent resident status or allowed to naturalize.

Currently, the JLPT is held in 64 countries. Each year, approximately 600,000 foreign nationals take the test with

roughly 60,000 of them certified for Level N1. Thus, by implementing appropriate measures, Japan could attract some 50,000 “quality” immigrants per year. This is far from sufficient to make up for a decrease in Japan’s working-age population, which is contracting at a pace of 600,000 per year. However, we can perhaps expect twice as much impact as what the number of prospective immigrants may indicate as they would bring their spouses to Japan and fertility would increase.

The Ministry of Health, Labour and Welfare estimates that a total of two million workers will be necessary in the field of health and caregiving services in the next 10 years. Securing two million workers at a time when the overall working-age population is expected to decrease by six million would be impossible unless working conditions for those workers are improved significantly. We should start actively accepting immigrants now. Otherwise, we would not be able to secure the necessary workforce.

By attracting a number of Japanese-proficient quality workers from other Asian countries, Japan would be able to become Asia’s business and financial center and seek to become a hub for healthcare services as well. Brighter prospects for the supply of human resources would have a positive impact on domestic capital investment and entice more foreign companies to Japan.

Quality immigrants would also help restore Japan’s fiscal health as they become financially independent and start paying taxes. Furthermore, since the fertility rate of the first generation of immigrants tends to be higher than that of the native born, a pro-immigration policy could also help address the low fertility problem. If we could slow the pace of population decline, we would also be able to keep property prices from falling at least to some extent. Moreover, the presence of such immigrants from other Asian countries would help deepen mutual understanding between Japan and their countries, thereby contributing to the prevention of regional conflicts.

The negative effects of accepting immigrants include a possible increase in the burden on the healthcare, educational, and social welfare system. Also, we all know that cultural friction with Muslim immigrants is intensifying in Europe. In order to minimize such negative aspects, we should focus on Japanese language proficiency as criteria for accepting immigrants.

Adverse effects of enhanced quantitative easing

By holding a huge amount of long-term JGBs, the BOJ is taking too much risk. Reducing risk for the private sector may not be a bad thing, but the BOJ is taking on all of the risk by itself. Some people might think that the BOJ has the capacity to absorb a degree of risk as an issuer of banknotes. However, the amount of the risk is now reaching a level beyond that capacity.

The amount of the BOJ’s long-term JGB holdings is expected to reach approximately 360 trillion yen at the end of 2016. Assuming that the average remaining term to maturity is seven to

eight years, a two percentage point rise in interest rates would translate into a valuation loss of 58 trillion yen. The BOJ’s maximum loss-bearing capacity is about 80 trillion yen based on the current outstanding balance of banknotes issued, which is equal to the amount up to which the BOJ is capable of making available cost-free funds. However, demand for banknotes falls when interest rates go up. A demand function for banknotes based on data from January 1991 through July 2015 shows that the outstanding balance of banknotes issued, which currently stands at nearly 90 trillion yen under the current levels of interest rates, would have been 35 trillion yen if the interest rate were 2%.

How should the BOJ deal with massive valuation losses? The simplest way is to bring about inflation by keeping the zero-interest rate even when prices start rising. When prices go up several-fold, demand for banknotes will grow. And as the government refinances its bonds, interest rates on the BOJ’s JGB holdings will rise and income will recover. Another way is to transfer losses to commercial banks by raising the required reserve amount, for instance, to 200 trillion yen compared to the current level of about seven trillion yen. This would force commercial banks to hold massive amounts of money in their current accounts at the BOJ at a zero or extremely low interest rate, enabling the BOJ to achieve a positive cash flow by investing their deposited funds in JGBs and other interest-bearing instruments.

In order to improve its financial position, the BOJ needs to execute either one of the two drastic measures. In other words, the BOJ has gone with its quantitative easing to the point where its credibility as a central bank might be jeopardized. It is not too late now to turn back, but I think the BOJ crossed the line when it stepped up its easing in autumn 2014.

Up to the point where Governor Kuroda made clear his commitment to quantitative easing by lining up a series of “two’s,” things were manageable and within the BOJ’s risk-bearing capacity.

However, with the additional easing in 2014, the BOJ took in the risk that goes beyond its income buffer. At that stage, Governor Kuroda should have declared victory instead of enhancing quantitative easing. With the inflation rate rising to slightly below 1%, he could have said that Japan had almost overcome deflation and that the BOJ would continue—but not strengthen—its easing efforts toward achieving the 2% goal. That would have been enough, but this did not happen. The BOJ ended up carrying forward enormous potential damage into the future. I am afraid that the next governor of the BOJ will have a very hard time.

International Workshop

Frontiers in Spatial Economics

The objective of this workshop held on April 14, 2015 was to extensively discuss the latest research in spatial economics especially in new economic geography. Four researchers including Jacques-François Thisse (Photo) of National Research University Higher School of Economics presented the recent developments in urban and regional economies and international trade. We thoroughly discussed these topics from a variety of perspectives. We also argued the policy implications of spatial economics such as optimal taxation in globalized cities and regions.



OECD-RIETI Special Session

Green Growth in Asia

See also: <http://www.rieti.go.jp/en/events/15052501/info.html>

Developing strategies for promoting green growth is becoming critical for Asia's quickly-developing economies as urban pollution levels and greenhouse gas (GHG) emissions rise. The Organisation for Economic Co-operation and Development (OECD) and RIETI co-hosted this special session on May 15, 2015 to build and set the policies that provide the right incentives and support for emerging Asia's green growth. In the session, Rintaro Tamaki, deputy secretary general, OECD, advocated policies for promoting more investment in renewable energy and increasing taxation on energy to prevent GHG emission. In the last half of the session, there was in-depth discussion on building the institutions and setting the policies that provide the right incentives and support for emerging Asia's green growth.



Workshop

The Third Asia KLEMS Conference

The third Asia KLEMS Conference jointly supported by RIETI was held in Taipei from August 12-13, 2015. This two-day international conference on productivity research highlighted the structural changes in each Asian country and productivity growth in service industries. A public forum was held on the last day entitled "Asia's Revival - The New Economic Driver." In the forum, Dale W. Jorgenson, professor, Harvard University, delivered his keynote speech entitled "The Rise of Asia and the Transformation of the World Economy." Masayuki Morikawa, vice president, RIETI, addressed his perspective in terms of improvement in service sector productivity in Japan. The conference concluded with a panel discussion.



RIETI-NISTEP Policy Symposium

Open Innovation as a Key Driver of Japan's Industrial Competitiveness

See also: <http://www.rieti.go.jp/en/events/15082101/summary.html>

The importance of "open innovation" for growth and competitiveness is stressed by Japanese government policy in documents such as the Comprehensive Strategy on Science, Technology and Innovation 2014 and the Japan Revitalization Strategy. In addition, the Japan Open Innovation Council was established in February 2015 to promote open innovation by private initiative. In order to turn these actions into economic growth, RIETI and National Institute of Science and Technology Policy (NISTEP) organized and held an international conference on August 21, 2015, inviting leading academics from the United States including Adam B. Jaffe (Director, Motu Economic and Public Policy Research / Fred C. Hecht Professor in Economics, Brandeis University) to share their views from the U.S. experience.



A Half Century of Trans-Pacific Competition:

Price level indices and productivity gaps for Japanese and U.S. industries, 1955–2012

Koji Nomura

Faculty Fellow, RIETI

Are there productivity gaps between Japan and the United States? Along with Professor Dale W. Jorgenson of Harvard University and Jon D. Samuels of the U.S. Bureau of Economic Analysis, RIETI Faculty Fellow Koji Nomura analyzed the productivity gap for 36 industries in Japan and the United States over the approximate 60 years since the end of World War II. With only about 50% of the productivity of the United States in 1955, Japan experienced a period of rapid economic growth and quickly became a rival until the beginning of the 1990s. However, Japan's current productivity has been pushed back to its level at the beginning of the 1980s. Whereas Japan's productivity in the motor vehicles industry and medical care is relatively high, it lags behind the United States in such industries as wholesale/retail, agriculture, and electricity/gas. Nomura emphasizes that with the broad agreement of the Trans-Pacific Partnership (TPP) negotiations, now is the time for Japan to identify the potential for growth in industries with low productivity.



Profile

Koji Nomura has been an associate professor at Keio Economic Observatory, Keio University since 2003. He became a faculty fellow at RIETI followed by visiting senior research fellow, Economic and Social Research Institute, Cabinet Office. His recent works include: *APO Productivity Databook*, Keio University Press, 2015 (co-authored with Fukunari Kimura); "The Japan-U.S. Price Level Index for Industry Outputs," RIETI Discussion Paper, 15-E-059, 34p, May 2015 (co-authored with Kozo Miyagawa); "Measurement of Quality-Adjusted Labor Input in Japan, 1955–2012," KEO Discussion Paper, No. 133, 144p, December 2014 (co-authored with Hiroshi Shirane); "Labor Productivity and Quality Change in Singapore: Achievements in 1974-2011 and Prospects for the Next Two Decades," KEO Discussion Paper, No. 129, 55p, September 2012 (co-authored with Tomomichi Amano).

— I can understand how the difference in competitiveness between Japan and the United States is reflected in the price gap of the products produced. The party that can produce at lower cost is more competitive, but how did you calculate the price gaps for the 36 industries?

The U.S. dollar (USD)/Japanese yen (JPY) exchange rate where an identical good in both the United States and Japan has the same price in the same currency is called the purchasing power parity (PPP). A well-known form of PPP is that for the gross domestic product (GDP) which is used for international comparison. The International Comparison Program (ICP) implemented by the World Bank and the Organisation for Economic Co-operation and Development (OECD) covers the products composing final demands.

Since our objective is comparing the productivity of industries, we will not measure the price gaps at the consumption stage, but rather at the production stage. However, it is only possible to directly observe the producer prices of limited goods. Therefore, for many products, a price model that associates the price gap experienced by the purchaser with the price gap of the producer must be developed. When surveying prices at the purchasing stage, added distribution margins and transportation costs must be accounted for, and understanding that imported goods are also included as well as domestic goods.

Wholesale and retail margin rates are estimated in both countries, but there are problems with their accuracy. For example, according to Japan's 2005 Input-Output (IO) Tables, the retail margin rate for perishables, fruits, and meat was about 10%. Thinking that this was too low, we re-estimated the margin rates for each good using the micro data of the Census of Commerce by the Ministry of Economy, Trade and Industry (METI) and found that the rate was actually about 30%. In the 2011 IO Tables that were released in June 2015, some of these margin rates have been corrected.

Also, intermediate goods such as semiconductors are not included in the final goods survey by the ICP. Since many countries confront these data restrictions, productivity gaps are estimated only at the aggregate level. However, in Japan, METI started accumulating data from the Survey on Disparities between Domestic and Foreign Prices of Industrial Intermediate Inputs in the 1990s. This price survey for intermediate goods is vital data that serve as the core for our estimates.

Even in the same industry, the percentage of import by good and the importing country differs between Japan and the United States, as does the import price. In order to systematically describe price models, my colleagues from the project in RIETI, including Associate Professor Kozo Miyagawa, devoted two years to constructing an expanded Japan-U.S. Input-Output Table (174 categories) based on METI's 2005 table. Using this extended table as a benchmark, we removed the impact of margins and import goods from the PPP survey results for final goods and intermediate goods. By considering imports from six

exogenous countries (China, Germany, Korea, Malaysia, Taiwan, and Thailand) and mutual trade between the Japan and the United States, we are able to obtain producer prices by product, and reflect the components of products by industry production (by supply/make table), thereby allowing us to estimate production price by industry in both the United States and Japan. This index of basic prices for domestic production (output) becomes industry-level price indices for competitiveness.

— You've also calculated the prices of products consumed in each industry. And, you have developed indices for input prices, what does this mean?

Input price gaps in addition to output price gaps are needed to calculate productivity gaps. The acronym for production input factor groups is KLEMS. "K" is for capital, "L" is for labor, "E" is for energy, "M" is for material, and "S" is for service. We measured the price gaps for each KLEMS in each industry in the United States and Japan. As with products, we estimate the PPP for factor inputs, such as labor and capital, when consuming the constant-quality volume of services. These types of measurements are rarely conducted in the rest of the world, and it's only possible because of the detailed databases that are developed with a methodological harmonization between the United States and Japan.

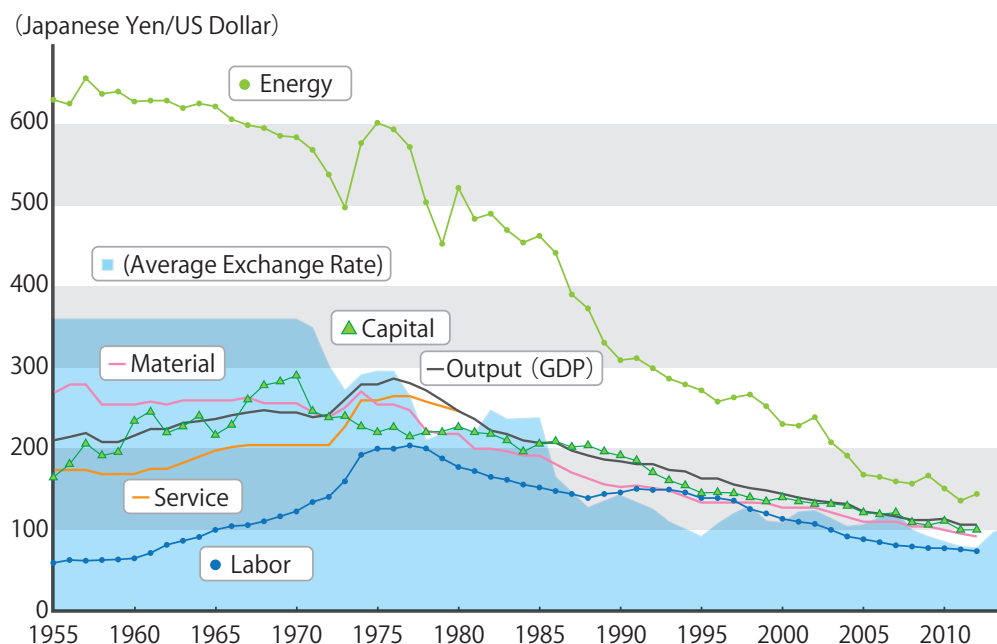
The price level index (PLI) is calculated as each PPP divided by the exchange rate. We use the exchange rate to determine the superiority or inferiority of price competitiveness. For example in 1955, the PPP for GDP (aggregate output) was 210.2 JPY per USD. The exchange rate at the time was 360 JPY/USD. Therefore, the PLI of GDP was 0.58, indicating that Japan's price competitiveness was approximately 40% above that of the United States. In other words, the yen was undervalued, thereby creating an environment conducive for exporting.

— What trends have you found in price levels between the United States and Japan?

Figure 1 (P. 22) gives you an easy-to-understand bird's eye view of environmental changes that the Japanese economy has faced in terms of price gap. It shows our PPP estimates for output price and KLEMS inputs. The blue shadow is the market exchange rate.

When the black solid line indicating output price is below the blue shadow presenting the exchange rate, overall price competitiveness is superior to the United States, thereby indicating that the yen is undervalued. In contrast, when it is above the blue shadow, Japan's production price is higher than that of the United States (PLI exceeds 1) thereby indicating that the yen is overvalued. After the Plaza Accord, Japan was faced with disadvantageous conditions, and, in 1995, the yen was overvalued by 75%. Corrections were made thereafter, but with the strong yen following the collapse of Lehman Brothers, Japan's price competitiveness once again decreased substantially.

Figure 1: Changes of PPP for Output (GDP) and KLEMS at National Level (1955–2012)



In terms of input price for example, if we look at labor cost (the dotted blue line), we see that labor in Japan was quite cheap during the 1950s and 1960s. The cost of labor for the same quality when one USD equaled 360 JPY was 50 JPY. That's 1/7 that of the United States. During this period, companies maintained price competitiveness with low wages. The cost of capital (green triangle line) was much higher than labor costs during the 1950s and 1960s, but the rate of return decreased in conjunction with economic growth, causing the user cost of capital to fall to approximately the same level from the late 1970s.

Since the beginning of the 1990s when Japan's economy entered a long period of stagnation, the price of all input factors was relatively high as a result of the strong yen, which was a big cause of the long-term stagnation. Then, after the global financial crisis, the yen continued to be strong, thereby causing wages that had continued to decrease since the end of the 1990s to become relatively high, but as can be seen, this was corrected by Abenomics.

— What have you learned about the price competitiveness of each industry?

We compiled results for 36 industries, and if we look at the PLI for the 2005 industry-based value added (net output), we see that the agriculture industry in Japan is about 3.9 times higher than that in the United States. Real estate is two times higher and airline service is 2.5 times higher. Meanwhile, the motor vehicle industry and medical care industry in Japan are 50% and 60% cheaper respectively than that in the United States. If we look at Japan's industry-based contribution to price competitiveness, we see that Japan's position is inferior to the United States by approximately 13%, and approximately half of this (six percentage points) is derived from wholesale/retail industries.

As you can see in Figure 1, regardless of the time period, the price of energy in Japan has always been more than twice of that in the United States. This higher price of secondary energy is not necessarily based on more expenses on fuel, such as natural gas and coal. The added value PLI of electricity and gas is 3.8 times that of the United States. It is assumed that this is because Japan is faced with a 20% to 30% higher cost of capital required to improve power generation efficiency by only a few percent. Higher performance contributes to energy productivity, but as we will look at later, it doesn't always lead to improvement in total productivity.

— What relationship did you find between output price, input price, and productivity gaps, which is the main focus of your research?

