



Global COE Hi-Stat Newsletter

No. 7 (January 2012)

Contents

| | |
|---|------------------------|
| Professor Christopher Sims Wins Nobel Prize for Economics | Toshiaki Watanabe... 1 |
| Report on the Hitotsubashi-UNSW Conference on International Trade and FDI | Akira Sasahara... 3 |
| Zambia Field Survey Report | Ken Miura...5 |
| Discussion Papers ...7 | |
| Seminars and Conferences ...7 | |
| Awards ...10 | |

Professor Christopher Sims Wins Nobel Prize for Economics

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The 2011 Nobel Prize for economics has been jointly awarded to Professor Christopher Sims and Professor Thomas Sargent for their research on macroeconomics and econometrics. Although I immediately sent Professor Sims an email to congratulate him, as he used to be my supervisor at Yale University, I would like to offer my sincerest congratulations once again. It may seem somewhat disrespectful to address a Nobel laureate by his first name, but it feels odd to address Professor Sims as such because I have always known him as Chris, so that is what I will call him for the rest of this article.

After gaining a PhD in Economics at Harvard, Chris went on to teach at the University of Minnesota and Yale University, before arriving at his current position

as professor at Princeton University. He apparently graduated second in his class from the Harvard Mathematics Department. I was fortunate enough to be taught by him as a graduate student at Yale, just after he had moved there from Minnesota.

Chris is well known for his work as an econometrician, which is primarily Bayesian in nature. In Bayesian estimation, model parameters are regarded as random variables, and the first step is to set the prior distribution, that is, the distribution of parameters before data are observed. This is then updated to the posterior distribution, which is calculated based on Bayes' theorem after data have been observed, in order to infer parameters. I once asked Chris why he favored the Bayesian approach.

He replied by pointing to the Lucas critique, which argues that when government and central bank policies change, so do the model parameters, so that they should be regarded not as constants but as stochastic variables. Whereas Bayesian estimation was not commonly used in the past because it was difficult to derive the posterior distribution, it has started to become more widespread since the development of a simulation technique called the Markov chain Monte Carlo (MCMC) method, as explained below.

When Chris became my supervisor, I was conducting research on financial stochastic volatility (SV) models rather than macroeconomic models. As it is difficult to analytically calculate likelihoods using such models however, I spoke to Chris and he advised me to use the MCMC approach instead. That was what started me using MCMC. Used as a general term for methods whereby values are sampled and then used to sample the next set of values, MCMC methods make it possible to sample parameters from the posterior distribution even when using more complex models, thereby making it possible to use Bayesian estimation. MCMC methods had previously been used in physics, but they had only just started to be applied in econometrics at that time, so there was very little literature available. I learnt almost everything directly from Chris.

To estimate parameters using MCMC methods, we have to generate a lot of random numbers, so it takes a considerable amount of time. It might seem alien to young people nowadays, but back then computer CPUs were still at the Intel i386 stage, meaning that they struggled to perform calculations with any speed. Fortunately, Chris allowed me to use the lab next to his own, which was equipped with an i486 33MHz computer, the fastest available back then. Even so, estimating SV models still took the best part of a week. With Chris' help however, I managed to finish my dissertation and successfully completed my PhD. I felt like giving up on MCMC after that, because it just took too long. As computers have become significantly

faster however (the time taken to estimate SV models has gone from nearly a week to around 15 minutes), I still use MCMC methods to this day. I don't know what sort of research I would be working on if I hadn't met Chris. He helped to make me the researcher I am today.

Chris taught a class in macroeconomics that was compulsory for first year graduate students at Yale and allowed me to work as his teaching assistant (TA). His lectures were hard to follow, to be honest, to the extent that he focused on transversality conditions for an entire term at one point. However, the TA sessions were fairly straightforward, as all I had to do was explain the contents of Chris' lectures in simpler terms.

Although Chris' work has touched on a wide range of areas, his most important research to date has probably been on vector autoregressive (VAR) models. Using such models, it is possible to run simulations to illustrate policy effects. For instance, when the central bank lowers interest rates, you can simulate the effects that will have on macroeconomic variables over time. VAR models are therefore important to policymakers as well as researchers. In order to estimate VAR models however, identifying restrictions are needed. In fact, Chris has written numerous papers on what sort of identifying restrictions to impose. He is also using VAR models in order to carry out important research on causality between variables.