If the input price is the same and the output price is cheaper, productivity will be superior. And even if you're faced with a high input price, if you can achieve an equal production price, productivity will be superior. Subtracting the output price gap from the input price gap for aggregated KLEMS will give you the gap in total factor productivity (TFP).

Figure 2 shows changes over time for productivity gaps between the United States and Japan broken down into two categories: manufacturing and nonmanufacturing. When the value is less than one, it means that Japan's productivity was lower than the United States. In 1955, Japan's productivity was 50% lower than the United States, and approximately 40% of this was contributed by the manufacturing industry. By the 1980s, Japan's manufacturing industry had caught up to the United States, and there was very little gap. Going into the 1990s, the yen became excessively stronger and all input factors increased in price thereby causing Japan to lose price competitiveness and experience decreased productivity once again. Meanwhile, following the collapse of Lehman Brothers, U.S. manufacturers

such as General Motors Company recovered. There is yet again another gap between the United States and Japan, and, currently, Japan's productivity is inferior.

— **It looks like there is a considerable gap between the United States and Japan if we look at productivity by industry.**

Figure 3 (P.24) is a graph that shows the changes in U.S.-Japan productivity gap for several industries.

In the 1980s, the U.S. agricultural industry saw remarkable improvement in productivity. In contrast, Japan's productivity remained almost the same for half a century. There are of course differences in the scale of individual production units, but the gap between both countries' productivity growth is most likely a reflection of the institutional inefficiencies of agricultural cooperatives.

Between the 1950s and the 1970s, the productivity of the U.S. chemical industry greatly exceeded that of Japan, but Japan quickly caught up, and both countries started to experience a gradual decline. If there's no superiority in terms of productivity, the United States will be more advantageous in terms of price competitiveness due to cheaper input prices such as the price of electricity. Japan has overtaken the United States in terms of primary metals, such as iron and steel, but productivity has recently dropped off. There is a concern that this change to inferior productivity is the direct result of rising electricity costs.

In the 1970s, Japan's motor vehicle industry caught up to the United States and remained superior for a long period of time, but that gap has disappeared recently. The reason why U.S. motor vehicle manufacturers have not been largely critical of the recent weak yen may be because they have improved productivity. The productivity of Japan's communications industry quickly increased and surpassed that of the United

States due to deregulation and the promotion of liberalization in the 1990s, but Japan's productivity in this industry is once again stagnating. Productivity improvement in the U.S. wholesale/retail industry has far surpassed that of Japan due to the huge impact of information technology (IT) in the 1990s.

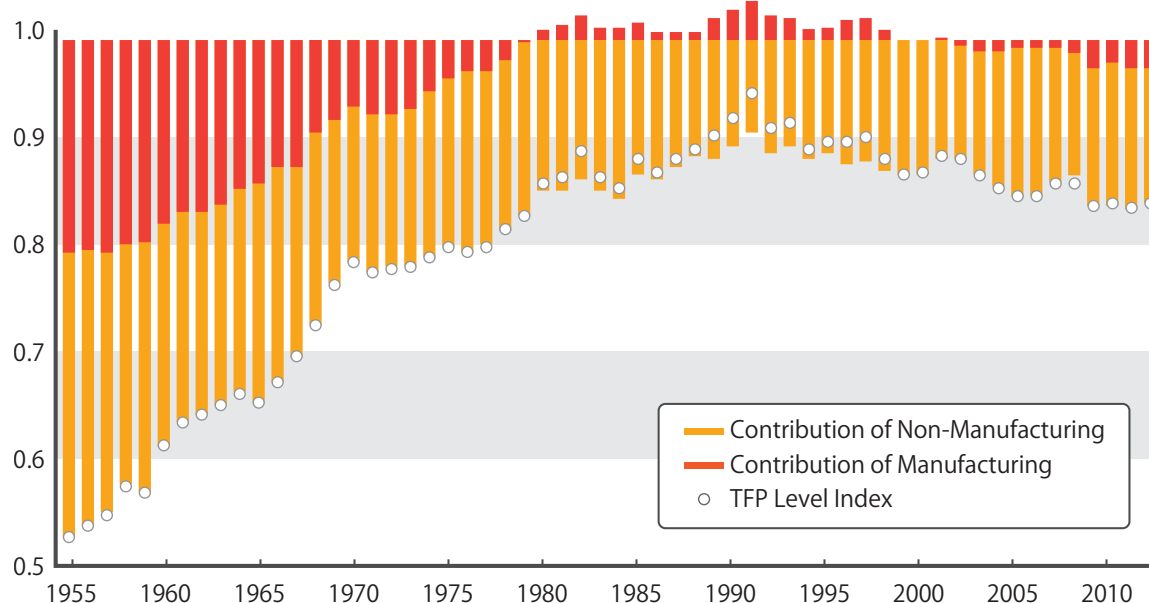
Japan's productivity in the medical care industry has remained constant while the United States has seen a steady decline in productivity since the middle of the 1970s. This is opposite from what is happening in Japan's electricity industry that has had inferior productivity due to high performance. The United States has a technically superior medical care industry, but it is very expensive and TFP has greatly decreased over the long-term. In contrast, Japan has continued to provide good service at a good price. There are problems with how the quality of the medical care industry is measured, but I do not believe that they impact these trends.

— **What is the difference between research you have done in the past and this research?**

Research on productivity gaps between the United States and Japan began in the 1980s. The base model was devised by Professor Jorgenson, Keio University Professor Masahiro Kuroda, and Mieko Nishimizu who later served as vice president of the World Bank, and then was later improved upon. At the time, PLI was measured by taking amounts obtained from trade statistics and calculating the per unit price from quantity, however, this is unstable and there are limits to comprehensive analysis. With the hybrid approach, nothing could be learned in detail unless you meticulously calculated price differences for each good.

In 2007, Professor Jorgenson and I analyzed productivity gaps between the United States and Japan. At the time, we estimated the PLI benchmark estimate for 1990. With this research, we updated this value with the 2005 benchmark estimate.

Figure 2: Changes in TFP Gaps between the United States and Japan (1955–2012)



Globalization has spread greatly compared to 1990, so in looking at the relationship between the United States and Japan, the PPP system is constructed while considering the impact of the price of imports from China, Germany, etc.

Furthermore, what is unique about our recent research is that we calculated productivity gap by incorporating research and development (R&D) into capital input. Each industry engages in production by investing in capital services, such as R&D, but until now, it had been handled as an intermediate good. This concept was incorporated into the new system of national accounting (2008SNA), the international statistical standard for national accounts. Japan will switch over to using the new system as of the end of 2016, but we developed our own estimates using the latest data on R&D expenditures. As a result, all of the graphs, such as Figure 2, will shift up a little, and the time when Japan's manufacturing industry will catch up to the United States will be moved up. This means that the United States has been investing more in R&D capital and Japan has been producing efficiently with less input.

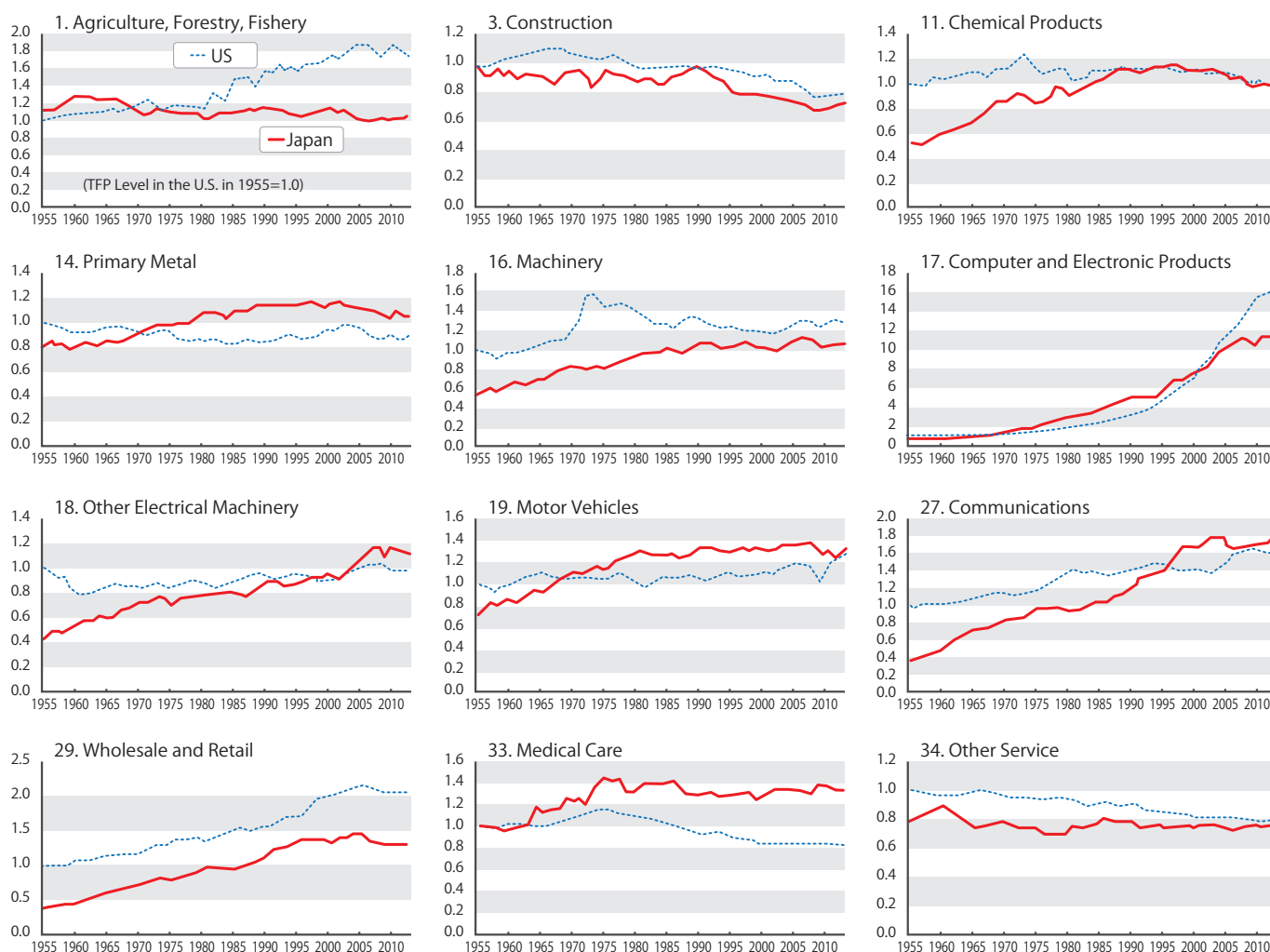
— What are the policy implications of this research?

The productivity gaps in each industry not only impact trade

competitiveness but also Japan's mid and long-term economic growth. Japan's productivity in industries that have been protected from international competition, such as agriculture and fisheries, electricity, wholesale/retail, etc., is remarkably inferior. And, if we consider the weight in terms of Japan's economy, the service industry, such as the wholesale/retail industry, contributes greatly and is an important area that should be given attention in order to improve economic efficiency. This type of systematic measurement enables us to identify not only the sources of Japan's inefficiency and price competitiveness but also the factors by product for each industry. It will serve as a kind of map or X-ray to determine strategies for economic growth.

If we look at input price, Japan's cheapest factor is still labor. Long-term economic stagnation forced wages down, but Japan's largest advantage in price competitiveness is labor service that is more than 30% cheaper. I think this will create new opportunities for competition for Japan's manufacturing industry, such as by attracting overseas manufacturers to begin production in Japan utilizing the high-quality labor. I think it's important that industries that still have room for improvement in terms of production efficiency take advantage of the TPP to move forward with reforms.

Figure 3: Changes in TFP Gap between the United States and Japan in Selected Industries (1955–2012)



Roles of Wholesalers in Transaction Networks

Yukiko Saito

Senior Fellow, RIETI

New light is being shed on the role of wholesalers in transaction networks. Wholesalers have a long history, and there is a certain concept of what their role is, but there has been little empirical research conducted using data. RIETI Senior Fellow Yukiko Saito, whose research field covers spatial economies, has conducted research on this issue using network analysis methods. Results have shown that wholesalers play an important role in reducing transaction costs and geographically expanding trading networks. It is expected that network data analyses, which have seen a breakthrough due to wholesaler research, will be leveraged for actual policy planning, such as regional policy.



Profile

Yukiko Saito is a senior fellow at RIETI. After receiving her Ph.D. in physics from the University of Tokyo, she became a researcher (a senior associate, afterward) at the Fujitsu Research Institute from 2002 to 2012. She joined RIETI in 2012. Her recent works include: “Geographical Spread of Interfirm Transaction Networks and the Great East Japan Earthquake,” in *The Economics of Interfirm Networks*, Springer Publishing, 2015; “Production Networks, Geography and Firm Performance,” (with A. B. Bernard and A. Moxnes), NBER Working Paper No. 21082, April 2015; “Labor Income Inequality in Japanese Corporations and Employee Health: Evidence from Japanese Health Insurance Society Data,” (with T. Kouno), *Problems and Perspectives in Management*, Vol. 10, Issue 4, December 2012, pp. 49-56; “Strong Customer/Supplier Relationships: A key to enterprise growth in Japan,” (with I. Uesugi) in *High Growth Enterprises: What governments can do to make a difference*, OECD Studies on SMEs and Entrepreneurship, OECD Publishing, 2010.

— When you wrote your paper, what was the perspective from which you approached the role of wholesalers?

When a firm is engaging in economic activities, the relationship with suppliers and customers in the supply chain plays a vital role in determining its performance. Our research has so far covered the structure of inter-firm transaction networks, geographical expansion of the network, shock propagation of the Great East Japan Earthquake through the network, and their relationship to firm performance. We focused on the wholesalers because we assume that they played a vital role in constructing

efficient networks that link firms.

Due to transaction costs partly caused by geographical factors, there appeared to be some significance to the fact that wholesalers do business with firms with long transaction distances, and that they play a vital role when engaging in business with various firms. That’s why we have tried to conduct research on the subject.

Keio University Associate Professors Yukako Ono, a co-author of the paper and an expert on industrial organizations, and

Toshihiro Okubo, another co-author and an expert on international trade, both had the same awareness of the issues so we decided to work together.

— **What do you know about transaction networks from previous research, and what progress have you made regarding research on wholesalers?**

There has been progress in research on wholesalers in the field of international trade. From firm-level analysis, it is found that firms engaging in direct exporting have extremely high productivity. In addition, firms that export indirectly via a wholesaler have the second highest productivity and firms with low productivity only deal with local companies. Such differences in trading networks between firms with different productivity have been examined in previous literature.

Using a wholesaler enables many firms to participate in trade. And, since wholesalers intermediate in a multitude of transactions, they are able to accumulate various types of information. This is the reason to use wholesalers when a firm is trying to enter a market with high costs. Therefore, there was a discussion on the role of wholesalers from the perspective of international trade. The next question was what happens when we go domestic? There has been no research on roles that wholesalers play in domestic trading networks, and we didn't know which firms were connected by wholesalers.

— **What method did you use to analyze the role of wholesalers? Could you tell us about the data that you used for your research and the method by which you analyzed it?**

We used firm-level transaction data from Tokyo Shoko Research Ltd. (TSR). Japan has a unique dataset of transaction network with about four million transactions for about 800,000 firms that tell us not only which firms are trading with whom, but also which firms are trading indirectly with whom. There are many types of wholesalers, including those that are direct partners of retailers, but in our research, we only focused on those that link manufacturing (MFG) firms to other MFG ones.

In order to compare MFG firms that engage in direct transactions with those that engage in indirect transactions, we have constructed a database, which redesigned TSR transaction data, by capturing an average value from information on the firms with which MFG sellers were trying to connect via wholesalers for these indirect transactions. Similarly, we also considered the average attributes of firms in terms of what firms MFG buyers were trying to purchase from via wholesalers (Table 1). We then used regression analyses to examine the characteristics of MFG firms which are using wholesalers, for example, whether large firms use wholesalers, and whether firms in agglomerations use wholesalers. In addition, comparing distance between wholesalers and MFG firms with distance between MFG firms, how the distance changes by using the wholesalers is analyzed. In other words, we analyzed two things: who is using wholesalers, and what is the distance relationship.

Table 1: Data for Direct Transactions and Indirect Transactions

When selling (Sample 1)

	MFG firms		Direct transaction partner		Indirect transaction partner
Direct transaction	MFG sellers	→	MFG buyers		
Indirect transaction	MFG sellers	→	Wholesalers	→	MFG buyers (Average)

When selling (Sample 2)

	MFG firms		Direct transaction partner		Indirect transaction partner
Direct transaction	MFG buyers	←	MFG sellers		
Indirect transaction	MFG buyers	←	Wholesalers	←	MFG sellers (Average)

— **What have you learned from your research?**

The first thing we have learned is that there is an opposite relationship between purchasing and selling when it comes to who is using wholesalers (Table 2). The larger the firm, the more of a tendency there is to use a wholesaler when selling. The previous discussion in international trade literature tells us that small companies are likely to use wholesalers, but our findings indicate that when they sell, large companies use wholesalers. In contrast, we have also learned that small companies use wholesalers when they purchase. So, we now see that there is a big difference between purchasing and selling.

Table 2: Wholesaler Use (transaction-link level regression analysis)

	Probability of wholesaler use	
	When selling (Sample 1)	When selling (Sample 2)
Firm size (sellers)	+	+
Sellers' density of area	+	+
Firm size (buyers)	–	–
Buyers' density of area	–	–

All variables are significant at a critical p-value of 1%

Also when looking at whether the region is an agglomeration area or not (density of area in the table), we found that when MFG sellers located in agglomerations use wholesalers, but when MFG buyers are located in non-agglomerations, they use wholesalers. We saw the following concept: large MFG firms in agglomerations will deliver goods to small MFG firms in the non-agglomerations via a wholesaler.

To put it specifically, for the most part, compared with large MFG firms that engage in the mass production of general products, smaller MFG firms tend to produce more specific products that only they have the ability to produce. In this case, large firms will purchase these specific products from each small firm without going through a wholesaler. On the other hand, when large firms sell they use a wholesaler to improve distribution. Small firms use wholesalers to purchase products in non-agglomerations.

The second thing we have learned is from a distance analysis. Compared with MFG firms that do business directly, our findings showed that wholesalers were located close to MFG buyers and far from MFG sellers. We can interpret these results as follows: when a small firm makes a purchase, trust with the customer, such as whether or not they can actually pay the bill, is necessary. So, for a wholesaler, being close to small regional firms that are purchasing is beneficial because they can ascertain the firm's solvency. These wholesalers then purchase goods from the large cities and distribute them in the regions. This is how wholesalers function.

— With depopulation in rural areas and urban concentration, the movement to make distribution more rational and efficient has accelerated. What do you think the future roles of wholesalers will be?

With the bipolarization of rural and urban areas, there are costs such as those for search and monitoring caused by geographical factors. In this regard, wholesalers can help overcome geographic costs. By using a wholesaler when trading overseas, costs that depend on geographical factors can be reduced. Similarly, although small rural firms cannot directly access firms in large cities, a wholesaler can serve as an intermediate between them. I think wholesalers will serve as important hubs for rural areas because they can help overcome these geographical factors.

Distribution will become more efficient through online direct trading, but I think wholesalers will still play a necessary role. Rural wholesalers are expected to play an important role, since the ability of small rural firms to pay can be monitored, and also they can be provided a credit by using a wholesaler. For small rural firms that are not very solvent, wholesalers play an important role in terms of regional finance. While regional financial institutions serve to match trading firms, wholesalers have a profound knowledge of the commercial market because many of them were originally manufacturers. Since such kind of people is acting as wholesalers, they can match business partners better. For rural areas, I think wholesalers play a different role than rural financial institutions.

— Based on your research, could you give us policy recommendations with regard to regional economic policy?

Wholesalers play an important role as local infrastructure that can match firms that are distant from each other. I think it's important to introduce policies in light of this relationship.

I cannot suggest a detailed policy, but regions can be viewed as networks. And, in addition to the role that wholesalers play in the region, they also serve as a network for linking the region to parties outside the region. If this is understood, then which firms are important can be seen. For example, there may be a firm that is not performing well, but given the propagation, it may be seen that the firm is actually an important core element to the region if it were to become removed. When the conditions in the region are examined, it is important to examine the region as a network, in addition to investigating each factor. More importantly,

policies should be introduced after ascertaining what the assets of the region are.

Within the regional policies of the Small and Medium Enterprise Agency of the Ministry of Economy, Trade and Industry, there is a movement to construct a system for ascertaining transaction networks that can be viewed publicly by employees of local governments. There is a gradual movement to encourage local governments to create various policies in preparation for some sort of a great impact to the region, such as an earthquake disaster, by using this network to investigate what risks will occur and where. This movement proposes using network data not just for research and analyses, but in the field and on the job in order to make policy planning.

The role of the firm can be re-realized by looking at the data. Vague concepts can now be analyzed statistically. I think we should use empirical analyses to conduct more and more research that can produce detailed implications.

— Are there any research issues that you weren't able to touch on in this paper, and do you have any future research plans?

I would like to investigate the role of wholesalers by using data that are a little more multifaceted. I predict that wholesalers function to provide trust, so I would like to analyze this issue further by combining with credit sales and credit purchasing data.

There are wholesalers that link companies in large cities, and those that link large firms. Wholesalers play the role of overcoming geographical factors, but there also are wholesalers that serve to support transactions with a variety of partners and transactions with many partners. I think there are various roles that wholesalers play, such as serving with roles unrelated to distance, and I would like to conduct more multifaceted research.

I would also like to look at regions more as networks without limiting the scope to just wholesalers. I think there are various hubs in addition to wholesalers. In addition to transaction hubs, there may be regional network hubs in the sense that they create knowledge, which is partially served by universities. Various types of networks create advantages for each region. I would like to analyze these types of trading networks and knowledge spillover networks.

We also have to consider the effect of agglomeration when examining regional networks. The effects of agglomeration include reduced transaction costs, the promotion of the knowledge spillover, and the sharing of workers. And, looking deeper into how these effects work within the region and how they are linked to improved productivity will help identify implications that can revitalize regions. I would like to shed more light on this agglomeration effect mechanism. I think it would be interesting to treat regions as networks, and consider networks outside the region upon understanding this agglomeration effect mechanism in order to identify policy implications.

Entrepreneurship and Aging

Naoko Matsuda

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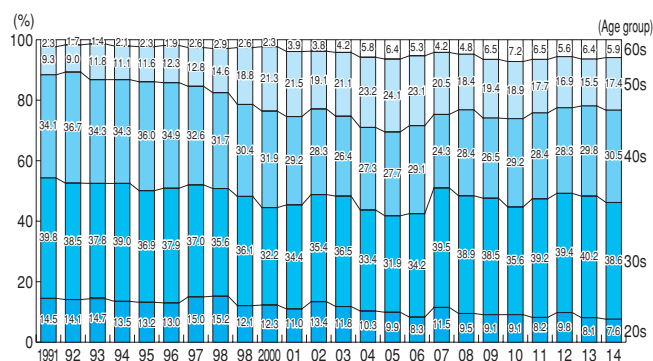


Is entrepreneurship a privilege reserved for the young?

People tend to consider entrepreneurship as a privilege reserved exclusively for the young. Hiroshi Mikitani was 31 years old when he started up Rakuten, Inc., while Shigenobu Nagamori founded Nidec Corporation at the age of 28.

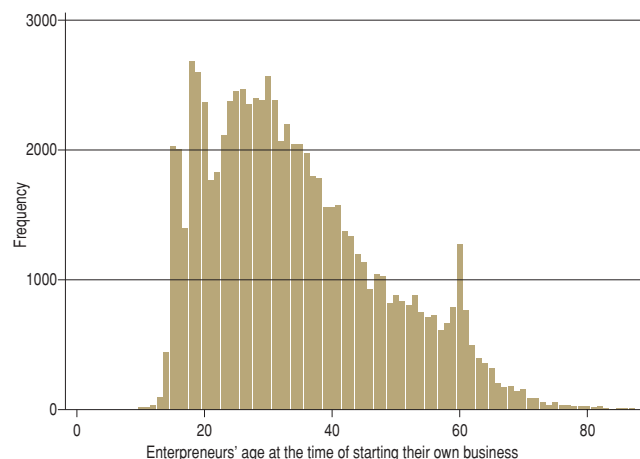
However, a review of data reveals otherwise. The average age of Japanese entrepreneurs who started up their business in 2013 was 42.1 years old, approximately three years older than it was 20 years ago. Furthermore, the proportion of those 50 years old or above has been on the rise as shown in Figure 1 (Japan Finance Corporation 2014). Thus, entrepreneurship is not necessarily a privilege reserved for the young.

Figure 1: Changes in the Average Age of Japanese Entrepreneurs Starting Their Own Business over the Past 24 Years



Furthermore, Figure 2 shows that while those starting their own business in their 20s and 30s are the largest in number, those around age 60 represent—albeit, smaller—the peak.

Figure 2: Distribution of Entrepreneurs by Age at the Time of Starting Their Own Business



*Created by the author based on data from the 2012 Employment Status Survey conducted by the Ministry of Internal Affairs and Communications.

Economic model of entrepreneurship

How can the relationship between entrepreneurship and age be explained in economics? Individuals choose between starting their own business or being employed by comparing how much they would be able to earn as a result of each choice, given their age at the time (Evans & Jovanovic, 1989).

Lévesque & Minniti (2006) proposed a model of a utility function which can be optimized by age. The function is composed from income earned by running a business or working for others and benefits derived from leisure activities. Furthermore, according to them, older people also take into consideration whether to start their own business under severe time constraint, since doing so requires a certain amount of time. There is also a lag before the business can provide a sufficient and stable income to the founders.

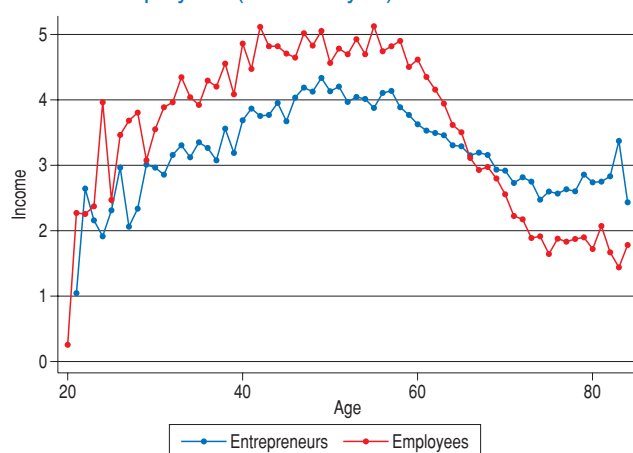
Starting a business at an older age means lower expected future income on average, thus senior entrepreneurship will not pay off.

Is that true? Let's take a look at another set of data on entrepreneurial activities in Japan.

Entrepreneurship in Japan and changes in income

Figure 3, in which the horizontal axis represents age and the vertical axis measures income, plots the average annual income by age for entrepreneurs (Note) and employees. The blue line is for entrepreneurs and the red line for employees. We can see that the average annual income for entrepreneurs is lower than that for employees from ages 20 to around 65. However, the income gap begins to shrink after age 50. The average income for entrepreneurs outstrips that for employees when they reach around age 65, and the gap gradually expands thereafter.

Figure 3: Average Annual Income for Entrepreneurs and Employees (in million yen)



*Created by the author based on data from the 2012 Employment Status Survey conducted by the Ministry of Internal Affairs and Communications.

Figure 3 provides a good picture of a typical income structure and employment patterns in Japan, showing that employees see their income plateau after age 50 followed by a significant decrease in income at age 65. What is important here, however, is that the longer they continue to work, the more income the entrepreneurs will be able to earn relative to their employed counterparts. There is no retirement age for entrepreneurs. If they can continue to work into old age, their decision to start a business will pay off.

Although more precise calculations should be made separately, a review of the graph suggests that those who start their own business at age 55 would be able to make up for the decrease in income in the initial years if they continue to work until around age 70. Furthermore, if we assume that people work until age 75, the amount of expected cumulative future income for those who start a business at age 50 is same as that for those who do not.

What should be noted here is that the average annual income for employees in the graph is the average annual income for those with jobs. That is, the average annual income for employees age 65 or above is not pension income but wage income earned by some form of employment. Given the current reality of Japan's

labor market where there is little demand for workers age 60 or above, employees inevitably experience a sharp drop in income after age 60. In contrast, entrepreneurs' income after age 60 follows a relatively gentle downward slope, unaffected by retirement age and supply-demand conditions in the labor market.

Senior entrepreneur model

Furthermore, income is not the only incentive for starting a business. Based on income data in the United States and Japan, Hamilton (2000) and Okamuro & Ikeuchi (2014) note that the choice of starting a business cannot be fully explained without taking non-pecuniary benefits into account. Some people choose to start their own business because they want to utilize their skills or set their own schedule. Those incentives also affect entrepreneurial activities by seniors.

Entrepreneurship is not a privilege exclusively reserved for the youth. Going forward, it is hoped that elderly people—those who are filled with energy and passion—will play an active role as entrepreneurs, along with their younger peers, by taking advantage of their seasoned experience. By setting a successful example in Japan, a country that is most advanced in terms of population aging, those entrepreneurs may become a model for their peers in other countries.

Note

“Entrepreneurs” referred to here are defined as those who continue to operate their own business for three years or more, regardless of whether their business is incorporated or not. Those who started their own business in the past but are currently working for others are not included.

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Trade Policy Ver. 2.0: WTO, TPP, and beyond

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Negotiations for the Trans-Pacific Partnership Agreement (TPP), which is Japan's foremost important trade policy issue at the moment, have just passed a crucial stage, with the deal successfully reached on October 5, 2015 in Atlanta. Now that what remain are the finalization of legal texts and the signing thereof by the 12 member countries, we have sufficient motivation to start shaping next-generation trade policy, which I will refer to as "Trade Policy ver. 2.0" hereinafter in this article.

Trade policy geared toward the establishment of joint hegemony in view of the increasingly multipolar world

Trade Policy ver. 2.0 should be developed and implemented based on the new reality of international politics in an increasingly multipolar world by departing from the conventional mindset centered on the international trade regime that has its roots in the postwar Cold War structure. More specifically, we need to consider the following two phenomena: 1) the retreat of the Western world led by the United States and the rise of emerging countries, and 2) the rise of non-governmental organizations (NGOs) and the relativization of national sovereignty. On the back of their rapid economic growth, emerging countries such as China and India are increasing their influence on international politics, whereas the influence of developed countries is in relative decline. The Doha round of negotiations at the World Trade Organization (WTO) have been dragging on far too long, and negotiators have yet to find a clue to its successful conclusion. Likewise, other multilateral negotiations, whether on climate change or on nuclear non-proliferation and disarmament, are having difficulty reaching agreement. My understanding is that the end of Pax Americana is the root cause of these phenomena. An international order can be maintained only when a hegemon or a single nation state that has overwhelming political power backed by coercion or authority exercises its leadership (hegemonic stability theory), and the stability of the international system diminishes as the power of the hegemon declines. Pursuing a new, multilateral international regime by disregarding these fundamental factors and keeping the conventional mindset would not lead us to a successful end. We have to wait for the rise of a new overwhelmingly dominant power or seek to restore the international order through the establishment of joint hegemony by a group of mutually trusting countries. Since the first option is not realistic, we have no choice but to pursue the second one.

Hegemonic stability theory and the possibility of establishing hegemony based on authority

Here, I would like to briefly review strands of theory for the conceptualization of international politics (in particular, international relations theories in the United States). Realism is the most widely accepted classical version of theory on the conceptualization of international politics. In particular, its latest version, which assumes that the primary goal of nation states is to ensure their survival in the anarchic world, is called "neorealism." Realism is based on the principle of a balance of power, and thus, according to its view, the era of the U.S.-led unipolar world immediately after the Cold War should have witnessed the formation of an anti-U.S. alliance by non-hegemonic nation states. However, as the reality turned out otherwise, this strand of theory was criticized for being unable to explain what happened in the immediate post-Cold War period. While being a realist himself, Robert Gilpin detaches himself from the theory of balance of power and instead advocates the theory of hegemonic stability, insisting that a hegemon has both the motivation and capabilities to build and manage an international order from a long-term viewpoint and hence that the unipolarity of the United States would lead to the stability of the international order. The validity of this thinking is now widely accepted as the end of the Cold War did not result in a collapse of the alliance of Western nations, and a significant number of cases of multilateralism in practice are observed on the economic front.

However, the theory of hegemonic stability is not without problems. Since its starting point is the realist assumption that the world is in anarchy, or the assumption of non-existence of international authority, it is unable to explain, for example, why the liberal international regime is being maintained in the multipolar world of the early 21st century, i.e., even after the military and economic power of the United States declined

relative to that of other countries. Against this backdrop, some liberals such as Joseph Nye and John Ikenberry modified Gilpin's theory of hegemonic stability to present a new vision of an international order. Rather than looking solely at hard power or coercion as the source of hegemonic leadership, they explicitly recognize a form of hegemony in which non-hegemonic nations agree on the presence of hegemony by acknowledging the authority of the hegemon, which in turn serves as an anchor for the stability of the international order, particularly, a multilateral one. Both Gilpin and Ikenberry assume that the presence of a hegemon leads to the stability of the existing international order, and thus support the view that the relative decline of the power or authority of the United States as seen today poses a challenge to the current multilateral regime.

For Japan, a non-hegemonic nation, the liberal vision that considers a multilateral international order as being established by a constitutional agreement between a hegemon and non-hegemons is preferable, for instance, as compared to the realist vision that considers an international order as being formed decisively through a military power game among great powers. Furthermore, based on the liberal vision under which not only coercion but also authority backed by thoughts and norms can be a source of hegemonic power, even a small military power can play a part in establishing joint hegemony.

Of course, all of these theories are no more than models. Still, when shared widely by many people and built substantially into the process of establishing their cognitive framework, such models would definitely affect human behavior in reality. Therefore, it may be of interest for Japan to accumulate supporting evidence to help establish liberal multilateralism as the dominant cognitive framework, while at the same time preparing itself for a possible turn of events—such as those in the area of national security—based on realism.

This brings us to the next question of what kind of authority Japan will be able to obtain. I believe that the key to Trade Policy ver. 2.0 is hidden in this question.

Trade policy for quality-oriented economic development geared toward obtaining authority

As aforementioned, Trade Policy ver. 2.0 should be developed and implemented with an eye to establishing joint hegemony. In doing so, there is one crucial factor that must be taken into account, namely, the current reality of the international community, where there are growing calls for a greater focus on the quality of economic development—such as sustainability and inclusiveness—reflecting the increasing significance of social issues such as the environment, human rights, labor, natural disasters, and public health relative to that of economic growth. The increasing influence of NGOs observed today also corresponds to the above-described phenomenon. Such social problems are also economic issues because failure to address them properly could hamper the sound operation of the highly globalized world economy. In other words, a quality-oriented

holistic policy approach encompassing both economic and social issues is needed. International economic policies must be adjusted to align with the concept of quality-oriented economic development. In order to solve global social problems and achieve common good on a global scale, we should introduce new thoughts, create new norms, and implement trade policy designed to ensure that the benefits of the globalized economy will be truly shared by as many people as possible across the world. Japan has a long history of addressing various social problems by developing new products, technologies, and services, for instance, in the area of environment management and energy conservation. Given such experience, there is tremendous potential for Japan to obtain authority in the international community through its trade policy.