One of Chris' most important papers on VAR models, titled "Macroeconomics and Reality," was published in the journal *Econometrica* in 1980. To commemorate the 30th anniversary of the publication of that paper, we organized the "Journal of Economic Dynamics and Control Conference on Frontiers in Structural Macroeconomic Modeling: Thirty Years after 'Macroeconomics and Reality' and Five Years after 'Nominal Rigidities and the Dynamic Effects of a Shock to Monetary Policy'," an international conference co-hosted by the Hitotsubashi University Global COE Program "Research Unit for Statistical and Empirical Analysis and Social Sciences" and the Bank of Japan's Institute for Monetary and Economic Studies. Chris

delivered a keynote speech at the conference, which took place on January 23 and 24, 2010, at Hitotsubashi University's Mercury Tower, and I had the honor of chairing the event. I compiled a summary of the conference for the Global COE Hi-Stat Newsletter (http://gcoe.ier.hit-u.ac.jp/english/research/newsletters/PDF/Newsletter_No_4_English.pdf), so please feel free to take a look. It would be difficult to get a Nobel laureate to come and give such a speech, so I'm glad we invited him before he was awarded the prize. While he was here, we also had a great time going to see sumo wrestling, which Chris really seemed to enjoy. Many of the participants of the conference now regret that they did not take the opportunity to have their photo taken with Chris.

Following on from our conference, Seoul National University and the Korean Development Institute hosted a conference titled "Recent Developments in Dynamic Analysis in Economics – 30 Years after *Macroeconomics and Reality*" from May 25 to 27, 2011. The event was attended by students who had

previously been taught by Chris at Minnesota, Yale and Princeton. Even Professor Thomas Sargent, the other winner of the Nobel Prize in economics, was able to attend. I was also invited to give a paper on VAR models, Chris' specialist subject. He asked me some penetrating questions that made me go pale and took me right back to my days as a student. I am currently revising my paper based on Chris' comments.

My research to date has revolved primarily around financial econometrics, focusing particularly on asset price volatility. In recent years however, I have finally started to engage in macroeconomic analysis, thanks to the increasing use of MCMC methods for the estimation of macroeconomic models, based on Chris' research amongst others. I may have a long way to go to live up to Chris himself, but I am determined to contribute in some way to the research he has carried out to date.

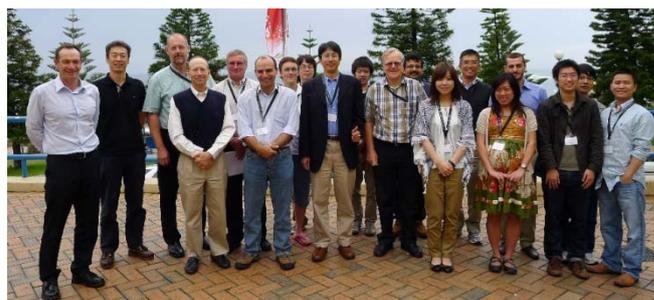
This article originally appeared in Hitotsubashi University's Hi-Stat Vox Series as Hi-Stat Vox No. 21.

Report on the Hitotsubashi-UNSW Conference on International Trade and FDI

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From December 9 to 11, the Hitotsubashi-UNSW Conference on International Trade and FDI was held at the University of New South Wales (UNSW). The main sessions, involving economists from around the world, took place on December 10 and 11 and were preceded by a special session for graduate students on December 9, where three Ph.D. students from Hitotsubashi and two from UNSW gave presentations on their research. The students from Hitotsubashi included Yoko Sakamoto, Ryo Makioka, and myself. On the second day of the conference, Professors Jota

Ishikawa and Taiji Furusawa presented their work in front of economists from around the world.



Author in the front row, second from the right

Although the session on December 9 was only a “graduate session,” it was attended by most of the scholars giving presentations at the main session as well as UNSW graduate students, providing us with the opportunity to present our research in front of an audience of about 30 participants. While the three of us from Hitotsubashi have given presentations before, this was the first time for us to do so at a conference in English. Therefore, before leaving Japan, we had two practice sessions and tried to memorize key phrases and prepare answers to potential questions. Thanks to these preparations, the feedback we received at the reception after the presentations was generally positive. Yet, although I think (hope) our presentations were relatively fluent and intelligible, there were a number of occasions where I could not fully catch the meaning of comments and questions from the audience and had to ask participants to repeat them after the session. Thus, I realized how important it is to get used to international conferences and to polish our ability to speak English.