Japan has been promoting economic integration in the Asia-Pacific region, defining it as a high priority issue on the trade policy agenda. It is my understanding that the idea of Trade Policy ver. 2.0, which is designed to realize quality-oriented economic development, would translate into what I call “holistic connectivity” when applied to the policy field of regional economic integration. The concept of holistic connectivity is to pursue regional economic integration in substance and in all aspects, departing from the current narrowly-focused approach to promote integration only in two aspects, namely, institutional connectivity and physical connectivity. Indeed, economic integration in the Asia-Pacific region, which is the world's growth center, has been deepening through these two channels, with institutional connectivity strengthened through free trade agreements (FTAs) and physical connectivity through the promotion of infrastructure construction. And there are some areas where the development of connectivity has yet to take place as is the case for Central Asia, the primary target of China's “*yidai yilu* (one belt, one road)” initiative. In general, however, value chains developed primarily by Japanese companies across the Asia-Pacific region have already reached the point where further development can be achieved only by securing connectivity of greater sophistication. It is necessary to capture a broad scope of phenomena that could cause a disruption to the operation of value chains and take necessary measures to reduce the incidence of such a phenomenon and minimize the cost incurred in the event of its occurrence. Failure to properly address any of the aforementioned social problems—i.e., those in the area of human rights, labor, natural disasters, etc.—could undermine the smooth operation of value chains in the Asia-Pacific region. In such an event, the benefits of institutional and/or physical connectivity—no matter how improved—would be diminished.

Accordingly, Trade Policy ver. 2.0 should comprise a mix of measures designed to realize quality-oriented economic development, and through the promotion of this policy, Japan should seek to establish joint hegemony with its trusted partners so as to ensure political stability in the Asia-Pacific region and across the world. This is how I envision Japan's post-TPP trade policy.

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Service Trade and Productivity

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World trade in services is increasing rapidly but micro evidence remains scarce. This column employs firm data from Japan to argue that service-exporting firms are more productive than non-exporting firms and goods-exporting firms. Information asymmetry, transportation costs, differences in institutions, cultures, and languages increase the fixed costs of service trade. Therefore, highly productive firms are more likely to self-select into service trade.

According to WTO statistics, world exports of services grew by 8% per annum between 1980–2013, exceeding the exports of goods (which grew at 7% per annum). The ratio of service exports relative to goods exports increased from 18% in 1980 to 24.7% in 2013. In 2013, Japan ranked fourth in export of goods and eighth in export of services, with annual growth rate of service exports (6.4% from 1980 to 2013) exceeding that of goods exports (5.3%). These numbers indicate a relatively low presence of Japan in the world service trade.

However, studies on service trade have lagged far behind those on goods trade, mainly due to the limited availability of good statistical data (see Francois and Hoekman 2010 for a survey). Particularly, empirical evidence on service trade using firm- or establishment-level micro data has been scarce.

As most services are distinguished by simultaneity of production and consumption, the transaction usually requires proximity between suppliers and consumers. Thus, the geographical distance matters more than in the transaction of goods. Cultural and institutional distances may impose an additional burden on service trade. In contrast to goods trade where tariffs and non-tariff barriers (NTBs) have been substantially reduced through multilateral and bilateral trade negotiations, a large number of services are still subject to public regulations. Given that regulations and standards imposed on services differ markedly by country, the barrier to crossing a national border is higher for service trade than it is for goods trade (e.g., Miroudot et al. 2013).

Firm heterogeneity in service trade

During the last decade, theoretical international trade studies on the heterogeneity of firms have advanced rapidly. Paralleling the theoretical development, a large number of empirical studies on international trade and foreign direct investments using firm- or establishment-level data has been accumulated. These studies demonstrated that there is a strong positive relationship between globalizing activity and the productivity of the firms (see Greenaway and Kneller 2007, Wagner 2007, 2012, Bernard et al. 2012 for surveys).

However, the vast majority of the extant empirical studies that employ micro data have dealt solely with goods trade. The rare firm-level studies that conduct a separate analysis of service trade include Breinlich and Criscuolo (2011) on UK firms, Kelle et al. (2013) on German firms, Haller et al. (2014) on firms in four EU countries, and Malchow-Møller et al. (forthcoming) on Belgian firms. However, all of these studies analyze firms in EU countries. In particular, UK firms are exceptional in the world service trade because the UK is the third largest service exporting country, and the ratio of service exports relative to goods exports is very high (54.0% in 2013). Other studies mentioned herein also analyze firms in EU countries where goods/services market integration is advanced. From the service trade perspective, these countries differ greatly in economic circumstances from non-EU countries such as Japan or the US.

To deepen our understanding on this issue, we empirically investigated the relationship between service trade and various firm characteristics in comparison with that of goods trade using a large panel data of Japanese firms (see Morikawa 2015 for more detail). The data are from the Basic Survey of Japanese Business Structure and Activities (BSJBBSA) by the Ministry of Economy, Trade and Industry for the period 2009–2012. The Basic Survey is a compilation of representative government statistics on all Japanese firms with 50 or more regular employees engaged in manufacturing, wholesale, retail, and service industries, and approximately 30,000 firms are surveyed every year. We perform a simple regression analysis to explain the total factor productivity (TFP), whereby the dummies for goods/service trading firms are used as key explanatory variables.

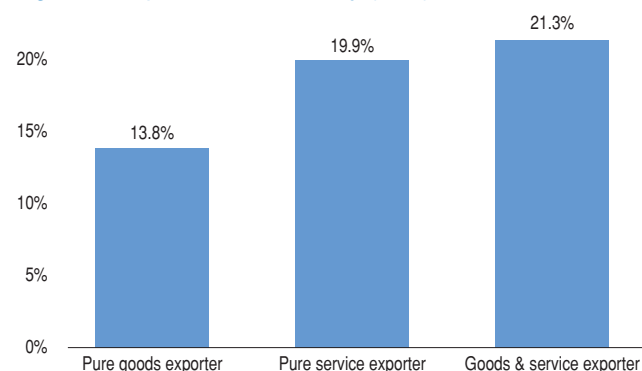
- We hypothesize, first, that the effect of firm productivity on self-selection into international service exports is stronger than the effect on goods exports.
- Our second hypothesis is that the size and productivity of service exporters with non-affiliate firms is higher than those with only affiliate firms and that the difference is more pronounced in service exports than goods exports.

Service exporters' productivity premium

According to our regression results, the TFP level of service exporting firms is significantly higher than that of domestic (non-exporting) firms and goods exporting firms. Exporters' productivity premiums relative to non-exporters are 13.8% for pure goods exporters, 19.9% for pure service exporters, and 21.3% for firms exporting both goods and services (see Figure 1). These results differ from the findings of past studies for EU countries. For example, according to Breinlich and Criscuolo's (2011) study on UK firms, the productivity differences of service exporters and goods exporters are small and statistically insignificant. Haller et al. (2014) find that labor productivity of service exporters in four EU countries is not necessarily higher than that of goods exporters.

- In comparison to EU countries, the development of service trade by Japanese firms is lagging. We interpret the results to suggest that only productive firms can engage in service trade due to geographical, linguistic, and institutional distances from foreign countries.

Figure 1: Exporters' Productivity (TFP) Premium



Notes: The figure is drawn from an OLS regression result using the BSJBSA data for the fiscal years 2009-2012. The reference category is the non-exporting firms. Control variables are firm size (log employees), year dummies, and three-digit industry dummies.

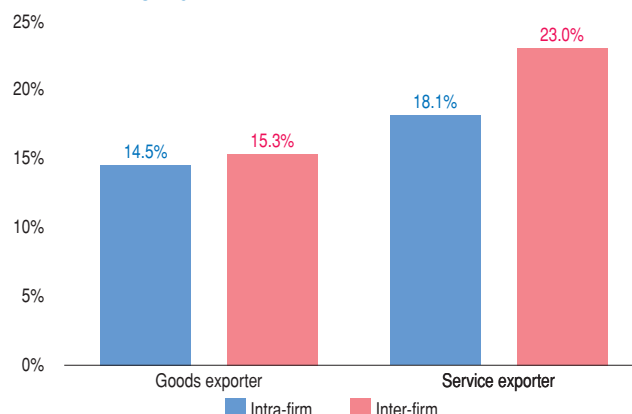
Next, we divide goods/service exporting firms into those that export only to their overseas affiliates (intra-firm exporters) and those that export to non-affiliate firms (inter-firm exporters), and we then investigate the differences in productivity between the subsamples. The TFP of inter-firm service exporters is significantly higher than those firms that export services only to their affiliate firms (see Figure 2).

- This result suggests that highly productive firms tend to self-select into service exporting beyond the boundary of the firms.

Summary and conclusion

To summarize, our findings indicate that fixed costs to initiate service trade exceed those to initiate goods trade. This is possible due to the information asymmetry in evaluating the quality of services, the high transportation costs, and the differences in institutions, cultures, and languages. We conjecture that policies to liberalize and facilitate service trade may play a more important role in globalizing firm activities than do policies for goods trade.

Figure 2: Intra- and Inter-Firm Exporters' Productivity (TFP) Premium



Notes: The figure is drawn from an OLS regression result using the BSJBSA data for the fiscal years 2009-2012. The reference category is the non-exporting firms. Control variables are firm size (log employees), year dummies, and three-digit industry dummies.

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Deflation and Money

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Deflation is a threat to the macroeconomy. Japan had suffered from deflation for more than a decade, and now, Europe is facing it. To combat deflation under the zero interest bound, the Bank of Japan and the European Central Bank have resorted to quantitative easing, or increasing the money supply. This column explores its effectiveness, through the application of novel methods to distinguish signals from noises.

Recent empirical works on micro price dynamics hitherto have uncovered the little known dynamics of micro prices (see Klenow and Malin 2011). A new study of individual prices of goods and services for Japan from January 1980 to June 2013 (Yoshikawa et al. 2015) shows that the frequency of individual price changes and synchronization are not constant but instead are time-varying (Figure 1), while the existing literature routinely assumes otherwise. Moreover, they change in clusters, not simultaneously in the economy as a whole. In this respect, there is a significant gap between observed facts and theory because, in standard theory, changes in money, supposedly the most important macro disturbance, more or less uniformly affect all prices (Klenow and Malin 2011). Examination of the autocorrelations of individual prices (Figure 2) reveals the importance of interdependence of individual prices with leads and lags. We analyzed such lead/lag dynamics of individual prices to find out what are the major macroeconomic variables leading to systemic changes in aggregate prices.

Figure 1) Blue and red colors correspond to changes above certain thresholds, while smaller changes are left as blank. Two months denoted by the left two arrows on the abscissa—the distance from a point to the y-axis, measured parallel to the x-axis—show the months of introduction and the raising of the consumption tax rate (April of 1989 and 1997 respectively), and the third arrow shows the subprime mortgage crisis (September 2008).

Figure 2) The sum of all of the autocorrelations of individual prices (dots) is compared with the colored region of the null hypothesis, obtained by randomly rotating them independently in the time direction such that any interdependency is destroyed.

Signals and “core Consumer Price Index”

In looking at any data, economic or otherwise, it is fairly important to identify what is at their core. Take “air”—noises or “random” fluctuations come from thermal individual motions of molecules, while sounds are collective motions of interacting molecules. If we are to find meaningful signals in the motion of air, we need to identify the latter.

“Core Consumer Price Index” pushed forward by central banks

aims for this, but only with heuristic arguments. A scientific way to identify signals, called the Complex Hilbert Principal Component Analysis and the Rotational Random Simulations were invented—the latter by us—and applied successfully to physics, meteorology, economics (Vodenska et al. 2014) and other areas. Applied to prices, we find that only 26 modes of collective motion among 830 modes are significant signals, which should constitute the new “true core Consumer Price Index.”

Figure 1: Normalized Monthly Price Changes of 75 Imported Price Index, 420 Domestic Corporate Goods Price Index and 335 Consumer Price Index

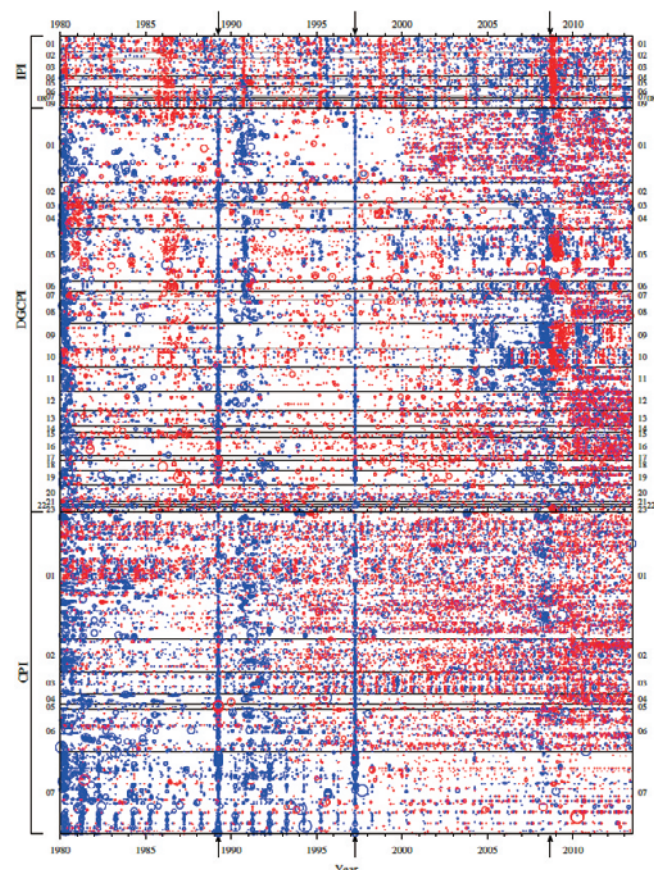
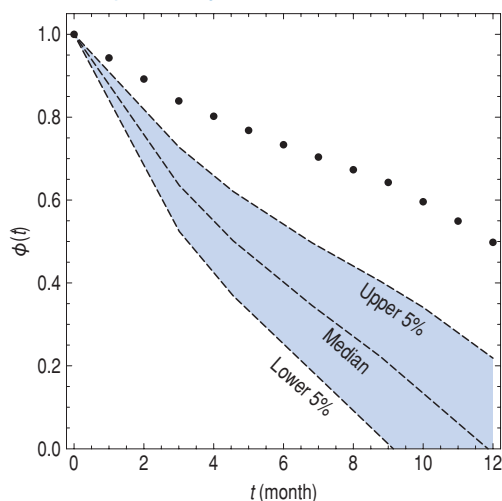


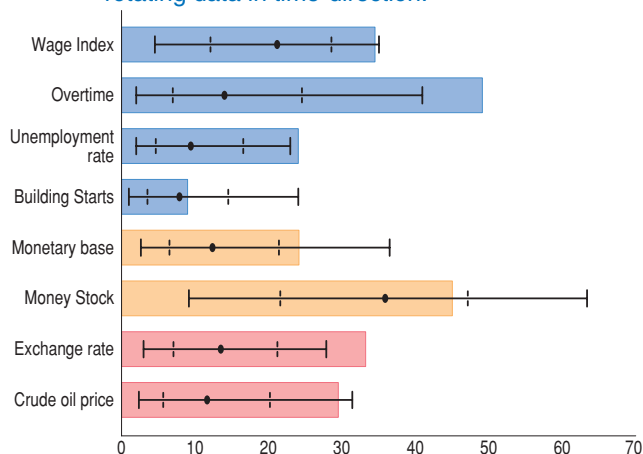
Figure 2: Demonstration of the Statistical Significance for Interdependency of Individual Prices



Macroeconomy and the “true core Consumer Price Index”

Systemic co-movements of micro prices are conditioned strongly by the state of the macroeconomy. Then, which aspects of the macroeconomy are crucial for the price changes? Figure 3 shows the relevant result for the first (most important) comovement mode, showing that only “Overtime” and “Exchange rate (yen/US\$)” have a significant correlation with prices, followed by “Wage Index,” “Unemployment rate,” and “Crude oil price,” but never with “Monetary base” or “Money Stock.”

Figure 3: The absolute values of the correlation coefficients (colored bars) between the first eigenmode and macro variables, compared with their RRS ranges (dots for average and black dashed vertical lines for the 1-sigma ranges and the solid lines for the 2-sigma range). The latter is obtained by randomly and independently rotating data in time-direction.



The second important factor (eigenmode) generating the systemic fluctuations of individual prices is significantly correlated with the exchange rate and crude oil price. In an open economy such as that of Japan, changes in the exchange rate and oil price affect the import prices without lags, and, in turn, modify the costs of energy and materials used in the production of a wide range of goods and services. With lags, many prices follow suit. The case study of the post-Plaza Accord period when the yen sharply appreciated from 240 per US dollar to 120 amply demonstrates the presence of this mechanism.

The results for all of the other 24 statistically significant modes are similar: changes in the aggregate price index, namely, deflation or inflation, consistent with systemic fluctuations of micro prices, are not directly linked to changes in money supply such as M2 and base money.

The reason is that, except for when it is at the irregular zero interest rate bound, monetary policy is interest rate policy ubiquitously that makes the money supply endogenous, or even passive as Black (1986, p. 539) observes.

The result is consistent with the old Phillips curve, which states that in booms, both quantities and prices change upward while the converse holds true in recessions. Note that the Phillips curve is not a mere correlation between price and quantity. It is not the case that quantities change because prices do not change. Rather, prices change responding positively to changes in quantities. Causality runs from the level of real output to changes in prices. The Phillips curve, a macro equation, emerges from aggregation of heterogeneous markets (Lipsey 1960, Tobin 1972, Okun 1981). The bottom line is that the aggregate price index rises when the average level of real economic activity as represented by overtime hours worked or the unemployment rate goes up.

Conclusion

Deflation and inflation are macroeconomic phenomena. However, we cannot fully understand them by only exploring macro data because the behavior of aggregate prices such as the Consumer Price Index depends crucially on the interactions of micro prices. On the other hand, all in all, the results we obtained have confirmed that aggregate prices significantly change, either upward or downward, as the level of real output changes. The correlation between aggregate prices and money, on the other hand, is not significant. The major factors affecting aggregate prices other than the level of real economic activity are the exchange rate and the prices of raw materials represented by the price of oil. Japan suffered from deflation for more than a decade beginning at the end of the last century. More recently, Europe faces a threat of deflation. Our analysis suggests that it is difficult to combat deflation only by expanding the money supply.

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Under the third medium-term plan (fiscal 2011 to fiscal 2015), RIETI makes it its mission to undertake theoretical and empirical research to create a grand design for putting the Japanese economy on a growth path and solidifying sustainable growth in the future. To this end, we will proceed with research activity by invariably bearing in mind the Three Priority Viewpoints on economic and industrial policies (see below). Based on the Three Priority Viewpoints, nine research programs have been established. With each research program representing a set of interrelated policies, altogether they will cover a broad range of policy areas. Several research projects are to be conducted under these nine research programs.

From the following pages, we will introduce to you our leading research findings from the nine research programs.

The Three Priority Viewpoints on economic and industrial policies:

- 1) Incorporating growth of the world economy;
- 2) Developing new growth areas;
- 3) Responding to changes in society and creating new economic and social systems for sustainable growth.

Research Programs

- 01** International Trade and Investment
- 02** International Macroeconomics
- 03** Regional Economies
- 04** Technology and Innovation
- 05** Raising Industrial and Firm Productivity
- 06** New Industrial Policy
- 07** Human Capital
- 08** Social Security, Taxation, and Public Finance
- 09** Policy History and Policy Assessment



International Trade and Investment



Program Director: Ryuhei Wakasugi, Faculty Fellow, RIETI

The growth of Japan's economy is inseparable from changes in the global economy. This program, focusing on the relationship between the globalization of firms (i.e., exports and overseas production) and growth of the Japanese economy, will study R&D and innovation of globalizing firms, international technology transfer, employment, and industrial clusters from theoretical and empirical perspectives, together with studying international trade and investment rules (i.e., the WTO and regional trade agreements) empirically and from both legal and institutional perspectives. Furthermore, it also will study the impacts on firms and industries of the external shock of the Great East Japan Earthquake, changes in production networks and the structure of trade following recovery, and the effects of restrictive energy and material supply on structural changes in the Japanese economy.

Introduction of Discussion Papers (DPs) published under this program

DP Title

Trade Policy Preferences and Cross-Regional Differences: Evidence from individual-level data of Japan

Author(s)	Banri Ito (Harvard University / Senshu University) Hiroshi Mukunoki (Gakushuin University) Eiichi Tomiura (RIETI) Ryuhei Wakasugi (RIETI)
Release date	January 2015
Research project	Empirical Analysis of Trade Policy Preferences at the Individual Level in Japan
DP No.	15-E-003
URL	http://www.rieti.go.jp/jp/publications/dp/15e003.pdf

This study examines the determinants of individuals' preferences for trade policies, using micro data of 10,000 individuals

selected from Japan's general population. In particular, we focus on the role of regional factors that influence trade policy preferences, considering the fact that there is a significant difference in preferences among regions. The results of the binary choice model reveal that local characteristics affect people's views on trade policy even after controlling for labor market and non-economic attributes. Specifically, people residing in a region with a high share of agricultural workers are likely to support import restrictions even if they do not engage in agriculture, which is the most protected sector in Japan. Moreover, there is a strong correlation between the probability of supporting the protectionist trade policy and the share of local agricultural workers for people not considering migration, suggesting that inter-regional immobility of workers affects their trade policy preferences.

Figure 1: Predictive Margins of Mobility Dummy Given Agricultural Workers Share

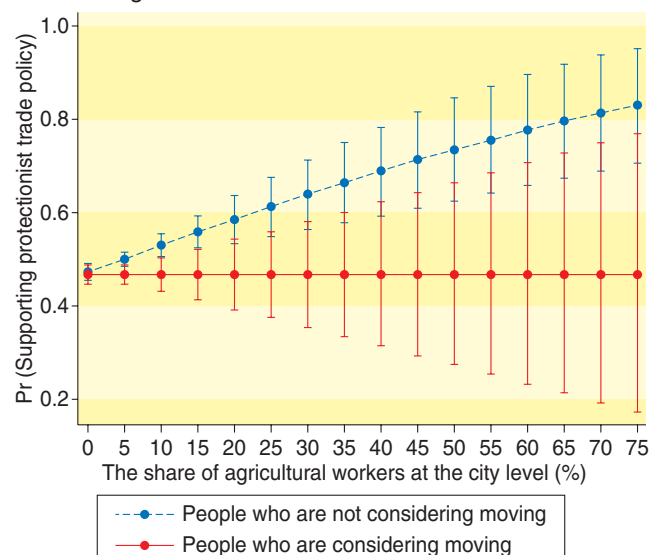
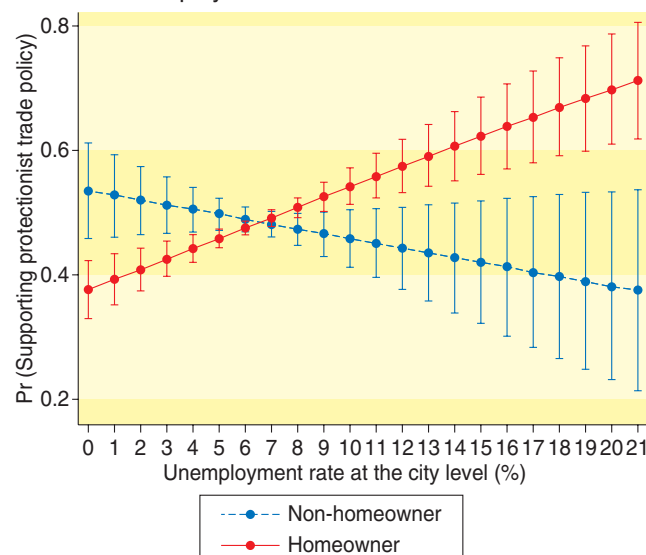


Figure 2: Predictive Margins of Homeowner Dummy Given Unemployment Rate



DP Title

Impacts of Japan's FTAs on Trade: The cases of FTAs with Malaysia, Thailand, and Indonesia

Author(s)	Mitsuyo Ando (Keio University) Shujiro Urata (RIETI)
Release date	August 2015
Research project	Economic Impacts of Free Trade Agreements: The case of Japan
DP No.	15-E-104
URL	http://www.rieti.go.jp/jp/publications/dp/15e104.pdf

This paper examines if Japan's free trade agreements (FTAs) with Malaysia, Thailand, and Indonesia contributed to an expansion of bilateral trade between Japan and its FTA partners, which is the expectation. The results of our analysis do not show significantly positive impacts when the analysis is conducted using aggregate/sectoral trade data. However, expected positive impacts are found for some products, whose tariffs are reduced under FTAs, when the analysis is conducted by using disaggregated trade data at the Harmonized System (HS) 4-digit level. There are also some cases, where expected positive impacts are not found, even where tariff reduction under FTAs was substantial. The authors argue that several factors such as a lack of knowledge of FTAs by traders, high cost of using FTAs, i.e., high cost of obtaining the certificate of origin, and existence of preferential tariff treatment as part of development policies such as investment incentive schemes may be responsible for the lack of positive response of FTAs on trade.

Table: Progress of Japan's FTAs

(as of February 2015)

	Negotiation started	Signed	Effective
Singapore	Jan 2001	Jan 2002	Nov 2002
Mexico	Nov 2002	Sep 2004	Apr 2005
Malaysia	Jan 2004	Dec 2005	Jul 2006
Chile	Feb 2006	Mar 2007	Sep 2007
Thailand	Feb 2004	Apr 2007	Nov 2007
Indonesia	Jul 2005	Aug 2007	Jul 2008
Brunei	Jun 2006	Jun 2007	Jul 2008
ASEAN	Apr 2005	Apr 2008	Dec 2008 (Singapore, Vietnam, Laos, Myanmar) Jan 2009 (Brunei), Feb 2009 (Malaysia), Jun 2009 (Thailand), Dec 2009 (Cambodia), Jul 2010 (Philippines)
Philippines	Feb 2004	Sep 2006	Dec 2008
Switzerland	May 2007	Feb 2009	Sep 2009
Vietnam	Feb 2007	Dec 2008	Oct 2009
India	Jan 2007	Feb 2011	Aug 2011
Peru	May 2009	May 2011	Mar 2012
Australia	Apr 2007	Jul 2014	Jan 2015
Mongolia	Jun 2012	Feb 2015	
Canada	Nov 2012		
Colombia	Dec 2012		
China, Korea	Mar 2013		
EU	Apr 2013		
RCEP	May 2013		
TPP	Mar 2010	(joined since Jul 2013)	
Turkey	Dec 2014		
(Korea)	Dec 2003	(negotiation stopped)	
(GCC)	Sep 2006		

Source: Ministry of Foreign Affairs, Japan.

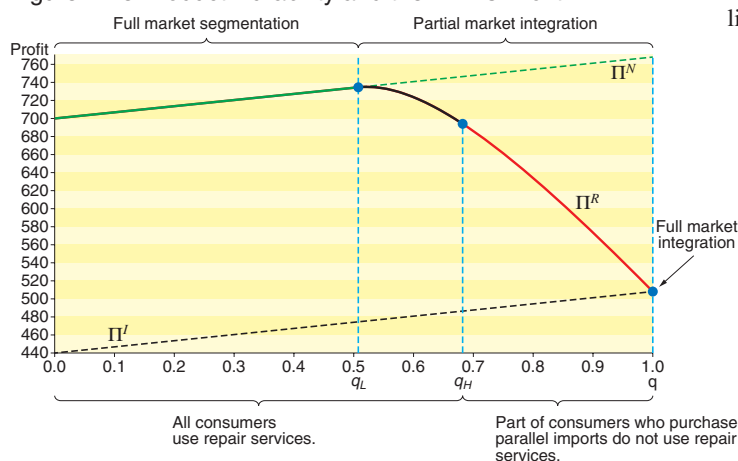
DP Title

Parallel Imports and Repair Services

Author(s)	Jota Ishikawa (RIETI) Hodaka Morita (University of New South Wales) Hiroshi Mukunoki (Gakushuin University)
Release date	May 2015
Research project	Trade and Industrial Policies in a Complex World Economy
DP No.	15-E-060
URL	http://www.rieti.go.jp/jp/publications/dp/15e060.pdf

This study investigates the effect of parallel imports when the producer of a durable good may refuse to provide repair and maintenance services for parallel imported units, or charge higher prices for those services. By doing so, the producer is able to weaken intra-brand competition and reduce the degree of market integration, thereby mitigating the negative effect of parallel imports on profits. Although the lower degree of market integration increases the producer's profit, it does not always mean that the producer wants to improve the durability of the product. If the producer invests in improving the durability of the good, the service discrimination against the parallel imported units could lower the durability of the product. In this case, consumers in the importing country may suffer by permitting parallel imports, and the negative effect is amplified by trade liberalization.

Figure: The Product Durability and the Firm's Profit



International Macroeconomics

Program Director: Takatoshi Ito, Faculty Fellow, RIETI



Amid rapidly advancing globalization, there is a need to consider how the Japanese economy should take on growth in emerging markets and realize balanced, sustainable growth within Asia. In addition to studying institutional infrastructures such as the role of a currency basket in the Asia region, this program also will analyze various issues related to exchange-rate pass-through and the choice of invoice currencies from both macroeconomic and corporate-level perspectives. Furthermore, it also will advance research spanning fields such as international trade and macroeconomics, international finance, macro finance, corporate foreign-exchange risk management, and corporate finance. We will endeavor to propose ideal macroeconomic policies for fiscal reconstruction, particularly their influence on exchange rates, as well as analyze the long-term deflationary mechanism and explore ways of overcoming it.

Introduction of Discussion Papers (DPs) published under this program

DP Title

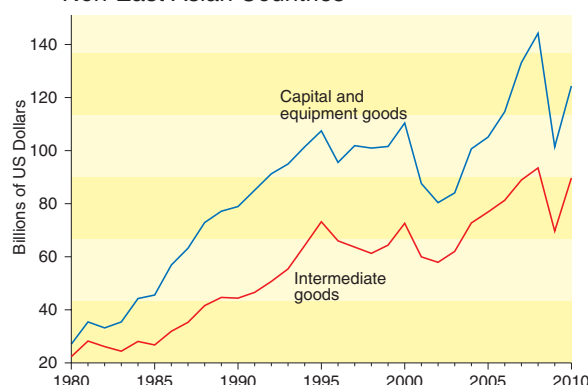
Understanding Japan's Capital Goods Exports

Author(s)	Willem Thorbecke (RIETI)
Release date	April 2015
Research project	East Asian Production Networks, Trade, Exchange Rates, and Global Imbalances
DP No.	15-E-044
URL	http://www.rieti.go.jp/jp/publications/dp/15e044.pdf

Japan is the leading supplier of sophisticated capital goods to East Asian countries. These goods embody advanced technologies and facilitate learning and productivity growth. Capital goods also represent 30%-40% of Japan's exports. This paper investigates the determinants of these exports. Results from dynamic ordinary least squares estimation indicate that exports depend on exchange rates, income in the importing countries, and downstream countries' exports to the rest of the world. Results from out-of-sample forecasts indicate that Japanese exports crashed in 2009 because of the perfect storm of

a yen appreciation, a global slowdown, and a collapse in Asia's exports.

Figure: The Value of Japanese Capital and Equipment Goods Exports and Intermediate Goods Exports to Non-East Asian Countries



Note: Non-East Asian importers include all countries except China, Indonesia, Malaysia, Singapore, South Korea, Taiwan, and Thailand.
Source: CEPII-Chelem Database

DP Title

Industry-specific Real Effective Exchange Rates in Asia

Author(s)	Kiyotaka Sato (Yokohama National University) Junko Shimizu (Gakushuin University) Nagendra Shrestha (Yokohama National University) Shajuan Zhang (Yokohama National University)
Release date	March 2015
Research project	Research on Currency Baskets
DP No.	15-E-036
URL	http://www.rieti.go.jp/jp/publications/dp/15e036.pdf

This study constructs a monthly series of industry-specific real effective exchange rates (I-REERs) based on the producer price indices of nine Asian economies from 2001 to 2014. To check

the usefulness of the I-REERs as a measurement of international price competitiveness, we calculated the aggregated I-REER (Avg-I-REER) and compared it with the REER published by the Bank for International Settlements (BIS-REER). We found that in some Asian economies, the Avg-I-REER exhibited different movements from the BIS-REER due to the differences in the underlying prices and weights used for the data construction. We also conducted a panel analysis to investigate the effect of both the Avg-I-REER and BIS-REER on real exports in the nine Asian economies. It was revealed that an appreciation of the Avg-I-REER has a negative and significant impact on real exports, whereas that of the BIS-REER has a positive and insignificant influence on real exports. Even the "aggregated" I-REER shows a greater advantage when used for measuring the export price competitiveness relative to the conventional REERs.

DP Title

Choice of Invoice Currency in Global Production and Sales Networks: The case of Japanese overseas subsidiaries

Author(s)	Takatoshi Ito (RIETI) Satoshi Koibuchi (Chuo University) Kiyotaka Sato (Yokohama National University) Junko Shimizu (Gakushuin University)
Release date	July 2015
Research project	Research on Exchange Rate Pass-Through
DP No.	15-E-080
URL	http://www.rieti.go.jp/jp/publications/dp/15e080.pdf

This paper empirically investigates the invoicing decision in trade of Japanese production subsidiaries, using the novel dataset obtained from a questionnaire survey. We sent out questionnaires

in August 2010 to all Japanese subsidiaries located in North America, Europe, and Asia to collect product-level information on the choice of invoice currency in importing intermediate inputs and exporting production goods along the production chain. By conducting a logit estimation, we demonstrate that the invoicing choice of intra-firm trade along the production chain depends on the destination of the subsidiary's exports as well as the degree of exchange rate volatility. Subsidiaries tend to choose yen invoicing only in exports of intermediate inputs to Japan, while major currencies such as the U.S. dollar and, to a lesser extent, the euro are typically chosen in the subsidiary's exports of finished goods to other countries. To accommodate the currency mismatch caused by the choice of foreign currency invoicing, Japanese subsidiaries need efficient management of the exchange rate risk in the face of large fluctuations of the local currency.