In the main sessions on December 10 and 11, leading researchers from Australia and around the world presented their latest research and actively debated their theoretical models and empirical results. Listening to the presentations and discussions was extremely stimulating. Ryo Makioka, who has a strong interest in the Vietnamese economy, continued asking Professor Richard Baldwin questions about the impact of the so-called “second unbundling” on the Vietnamese economy even after the sessions had ended. He said later that the discussion had provided him with a much better understanding of the Vietnamese economy. Meanwhile, Yoko Sakamoto took the opportunity to enthusiastically ask questions of Professors Alan Woodland and Arghya Ghosh, who presented theoretical papers on coalition formation games in an international context, a topic very close to her own field of research.

As for myself, the talk I was most interested in was the one by Professor Arpita Chatterjee, who presented an empirical analysis of the impact of exchange rate

fluctuations on the price-setting behavior of a multi-product firm. Because this research is very close to the paper I presented on multi-product firms engaged in exporting, I found her presentation extremely stimulating. In addition, Professor Chatterjee provided me with many valuable comments on my paper and I would like to thank her for both her interesting presentation and helpful comments.

During the breaks, we were able to interact with the speakers as well as graduate students from UNSW. Talking with UNSW graduate students allowed us not only to learn about their work on international trade, international macroeconomics, experimental economics, and other various research fields, but also gave us an insight into life in Sydney and research at UNSW.

In sum, the conference provided us with the opportunity to present our own research, to learn about cutting-edge research by world-renowned economists, and to interact with graduate students at UNSW. The comments and questions from the audience will improve the quality of our research and the experiences we had at the conference will motivate us to do further research and increase the quality of our research and presentations. In particular, we received extremely helpful comments on our research and tips for future presentations from Professors Hodaka Morita, Arghya Ghosh, and Alan Woodland at UNSW, as well as Tomohiro Ara, who was a graduate student at Hitotsubashi and is now studying at UNSW. We would like to thank them for their efforts and guidance. In addition, we would like to take this opportunity to thank Professor Jota Ishikawa, who is our supervisor and gave us the opportunity to present our work. We are also indebted Professor Taiji Furusawa, who provided us with many insightful and encouraging comments at the session on the first day. Special thanks go to Ms. Chieko Takada, who provided administrative support and encouragement. Lastly, we are deeply grateful to the Hitotsubashi G-COE Program, which provided financial support for the conference. Thank you very much.

The program and papers of the Hitotsubashi-UNSW Conference on International Trade and FDI 2011 can be

found on the following website:

http://www.econ.hit-u.ac.jp/~cces/COE2011_HP/program2011.htm

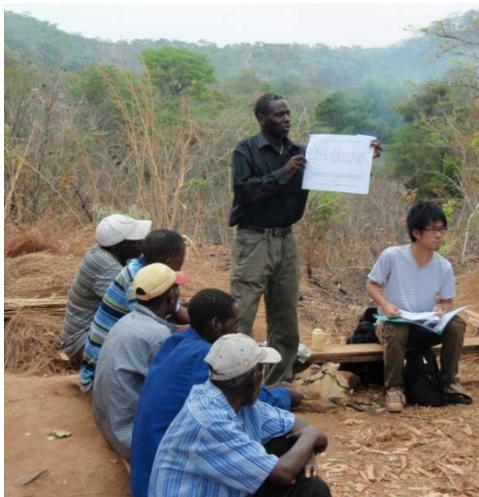
Zambia Field Survey Report

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In November 2011, I took part in a three-week field survey in rural Zambia. The dry season had almost finished and the rainy season was on its way. Although they may have been busy with preparations for upcoming agricultural activities, the farmers were nevertheless willing to participate in our household survey.



ZARI staff explaining weather index insurance
(author on the right)

As part of the survey, I conducted a field experiment selling weather index insurance. Weather index insurance bases payouts on officially observable indexes such as rainfall and temperature. For this reason, it avoids problems related to moral hazard and adverse selection, which often accompany typical insurance contracts. Working with the Zambia Agriculture Research Institute (ZARI), the aim was to

design and sell actual weather insurance contracts. As far as I am aware, this was the first attempt to do so in Zambia.