Table: Share of Invoice Currency in Manufacturing Subsidiaries' Imports of Intermediate Inputs and Exports by Location

Location of Subsidiaries:	Number of Respondents	(a) Yen (%)	(b) US Dollar (%)	(c) Euro (%)	(d) Renminbi (%)	(e) Local Currency (%)	(f) Others (%)
1a) Imports of Intermediate Inputs from Japan:							
Asia	422	54.0	40.3	0.4	1.0	3.9	0.4
China	110	48.1	47.7	0.0	3.8	0.0	0.5
Thailand	95	62.4	25.4	1.5	0.0	10.7	0.1
Oceania	9	39.4	29.4	0.6	0.0	29.4	1.1
North America	146	19.1	79.8	0.0	0.0	0.9	0.1
United States	135	18.6	80.3	0.0	0.0	0.9	0.1
Europe	87	50.5	9.0	36.4	0.0	2.9	1.1
Euro Area	52	52.9	10.7	36.4	0.0	0.0	0.0
United Kingdom	12	48.3	0.9	31.1	0.0	19.7	0.0
1b) Imports of Intermediate Inputs from Other Countries (excl. Japan):							
Asia	282	6.1	79.0	5.6	1.0	4.9	3.5
China	49	4.0	77.5	11.9	3.8	0.5	2.2
Thailand	59	6.7	79.6	6.4	0.0	4.9	2.4
Oceania	12	0.0	67.7	17.7	0.0	12.9	1.8
North America	89	1.6	87.8	6.9	0.0	2.3	1.3
United States	76	1.0	86.8	8.0	0.0	2.7	1.5
Europe	75	4.9	40.7	46.5	0.0	5.8	2.0
Euro Area	40	2.4	48.7	45.0	0.0	3.3	0.7
United Kingdom	10	0.0	39.0	36.0	0.0	15.0	10.0
2a) Exports to Japan:							
Asia	313	46.0	48.0	0.2	0.2	5.6	0.0
China	93	47.8	50.8	0.7	0.8	0.0	0.0
Thailand	71	54.6	27.4	0.0	0.0	18.0	0.0
Oceania	11	9.5	53.2	0.0	0.0	37.3	0.0
North America	56	13.1	86.0	0.0	0.0	0.9	0.0
United States	52	12.2	86.9	0.0	0.0	1.0	0.0
Europe	31	17.0	14.5	61.7	0.0	6.8	0.0
Euro Area	22	11.2	17.7	71.1	0.0	0.0	0.0
United Kingdom	3	0.0	0.0	60.0	0.0	40.0	0.0
2b) Exports to Other Countries (excl. Japan):							
Asia	323	8.6	77.5	3.2	0.7	6.6	3.4
China	68	8.4	76.5	4.6	2.3	1.4	6.8
Thailand	81	7.7	73.3	5.0	0.0	12.0	2.0
Oceania	15	0.0	47.8	2.7	0.0	40.7	8.9
North America	100	0.2	90.6	5.4	0.0	1.4	2.5
United States	89	0.2	90.5	6.1	0.0	0.4	2.8
Europe	75	2.8	20.6	68.6	0.1	5.7	2.2
Euro Area	43	2.4	26.9	68.8	0.0	0.0	2.0
United Kingdom	11	2.7	11.4	66.8	0.0	19.1	0.0

Regional Economies

Program Director: Nobuaki Hamaguchi, Faculty Fellow, RIETI



This program will study urban, rural, and industrial growth viewing the regions of Japan in the context of the global economy, and using this to develop policy recommendations and other outputs. Specifically, it will analyze, both theoretically and empirically, matters such as formation of domestic and international regional systems through market mechanisms, the mechanisms of enterprise clustering, and the relationship between economic growth and urbanization, considering regional policies that would be desirable from the perspectives of national economic growth and maximizing policy effects, and also researching the optimal sizes of regional blocs and communities. Additional study will look at the ideal forms of the supply chains of Japanese firms and the recovery of areas affected by the Great East Japan Earthquake. Furthermore, the ideal management strategies for outstanding small and medium-sized enterprises utilizing regional resources and other advantages will be studied as well.

Introduction of Discussion Papers (DPs) published under this program

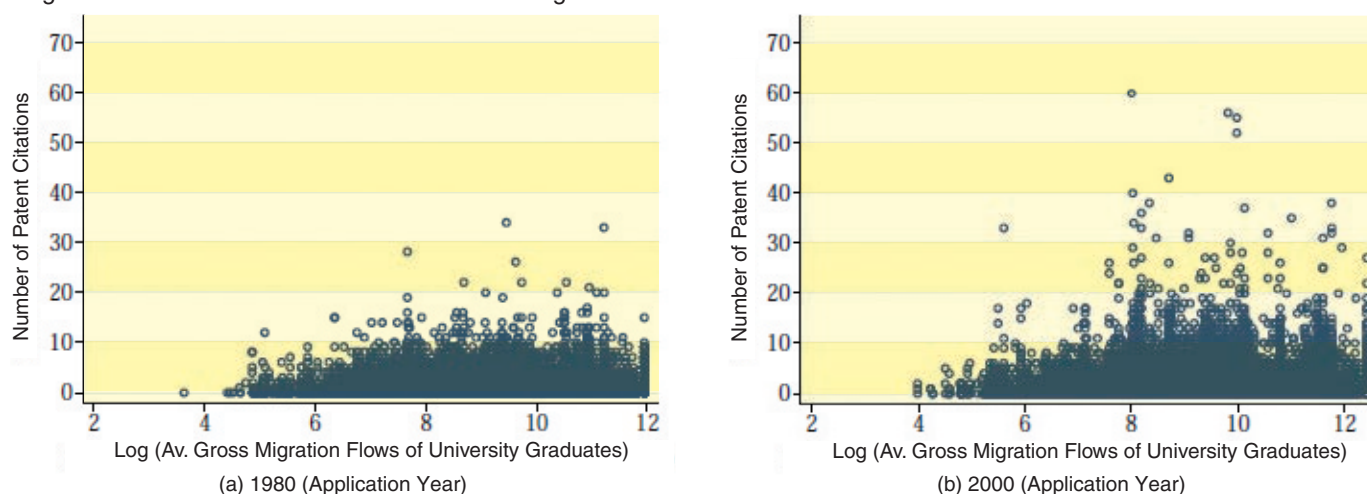
DP Title

Fresh Brain Power and Quality of Innovation in Cities: Evidence from the Japanese patent database

Author(s)	Nobuaki Hamaguchi (RIETI) Keisuke Kondo (RIETI)
Release date	September 2015
Research project	Restoration from Earthquake Damage and Growth Strategies of the Japanese Regional Economy
DP No.	15-E-108
URL	http://www.rieti.go.jp/jp/publications/dp/15e108.pdf

This paper analyzes whether freshness of knowledge increases the quality of innovation by using the Japanese patent database. Agglomeration is generally believed to foster the creation of new knowledge through knowledge spillover, such as active face-to-face communication; however, expansion of common knowledge within research communities may discourage high-quality innovation. Taking this into consideration, we attempt to examine the turnover effects of knowledge workers across cities by looking at the interregional migration of university graduates. We find that the quality of innovation as measured by the number of patent citations tends to be higher in cities with bigger migration flows of university graduates. More importantly, we find that metabolizing agglomeration plays an important role for high-quality innovative activities.

Figure: Number of Patent Citations and Gross Migration Flows



Note: Created by the authors from the IIP Patent Database.

DP Title

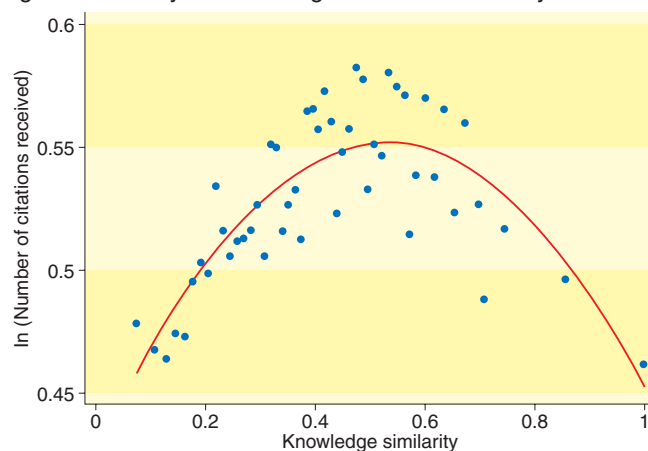
Innovation and Collaboration Patterns between Research Establishments

Author(s)	Hiroyasu Inoue (University of Hyogo) Kentaro Nakajima (Tohoku University) Yukiko Saito (RIETI)
Release date	April 2015
Research project	Geospatial Networks and Spillover Effects in Inter-organizational Economic Activities
DP No.	15-E-049
URL	http://www.rieti.go.jp/publications/dp/15e049.pdf

This study empirically investigates the determinants of the productivity of knowledge creation by collaboration. By using

the Japanese patent database, we extracted establishment-level patent co-invention information and found the following results. First, we find an inverse U-shaped pattern in the relationship between the similarity of knowledge stocks and the quality of patents. That is, moderate diversity in knowledge stocks between establishments rather than extreme similarity or extreme diversity is important for knowledge creation. Second, focusing on the differences in technology class, we find an inverse U-shaped pattern except in the lowest technologies, and the peak of the inverse U-shape is larger in the higher technologies. This implies that the common knowledge between establishments is important in the higher technologies. Third, we find that the physical distance between collaborating establishments has a negative effect on the quality of patents.

Figure: Similarity of Knowledge Stocks and Quality of Patents



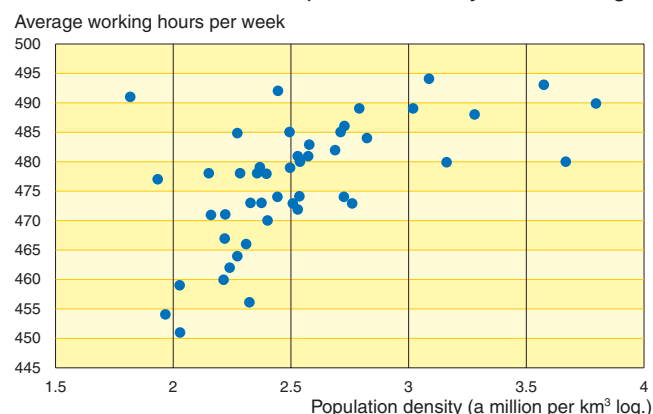
DP Title

Elastic Labor Supply and Agglomeration

Author(s)	Takanori Ago (Senshu University) Tadashi Morita (Kindai University) Takatoshi Tabuchi (RIETI) Kazuhiro Yamamoto (Osaka University)
Release date	October 2015
Research project	Spatial Economic Analysis on Regional Growth
DP No.	15-E-118
URL	http://www.rieti.go.jp/publications/dp/15e118.pdf

This study analyzes the interplay between the agglomeration of economic activities and interregional differences in working hours, which are typically longer in large cities, as normally they are more developed than small cities. For this purpose, we develop a two-region model with endogenous labor supply. Although we assume a symmetric distribution of immobile workers, the symmetric equilibrium breaks in the sense that firms may agglomerate when trade costs are intermediate and labor supply is elastic. We also show that the price index is always lower, while labor supply, per capita income, real wages, and welfare are always higher in the more agglomerated region.

Figure: Correlation between Population Density and Working Hours



Technology and Innovation

Program Director: Sadao Nagaoka, Faculty Fellow, RIETI



The sources of innovation are the creation of new knowledge and its exploitation to solve real-world problems. This program will develop original data on innovation process with a view toward improving our understanding of such processes, including the surveys of inventors in Japan, North America, and Europe, and will conduct analysis from a global perspective so as to contribute to evidence-based policy formation conducive to technology development and innovation. Specifically, the program will analyze a broad range of issues, such as an assessment of intellectual property systems such as patent systems, knowledge transfer and mobility of people across organizations, university-industry cooperation, technical standards for innovation, collaboration in innovation, corporate organization and industrial organization to promote innovation, and international comparison of entrepreneurship.

Introduction of Discussion Papers (DPs) published under this program

DP Title

**Monetary Incentives for Corporate Inventors:
Intrinsic motivation, project selection and inventive
performance**

Author(s)	Koichiro Onishi (Osaka Institute of Technology) Hideo Owan (RIETI) Sadao Nagaoka (RIETI)
Release date	June 2015
Research project	Research on Innovation Process and its Institutional Infrastructure
DP No.	15-E-071
URL	http://www.rieti.go.jp/jp/publications/dp/15e071.pdf

Using novel panel data on Japanese inventors, we investigate how monetary incentives affect corporate inventors' behavior and performance, as well as how they interact with the strength of intrinsic motivation. In order to identify the effects, we exploit inventors' responses to a policy change in Japan in the early

2000s that forced firms to strengthen monetary incentives for inventors. Our major findings are as follows: (1) while introducing or increasing revenue-based payments is associated with a small improvement in patent quality, such schemes significantly decrease the use of science in research and development (R&D) projects; (2) the above positive effect of revenue-based payment on patent quality is smaller and the negative effect on scientific intensity is greater in research areas where risk heterogeneity among potential projects is greater; (3) the strength of intrinsic motivation is significantly associated with the inventor's patent productivity; and (4) strong intrinsic motivation weakens the marginal effect of monetary incentive on inventive productivity, and reinforces the negative effect of monetary incentive on scientific intensity in research areas where risk heterogeneity among potential projects is sufficiently large. The results are consistent with our model predictions and imply that strengthening monetary incentives changes project selection toward less risky and less exploratory ones.

Figure 1: Number of New Implementations of Revenue-based Payments (based on Onishi 2013)

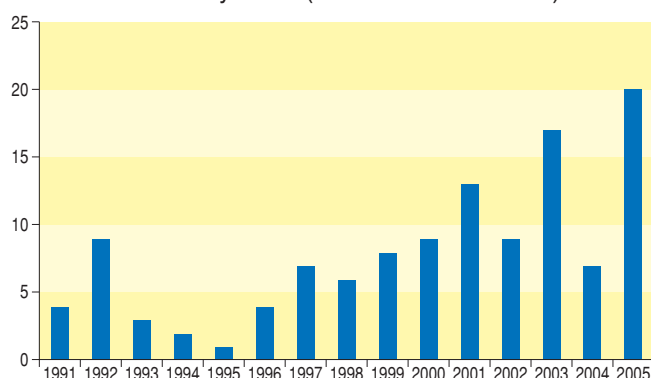
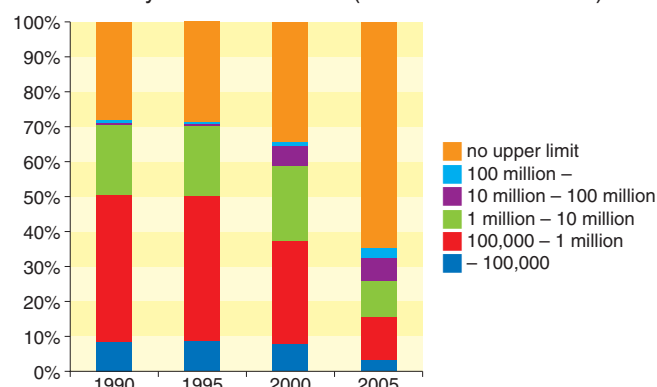


Figure 2: Trends in the Payment Ceilings of Revenue-based Payments Made from (based on Onishi 2013)

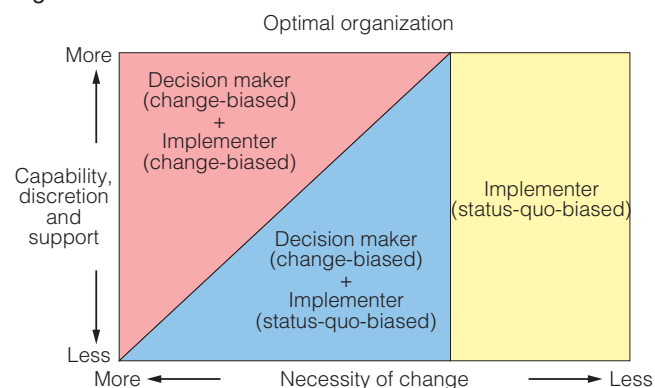


DP Title**Organizing for Change: Preference diversity, effort incentives, and separation of decision and execution**

Author(s)	Hideshi Itoh (RIETI)
Release date	July 2015
Research project	Innovation, Incentives, and Organizations
DP No.	15-E-082
URL	http://www.rieti.go.jp/publications/dp/15e082.pdf

We study the decision process of an organization that faces a problem of choosing between the status quo project (“no change”) and the new project (“change”). The organization consists of a decision maker and an implementer. The implementer first chooses a costly effort to develop a new project. If it is developed, the decision maker formally selects either the status quo project or the new project. Otherwise, only the status quo project is available (and is selected). The implementer then chooses an implementation effort to execute the selected project. Both the decision maker and the implementer have intrinsic and possibly divergent preferences over two projects that are either status-quo-biased (anti-changer) or change-biased (pro-changer). The owner of the organization must choose one of four feasible organizational forms: both status-quo-biased, both change-biased, a status-quo-biased decision maker and a change-biased implementer, and a change-biased decision maker and a status-quo-biased implementer. We

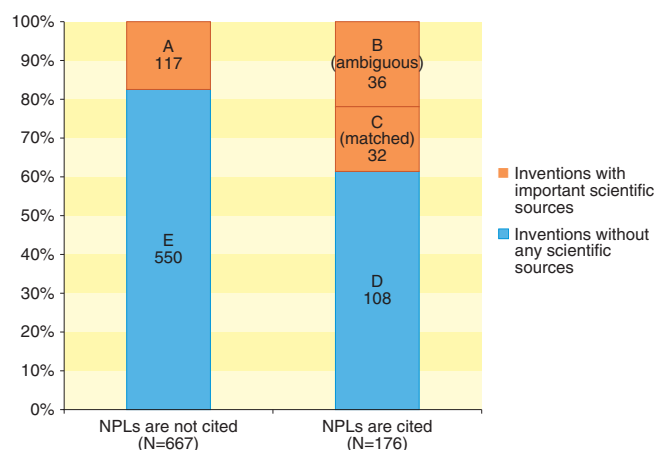
analyze how the organizational form affects the decision maker’s project selection, the implementer’s implementation motive, and his incentive to develop a new project, and solves for the organization optimal for the unbiased owner.

Figure**DP Title****The Use of Science for Inventions and its Identification: Patent level evidence matched with survey**

Author(s)	Sadao Nagaoka (RIETI) Isamu Yamauchi (RIETI)
Release date	August 2015
Research project	Research on Innovation Process and its Institutional Infrastructure
DP No.	15-E-105
URL	http://www.rieti.go.jp/publications/dp/15e105.pdf

While backward citation information disclosed in patent documents is often used for tracing the scientific sources of innovations, it is still poorly understood how well the backward citations trace the actual knowledge flow from science. This paper directly evaluates both the completeness and the noise of the inventor citation information, linking the results of an original inventor survey on scientific sources to the dataset of non-patent literatures (NPLs) revealed in the entire patent document. We find that patent citations to NPLs are not only noisy but also highly incomplete. More important science sources are not necessarily more revealed. However, controlling for the propensity to cite NPLs, our estimation results show that

the revealed NPLs are more likely to predict the existence of important scientific sources when the inventor refers to highly cited scientific literature early after its publication. We also find that the NPLs revealed at the place where an invention is described provide important additional information in identifying science sources.

Figure: Completeness and Noise of the Citation Information

Raising Industrial and Firm Productivity

Program Director: Kyoji Fukao, Faculty Fellow, RIETI



The aim of this program is to measure industry- and firm-level productivity and its determinants for Japan and various East Asian countries and to conduct research on policies aimed at raising productivity. At the industry level, in addition to updating and expanding the Japan Industrial Productivity (JIP) and China Industrial Productivity (CIP) databases in collaboration with Hitotsubashi University, the program will construct an industrial productivity database by prefecture for Japan and examine the impact of the recent earthquake on regional economies and policies for reconstruction. At the firm or establishment level, employing micro-data from government statistics and corporate financial data in Japan and abroad, the program will research the following: productivity differentials between firms, the impact of globalization, how changes in demand affect corporate performance, policies for raising productivity in the service sector, and productivity dynamics from an international perspective—including productivity differentials between Japanese, Chinese, and Korean firms—as well as other related issues.

At the industry and firm level, the program will measure investment in intangible assets such as research and development, software, in-house training, and organizational structure—all of which are important sources of innovation and productivity growth—and will examine the economic effects of such investments.

Introduction of Discussion Papers (DPs) published under this program

DP Title

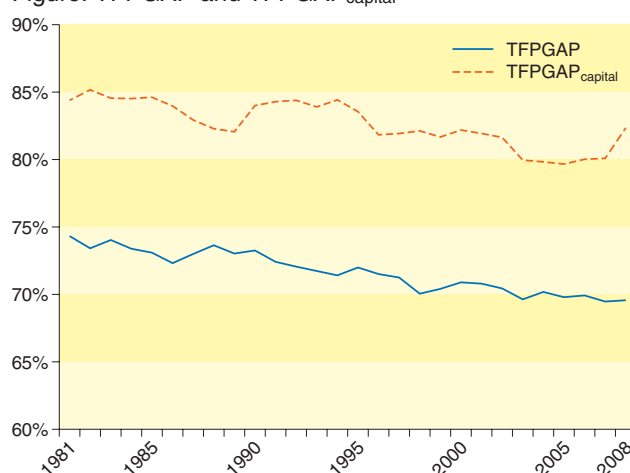
Misallocation and Establishment Dynamics

Author(s)	Kaoru Hosono (Gakushuin University) Miho Takizawa (Toyo University)
Release date	January 2015
Research project	Competitiveness of Japanese Firms: Causes and Effects of the Productivity Dynamics
DP No.	15-E-011
URL	http://www.rieti.go.jp/jp/publications/dp/15e011.pdf

The gap between marginal revenues and marginal costs of inputs (i.e., distortions or wedges) at establishments potentially lower aggregate total factor productivity (TFP) by preventing efficient allocation of resources among incumbents, deterring entry and

exit, and affecting technology choices. We investigate the impacts of distortions on aggregate TFP, entry and exit, and establishment-level productivity growth using a rich dataset of Japanese establishments falling into manufacturing industries. Our main findings are the following. First, if capital and labor were reallocated in Japan to equalize marginal products to the extent observed in the United States, aggregate TFP would increase by 6.2%. Second, the efficient size distribution of establishments that would be realized without any distortions would be more dispersed than the actual one. Third, distortions have a significant impact on entry and exit as well as establishment-level productivity growth. Finally, we investigate the factors of distortions, obtaining evidence that financial constraints result in distortions.

Figure: TFP_{GAP} and TFP_{GAP}_{capital}



DP Title

Industry-level Factor Inputs and TFP and Regional Convergence: 1970-2008

Author(s)	Joji Tokui (RIETI) Tatsuji Makino (Hitotsubashi University) Kyoji Fukao (RIETI)
Release date	July 2015
Research project	Regional-Level Japan Industrial Productivity Database: Database Refinement and Its Analysis
DP No.	15-E-089
URL	http://www.rieti.go.jp/jp/publications/dp/15e089.pdf

Using the Regional-Level Japan Industrial Productivity (R-JIP) Database, we examined prefectural differences in labor productivity from 1970 to 2008 from various angles by looking at prefectural differences in industrial structure and prefectural and industry differences in factor inputs and productivity. First, in section 2, we decomposed prefectural labor productivity differences into the contribution of differences in industrial structure and the contribution of within-industry differences in labor productivity, and further decomposed the latter into the contribution of capital-labor ratio, labor quality, and total factor productivity (TFP). Next, in section 3, we decomposed prefectural differences in productivity and factor inputs into the share effect due to prefectural differences in industrial structure and the within effect due to prefectural differences in productivity or factor intensity within the same industry. Finally, in section 4, we examined which industries make the largest contribution to prefectural differences in productivity and how

they do so—namely, through differences in capital-labor ratio, labor quality, or TFP, and through the share effect or the within effect.

The results of these analyses show that industrial structures among prefectures became increasingly similar over the roughly four decades, and that this greatly contributed to the decline in labor productivity differences overall. In contrast, within-industry differences in labor productivity among prefectures declined only marginally over the same period and therefore hardly contributed to the reduction in prefectural labor productivity differences. The decomposition of within-industry labor productivity differences shows that although such within-industry differences show relatively little change over time, the factors contributing to them did shift considerably. That is, while regional differences in capital-labor ratios decreased substantially, regional within-industry differences in TFP increased. Therefore, the increase in within-industry differences in TFP is the main cause of the recent slowdown of the convergence of regional labor productivity differences. By decomposing the covariance between within-industry TFP differences and labor productivity differences among prefectures into each industry's contribution, we find vital contribution of service industries, especially wholesale and retail trade, and other non-government services, suggesting the important role of these service industries in recent increase of within-industry differences in TFP, and thereby in the recent slowdown of the convergence of regional labor productivity differences.

DP Title

A Half Century of Trans-Pacific Competition: Price level indices and productivity gaps for Japanese and U.S. industries, 1955–2012

Author(s)	Dale W. Jorgenson (Harvard University) Koji Nomura (RIETI) Jon D. Samuels (Bureau of Economic Analysis)
Release date	May 2015
Research project	Evaluating International Competitiveness
DP No.	15-E-054
URL	http://www.rieti.go.jp/jp/publications/dp/15e054.pdf

Trans-Pacific competition between Japanese and U.S. industries has provided powerful incentives for mutually beneficial economic cooperation between Japan and the United States. The benefits would be greatly enhanced by the proposed Trans-Pacific Partnership, an international agreement that would involve Japan, the United States, and 10 additional countries of the Asia-Pacific region. In this paper, we analyze competition between Japanese and U.S. industries in detail over more than a half century. We conclude with a discussion of opportunities for improving productivity performance in both countries.

We first present new estimates of price level indices for Japan and the United States over the period 1955–2012. These indices are key indicators of international competitiveness between the two countries, often expressed as over-valuation or under-valuation of the Japanese yen relative to the U.S. dollar. We provide price level indices for outputs and inputs of 36 industries and for the two economies as a whole. The inputs at the industry level include capital, labor, energy, materials, and services (KLEMS). For an economy as a whole, output is gross domestic product (GDP) and the inputs are capital and labor services.

We use our price level indices to generate new estimates of productivity gaps for the two countries and for individual industries. The productivity gap is an indicator of the efficiency of production. A wide Japan-U.S. productivity gap that existed in 1955 contracted for more than three decades, and Japan came close to parity with the United States in 1991. After the collapse of the “bubble economy” in Japan, the Japan-U.S. productivity gap widened again and only a few industries in Japan retained a productivity advantage over their U.S. counterparts in 2012. We conclude that industries sheltered from international competition offer the greatest opportunities for improvements in productivity performance.

New Industrial Policy

Program Director: Hiroshi Ohashi, Faculty Fellow, RIETI



Leading nations appear to have ventured into the formulation of strategies and policies that promote both their own domestic industries and companies in the global markets. This program will conduct research on formulating industrial policies in the aftermath of the Great East Japan Earthquake with a view toward resolving issues being faced by the Japanese economy. It will take into consideration the roles played by product innovations while also looking into the perspectives of, for example, environmental, energy, and resource policies, competition policy, as well as agricultural policy.

Introduction of Discussion Papers (DPs) published under this program

DP Title

An Airline Merger and its Remedies: JAL-JAS of 2002

Author(s)	Naoshi Doi (Sapporo Gakuin University) Hiroshi Ohashi (RIETI)
Release date	August 2015
Research project	Globalization, Innovation, and Competition Policy
DP No.	15-E-100
URL	http://www.rieti.go.jp/jp/publications/dp/15e100.pdf

This paper investigates the economic impacts of the merger between Japan Airlines (JAL) and Japan Air System (JAS) in

October 2002 and its remedial measures. This paper performs simulation analyses using an estimated structural model in which airlines set both fares and flight frequencies on each route in the domestic market. By comparing supply models, the hypothesis that the merger caused a collusion among airlines is rejected. The marginal-cost estimates for the merging airlines significantly declined primarily through the expansion of its domestic network. The simulation estimates suggest that, although the merger increased the total social surplus for all domestic routes by 6.8%, it increased fares and decreased consumer surplus on the JAL-JAS duopoly routes. This paper also evaluates remedial measures associated with the merger.

Table: The Impacts of the Merger between JAL and JAS

This table simulates counterfactual scenarios in which the JAL-JAS merger did not occur and estimates the economic impacts of the merger by comparing the results of the simulation with the actual data (average from October 2002 to December 2005 about 166 domestic airline routes). In "Average across routes," to investigate airfares and flight frequencies, we divide 166 routes into three types according to competitive situations before the merger. In total, we estimate economic welfare of entire domestic airline routes by comparing the presence or absence of the JAL-JAS merger.				
Average across routes	Airfares	JAL-JAS-ANA competitiveness	-1.0%	(5.0) **
		JAL-JAS duopoly	1.6%	(1.8) ***
		The others	-0.9%	(1.0) ***
	Flight frequencies	JAL-JAS-ANA competitiveness	23.4%	(15.4) ***
		JAL-JAS duopoly	49.7%	(32.6) ***
		The others	10.5%	(18.9) ***
Total	Consumer surplus		4.3%	(2.9) ***
	Profit	JAL-JAS	43.0%	(13.6) ***
		Non-merger airlines	1.0%	(1.4) **
	Social surplus		6.8%	(3.0) ***

Note: Figures in parentheses indicate standard deviation. ***, ** and * indicate 1, 5 and 10% significance respectively.

DP Title**Determinants of Industrial Coagglomeration and Establishment-level Productivity**

Author(s)	Daisuke Fujii (RIETI) Kentaro Nakajima (Tohoku University) Yukiko Saito (RIETI)
Release date	June 2015
Research project	Study on Corporate Finance and Firm Dynamics
DP No.	15-E-077
URL	http://www.rieti.go.jp/jp/publications/dp/15e077.pdf

This paper investigates the relationships between the determinants of industrial coagglomeration and establishment-level productivity. For each pair of industries, we first construct

the degree of coagglomeration and indices for three factors of coagglomeration: inter-firm transactions, knowledge spillover, and labor market pooling. We then examine the correlation between these three factors and the degree of coagglomeration. Overall, inter-firm transactions and labor market pooling are positively correlated with the degree of coagglomeration whereas knowledge spillover has no significant relationship with it. We also find that the determinants of coagglomeration are quite different across industries. Further, we examine the relationships between these factors and establishment-level productivity. We find that the determinants of coagglomeration are not necessarily positively associated with the productivity of establishments.

Table: Frequency Table of Industries that Show Significant Coefficients

(a) Transaction			Productivity estimation	
			Yes	No
Coagglomeration estimation	Yes	Yes	25	89
		No	14	22
(b) Collaboration			Productivity estimation	
			Yes	No
Coagglomeration estimation	Yes	Yes	0	15
		No	28	107
(c) Labor similarity			Productivity estimation	
			Yes	No
Coagglomeration estimation	Yes	Yes	5	39
		No	8	98

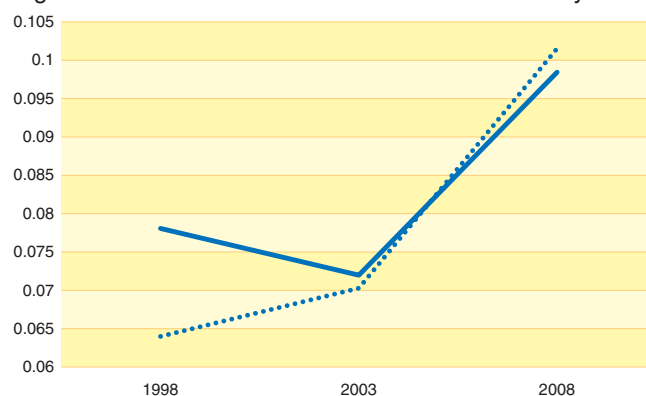
DP Title**Heterogeneous Impact of Real Estate Prices on Firm Investment**

Author(s)	Makoto Hazama (Hitotsubashi University) Iichiro Uesugi (RIETI)
Release date	July 2015
Research project	Study on Corporate Finance and Firm Dynamics
DP No.	15-E-091
URL	http://www.rieti.go.jp/jp/publications/dp/15e091.pdf

Focusing on real estate and other fixed tangible assets, we study how the heterogeneous effects of real estate prices influence real estate investment behavior. Theoretically, expectations of declining real estate prices reduce not only overall fixed tangible investment through a collateral channel but also real estate investment through intertemporal substitution of demand. By employing a unique dataset on firms' land transactions and overall investment in Japan during the period 1997-2006, we examine these predictions and find the following. First, the entire fixed tangible asset investment is positively associated with the growth rate of land prices, which is the evidence for the collateral channel. In contrast, land investment has no statistically significant relationships with land price growth. Second, a decomposition of land investment into land purchases and sales shows that land sales actually decrease when the

growth rate of land prices falls. Third, large firms and firms that acquired land during and shortly after the bubble period tend to reduce land sales. This is consistent with Geltner's (2014) argument that potential sellers of land set their reservation prices at their purchase prices and are reluctant to sell land in the face of a persistent drop in its price.

Figure: Ratio of Unused Land to Total Land Owned by Firms



Note: Bold line is for all the sample firms and dotted line is for firms with 300+ regular workers.

Source: Basic Survey of Corporate Land Ownership by the Ministry of Land, Infrastructure, Transportation, and Tourism.

Human Capital

Program Director: Kotaro Tsuru, Faculty Fellow, RIETI



Amid the rapid aging of Japanese society, intensifying global competition, and recovery from the Great East Japan Earthquake, utilizing its human resources will be critical for Japan, a nation relatively lacking in natural resources, to maintain and strengthen its economic dynamism and increase its growth potential. This program will carry out multifaceted, comprehensive research on measures for strengthening human capital and human resources capabilities, from a full life-cycle perspective including ideal labor market systems to increase worker incentive and ability, early childhood education through higher education, human resources development in employment years, and utilization of elderly human resources.