The design of our insurance is very simple. If total rainfall recorded at the nearest Zambia Meteorological Department weather station is above 1,000mm (i.e., heavy rain) or below 600mm (i.e., drought) in the coming rainy season (November 2011-April 2012), the insuree will receive a payout in May 2012. The price of each insurance contract is K5,000 (approximately US\$1) and, because of budget constraints, the maximum number of contracts each farmer was allowed to purchase was set to 20. To be actuarially fair, the premium rate was set at 20%, meaning that if a person pays K10,000 in November 2011 and if the total rainfall during the rainy season turns out to be above 1,000mm or below 600mm, he or she will receive K50,000 in May 2012.



Locals talking about their expectations for total rainfall
in the coming rainy season

The aim of my research is to examine what determines if an individual participates in the insurance scheme. However, if nobody purchased any insurance, I would not be able to carry out my research. I was therefore worried how the farmers would respond, given that there are numerous reasons why they might not purchase any insurance. The first potential reason is that many farmers in our study lack the most basic education and even cannot write their names. Second, survey participants might not fully understand the concept of insurance and I was concerned that few would appreciate the benefits of purchasing insurance. Third, another potentially serious obstacle is that participants simply lack the money to join the insurance scheme. Studies conducted in India report that these reasons resulted in a low take-up rate for weather insurance of only 4%. An additional obstacle in our case was that, unlike in the Indian case, the study was conducted by a foreigner (i.e., me) who was unfamiliar with the local culture and visited survey participants' houses to explain and sell the insurance policy. It was thus with considerable anxiety that I embarked on the survey.

The first person I interviewed was Mr. J. M., who even in his village is relatively poor. In January 2010, heavy rain had completely destroyed his house, so that he sleeps in a small brick enclosure under his corn crib. It is individuals vulnerable to weather-related shocks just like him that potentially benefit from weather index insurance, but there are many reasons such as the ones mentioned above that prevent them from purchasing insurance. How would he respond? During the interview, I asked him twice whether he wanted to purchase the insurance. The first time I asked him was just after I had explained the insurance policy. Unexpectedly, he answered yes. Accordingly, at the end of the interview, I asked further questions about the insurance policy contract to test his level of understanding. He got two out of the five easy questions wrong, so that his unexpected response could have been due to a lack of understanding. Yet, after clearing up the parts he did not understand, I

asked again, and he replied that he had not changed his mind and paid K5,000 to buy one insurance contract.

This was an auspicious start and the remainder of the survey also went well, so that eventually we had successfully collected data on 101 agricultural households during the three weeks. The final take-up rate for the insurance scheme was 93% and the average number of contracts purchased was 2.9. To be honest, I was quite surprised by this outcome. However, about 60% of respondents purchased only one or two contracts, which will be insufficient to fully cover potential income losses due to weather shocks. Therefore, their main reason for purchasing insurance may have been not to disappoint us. Nevertheless, more than 30% of all respondents bought four or more contracts. A household that has purchased four contracts will receive K100,000 in the case of drought or heavy rain. Even if food prices increase due to bad weather, this will be enough to purchase a 50kg bag of maize, the staple food in Zambia, which will sustain an average family for a month.



Members of a family that took part in the household survey

Looking back, being involved in the household survey was a very exciting experience for me. However, this is just the starting point. In fact, weather index insurance is a topic on which research has only recently begun and there remain many unanswered questions. Therefore, we are going to conduct several follow-up surveys in the near future. The amount of rainfall during the rainy season (November 2011 to

April 2012) will determine whether the insurance will have to pay out, and this in turn will greatly influence farmers' behavior in the future and the design of our next surveys. Thus, as I finish writing these lines, I find myself thinking a lot about rainfall in Zambia.

Acknowledgements:

The research trip to Zambia was supported by a G-COE Overseas Research Grant. I would like to express my deepest thanks here. Moreover, I am very grateful to my assistants in Zambia, Mr. Katundu and Mr. Evance. Special thanks are also due to the survey respondents and their families for their enthusiastic participation in the interviews.