Introduction of Discussion Papers (DPs) published under this program

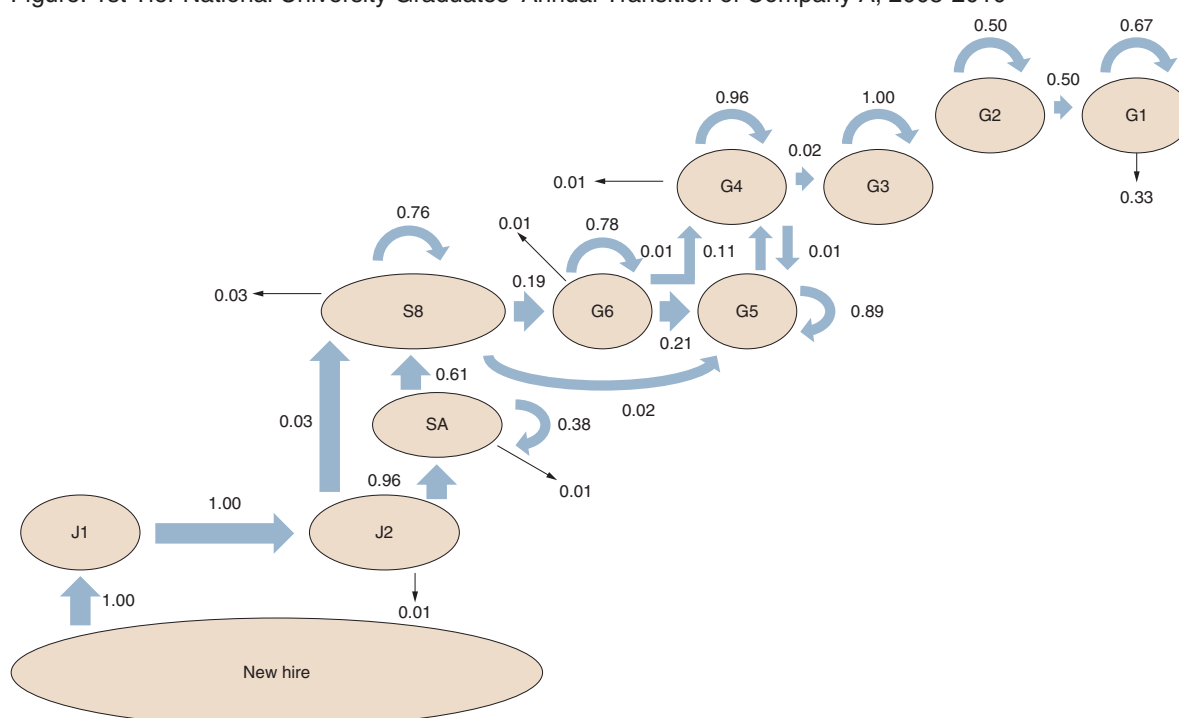
DP Title

University Prestige, Performance Evaluation, and Promotion: Estimating the employer learning model using personnel datasets

Author(s)	Shota Araki (RIETI) Daiji Kawaguchi (RIETI) Yuki Onozuka (Hitotsubashi University / University of Western Ontario)
Release date	March 2015
Research project	Economic Analysis of Human Resource Allocation Mechanisms within the Firm: Insider econometrics using HR data
DP No.	15-E-027
URL	http://www.rieti.go.jp/jp/publications/dp/15e027.pdf

The employer learning model postulates that employers form employees' prior ability distribution from educational credentials and update its distribution by observing workers' performance on the job. This paper estimates the employer learning model for university-graduate white-collar workers using personnel datasets from two large manufacturers that contain rich information, including the name of the university from which the worker graduated, annual performance evaluations, and position in the promotion ladder. The estimates indicate that employers learn workers' ability relatively quickly through observing their performance on the job. The initial expectation errors on ability decline by a half in about three to four years in the two companies. Companies promote graduates of elite schools quickly mainly because they tend to perform better on the job.

Figure: 1st Tier National University Graduates' Annual Transition of Company A, 2005-2010



Note: 1st tier national universities include Tokyo, Kyoto, TIT, Hitotsubashi, and Osaka.

DP Title

Does the Three Good Things Exercise Really Make People More Positive and Less Depressed? A study in Japan

Author(s)	Yoichi Sekizawa (RIETI) Naomi Yoshitake (Ochanomizu University)
Release date	January 2015
Research project	Research Project on Mental Health from the Perspective of Human Capital
DP No.	15-E-001
URL	http://www.rieti.go.jp/publications/dp/15e001.pdf

Objective: Seligman, Steen, Park, and Peterson (2005) reported that people who wrote down three good things (TGT) for a week exhibited significantly greater happiness and less depression. An online study was conducted to examine whether performing a similar exercise reduces depressive symptoms and increases positive affect (PA) in the Japanese population.

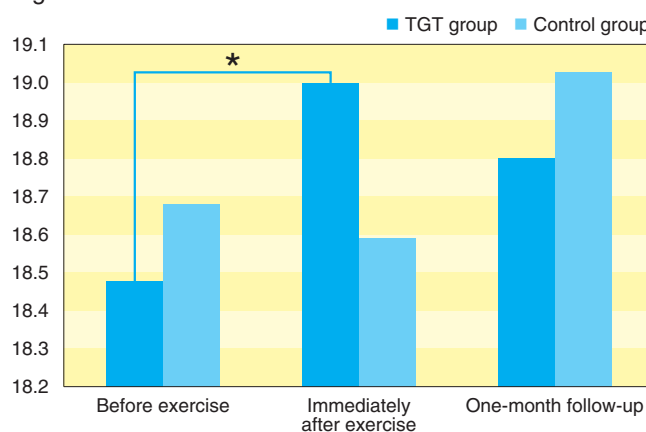
Methods: One thousand Japanese adults were randomly assigned to the TGT group or the control group. Participants in the TGT group were instructed to perform the TGT exercise at least twice a week for four weeks, whereas participants in the control group were told to record three past events.

Results: An increase in PA was observed in the TGT group at the post-test, but not at the one-month follow-up. There were no significant changes in depressive symptoms at the post-test or the one-month follow up in either group. Participants in the TGT

group exhibited a significant increase in general trust at both the post-test and the one-month follow-up. A significant increase in this variable at the one-month follow-up was also observed in control participants.

Conclusion: Performing the TGT exercise increases PA, but this increase is temporary. The TGT exercise may be effective in enhancing general trust.

Figure: Transition of Scores for Positive Affect



Note 1: Positive affect refers to “Brief, Momentary mood Checklist Japanese version” (Thomas and Diener, 1990, Tanaka, 2008).

Note 2: TGT group consists of 266 people and Control group consists of 203 people.

Note 3: *p<.05

DP Title

The Effects of Graduating from College during a Recession on Consumption and Asset Holding

Author(s)	Daiji Kawaguchi (RIETI) Ayako Kondo (Yokohama National University)
Release date	June 2015
Research project	The Changing Japanese Labor Market: A perspective and desirable policy responses
DP No.	15-E-074
URL	http://www.rieti.go.jp/publications/dp/15e074.pdf

Recent studies reveal that graduating from college during a recession has persistent negative effects on labor market

outcomes—a phenomenon called the scarring effect. This study assesses the welfare impact of the scarring effect beyond labor market outcomes, by analyzing consumption and asset-holding behaviors. Scrutiny of the Current Population Survey and Consumer Expenditure Survey reveals that, despite a significant decline in earnings, business cycle conditions at the time of entry into the labor market does not affect expenditures or asset holdings; instead, young college graduates who face a recession tend to stay with their parents. These results suggest that the cohort-specific negative shock is absorbed by an implicit inter-generational insurance mechanism; the scarred cohort postpones the timing of leaving the parents’ household to secure the same consumption and asset-holding levels as that of other cohorts.

Table: U.S. State Unemployment Rate at College Graduation and Consumption Behaviors

	ln (Expenditure)	ln (Household size)	Food share	House ownership
UE 1-3	−0.016 (0.016)	0.015 (0.008)*	0.003 (0.003)	−0.009 (0.014)
UE 4-6	0.011 (0.013)	0.008 (0.007)	−0.002 (0.002)	0.005 (0.009)
UE 7-9	0.011 (0.014)	0.002 (0.006)	−0.001 (0.002)	−0.004 (0.008)
UE 10-12	0.014 (0.012)	−0.007 (0.006)	−0.001 (0.001)	0.007 (0.010)
UE 13-15	0.005 (0.009)	−0.005 (0.005)	0.001 (0.001)	−0.012 (0.007)
UE 16-18	0.002 (0.008)	0.002 (0.005)	0.001 (0.001)	−0.012 (0.007)*
R ²	0.45	0.10	0.02	0.14
N	32,431	32,432	32,432	32,432

* p < 0.1; ** p < 0.05; *** p < 0.01

Note: State-level clustering robust standard errors are reported in parentheses. All specifications include dummy variables corresponding to each year of potential experience and cohort and state × year-quarter fixed effects.

Social Security, Taxation, and Public Finance

Program Director: Mitsuhiro Fukao, Faculty Fellow, RIETI



Japan has to maintain its economic dynamism in the face of its rapid aging population and low fertility rate. This program will carry out multifaceted, integrated research on Japan's social security system, taxation, and public finance. The research subjects include (1) an analysis of comprehensive panel data on the elderly, (2) possible reforms to the social security and taxation systems, (3) a proposal for combining carbon taxes and investment subsidies in energy conservation, (4) optimal fiscal policy measures for reconstruction from the recent earthquake, economic recovery, and fiscal consolidation, and (5) new forms of public services, including the "third sector."

Introduction of Discussion Papers (DPs) published under this program

DP Title

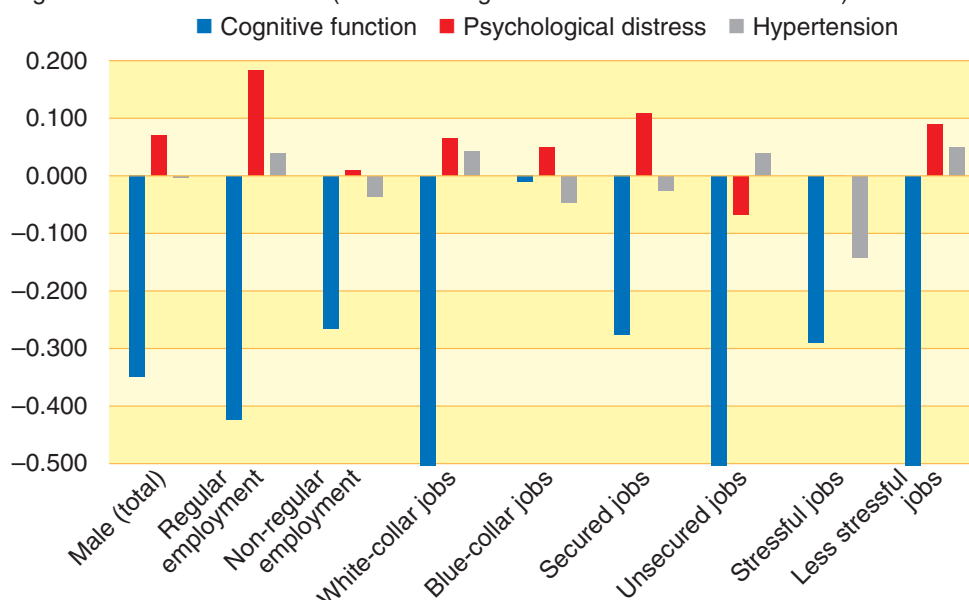
Impacts of Leaving Paid Work on Health, Functions, and Lifestyle Behavior: Evidence from JSTAR panel data

Author(s)	Hideki Hashimoto (University of Tokyo)
Release date	September 2015
Research project	Toward a Comprehensive Resolution of the Social Security Problem: A new economics of aging
DP No.	15-E-114
URL	http://www.rieti.go.jp/jp/publications/dp/15e114.pdf

Despite extensive research published in economic, psychological, and public health literature, a consensual view on the causal influence of leaving paid work on health, functions, lifestyle behavior, and social participation has not been reached. Recent review studies indicate that heterogeneous characteristics of the pre-retired should be accounted for to reveal the impact of leaving paid work. Related evidence is scarce in Japan where the

effective retirement age is the highest among developed countries. We used panel data from the Japanese Study of Aging and Retirement (JSTAR) to fill this knowledge gap. Using propensity-matching difference-in-difference estimation stratified by age strata (under 65 vs. 65 and over), gender, and job characteristics, we find that transitioning from paid work status to retirement exerts limited impact on cognitive function, mobility, smoking behavior, body mass index, psychological distress, hypertension prevalence, fruit intake, and social participation to voluntary services. However, some segments of older people seem more vulnerable to specific impacts, e.g., men formerly engaged in white-collar jobs and secured jobs, or older women with unsecured jobs showed a negative impact on cognitive function, while men with stressful jobs show a reduced prevalence of hypertension after retirement. We argue that the heterogeneity of the population at retirement age should be considered to specify causal pathways and policy implications of health impacts after leaving paid work more effectively.

Figure: Effects of Retirement (ATET: average treatment effect on the treated)



DP Title

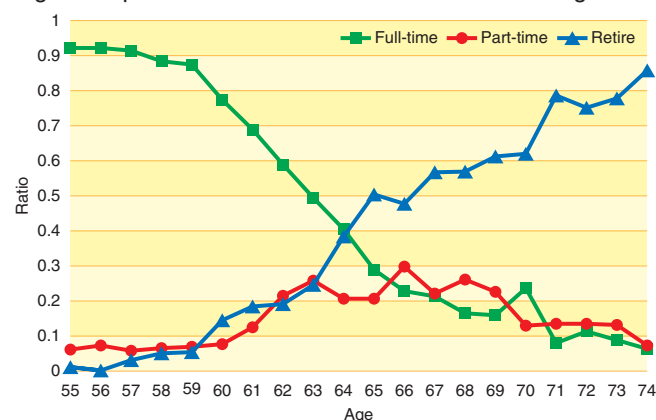
Are Japanese Men of Pensionable Age Underemployed or Overemployed?

Author(s)	Emiko Usui (Hitotsubashi University) Satoshi Shimizutani (RIETI) Takashi Oshio (Hitotsubashi University)
Release date	August 2015
Research project	Toward a Comprehensive Resolution of the Social Security Problem: A new economics of aging
DP No.	15-E-099
URL	http://www.rieti.go.jp/jp/publications/dp/15e099.pdf

We investigate how Japanese men aged 60-74 adjust their workforce attachment after beginning to receive a public pension. Men who were employees at age 54 gradually move to part-time work or retire after beginning to receive pension benefits; those who continue working are more likely to be underemployed. Men self-employed at age 54, however, neither retire nor reduce their working hours even after beginning to receive pension benefits; these men are more likely to be overemployed. In contrast, U.S. men retire or move to part-time

when they first claim Social Security; those who continue working as employees after Social Security starts are unlikely to be either over- or underemployed. Therefore, unlike U.S. men, Japanese men are not choosing the optimal pensionable age and labor hours to maximize their intertemporal utility.

Figure: Japanese Men Who Had Salaried Jobs at Age 54



DP Title

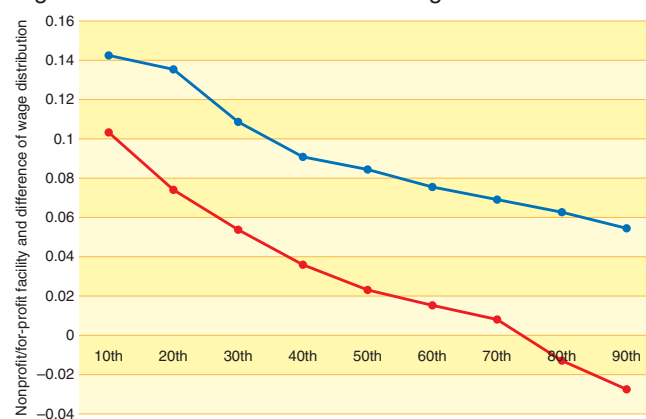
Nonprofit/For-profit Facility and Difference of Wage Distribution: Evidence from the Japanese elderly care industry

Author(s)	Yutaka Ito (Hiroshima University) Keisuke Kawata (Hiroshima University) Yin Ting (RIETI)
Release date	June 2015
Research project	A Socioeconomic Analysis of Households in Environments Characterized by Aging Population and Low Birth Rates
DP No.	15-E-073
URL	http://www.rieti.go.jp/jp/publications/dp/15e073.pdf

This paper provides new estimation results for the impacts of operator types, nonprofit or for-profit, on earnings distribution by using employee-employer matched data in the Japanese elderly care sector. The ordinary least squares (OLS) and quantile regression results show that even if workers' and operators' basic characteristics are controlled, we can observe a nonprofit premium on average and in lower quantiles. However, in higher quantiles, we observe a negative premium (penalty) of nonprofit operators. Additionally, average and quantile decomposition

results represent that, on average and in each quantile, a large part of a nonprofit premium can be explained by the difference of observable characteristics, especially the license acquisition rate and worker's tenure. The quantile decomposition results additionally show that a larger part of earnings gap in high quantiles can be explained by the difference of tenure than in lower quantiles.

Figure: Coefficients in the Quantile Regression



Policy History and Policy Assessment

Program Director: Haruhito Takeda, Faculty Fellow, RIETI



The objective of this program's research is to review and assess trade and industrial policy, chiefly over the period from 1980 through 2000, as it looks at Japan's economy, society, and trade and industrial policies at the end of the 20th century. At the same time, the final two decades of the 20th century were a time of significant changes in Japan's economy and society; they also were a time of very major real and organizational changes in trade and industrial policy. This research will attempt to make clear how changes in trade and industrial policy at the turn of the century were effected, based on activities including assessment of the recognition of policy issues over the preceding quarter-century, choice of policy means in response, and their results.

Introduction of Research Results under the program

Abstract of *History of Japan's Trade and Industry Policy*: (1)–(12)

Author(s)	Satoshi Kawamura (RIETI) Haruhito Takeda (RIETI)
URL	http://www.rieti.go.jp/en/publications/act_pdp.html

- 1) The second series of the History of Japan's Trade and Industry Policy, comprising 12 books (the first volume with a general overview and the remaining 11 volumes with detailed expositions on the main policy items) were published that not only record objective facts about the drafting process of the policy at the time and the situation of the industry and the economy that required such drafting, but also analyze and evaluate policy for the period 1980 through 2000.
- 2) However, it is not easy for people to read all 12 books and understand the history of policy. Subsequently, we made an abstract of each book to assist in using it in policy evaluation and policy making. The 12 abstracts describe the main points of the policy clearly and collect policy evaluation, and our hope is that they are utilized as the guide for each book.

●History of Japan's Trade and Industry Policy Vols.1–12●





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Research Institute of Economy, Trade & Industry, IAA