Global COE Hi-Stat Discussion Papers (August 2011 – December 2011)

- No. 202 (August 2011) Kazuya Wada, "What Effect Does Female Autonomy Have on Child Health? Microeconomic Evidence from Rural India."
- No. 203 (August 2011) Qing-yuan Sui, "The Determinations of the Type and the Level of Consideration: An Analysis of China's Split Share Structure Reform (in Japanese)."
- No. 204 (September 2011) Kazuharu Kiyono and Jota Ishikawa, "Environmental Management Policy under International Carbon Leakage."
- No. 205 (September 2011) Yuko Mori and Takashi Kurosaki, "Does Political Reservation Affect Voting Behavior? Empirical Evidence from India."
- No. 206 (October 2011) Zhao Chen, Ming Lu, and Zheng Xu, "A Core-Periphery Model of Urban Economic Growth: Empirical Evidence Using Chinese City-Level Data, 1990-2006."
- No. 207 (October 2011) Toshio Honda, "Nonparametric LAD Cointegrating Regression."
- No. 208 (October 2011) Yoshimasa Uematsu, "Asymptotic Efficiency of the OLS Estimator with Singular Limiting Sample Moment Matrices."
- No. 209 (October 2011) Yoshimasa Uematsu, "Regression with a Slowly Varying Regressor in the Presence of a Unit Root."
- No. 210 (December 2011) Kei Nanamiya, "The Wavelet-based Estimation for Long Memory Signal Plus Noise Models."
- No. 211 (December 2011) Eiji Satoh, "Nontransferable Water Rights and Technical Inefficiency in the Japanese Water Supply Industry."
- No. 212 (December 2011) Yoshiko Nagano, "The Philippine National Bank and Lending in Agriculture: 1916-1930."
- No. 213 (December 2011) Yoshiko Nagano, "The Emergence of Modern Banking System in the Philippines during the American Colonial Period."
- No. 214 (December 2011) Masato Ubukata and Toshiaki Watanabe, "Market Variance Risk Premiums in Japan as Predictor Variables and Indicators of Risk Aversion."

Global COE Hi-Stat Discussion Paper Series

<http://gcoe.ier.hit-u.ac.jp/english/research/discussion/index.html>

Seminars and Conferences (August 2011 – December 2011)

- 221st (August 19, 2011) Symposium, "Rethinking Labour and Industrialization in Global Context: Occupational Socio-Economic History Society Summer

- Structure, Economic Geography, Gender, and Migration”
co-organized with Osaka University's MEXT Grant-in-Aid for Scientific Research Project on “Female Occupational Structure in England in the First Half of the 19th Century”
Leigh Shaw-Taylor (University of Cambridge), “Industrialisation, Economic Development and Occupational Structure: Secondary and Tertiary Sector Growth,”
Osamu Saito (Hitotsubashi University), “By-employment, Gender and Sectoral Labour Productivity,”
Jelle van Lottum (University of Cambridge), “Labour Migration and Economic Development in Global Perspective,”
Chiaki Yamamoto (Osaka University), “Staying or Leaving? Gender, Job Opportunity, and Poor Law Administration in Nineteenth-Century England”
222nd (August 25, 2011)
G-COE Hi-Stat Seminar “Occupational Structure, Human Capital and Economic Development in Historical Perspective”
co-organized with Osaka University's MEXT Grant-in-Aid for Scientific Research Project on “Female Occupational Structure in England in the First Half of the 19th Century”
Leigh Shaw-Taylor (University of Cambridge), “Economic Development and Structural Change Since 1700: New Evidence in a Global Perspective,”
Jelle van Lottum (University of Cambridge), “Human Capital and Economic Performance in Europe Before the Industrial Revolution: Evidence from the Maritime Sector”
223rd (October 5, 2011)
Global COE Seminar
Nahm Joon Wu (Sogang University), “Asset Pricing Theory and the Valuation of Korean Paintings: A Semiparametric Model of Hedonic Pricing”
224th (October 6, 2011)
29th Global COE Research Workshop
Yuko Mori (Hitotsubashi University), “Does Political Reservation Affect Voting Behavior? Empirical Evidence from India”
225th (October 11, 2011)
Workshop on International Trade and FDI
co-organized with the Tokyo Center for Economic Research (TCER)
Andres Akerman (Stockholm University), “A Theory on the Role of Wholesalers in International Trade”
226th (October 13, 2011)
30th Global COE Research Workshop
Akira Sasahara (Hitotsubashi University), “Two-sided Firm Heterogeneity, Random Matching, and Trade Liberalization”
227th (October 25, 2011)
Industrial Organization and Labor Economics Workshop
co-organized with the TCER Seminar
Martin Hemmert (Korea University Business School), “Cultivating University-Industry Research Collaborations in Korea: The Role of Social Capital”
228th (October 28-30, 2011)
The Second International Conference on “High-Frequency Data Analysis in Financial Markets”
co-organized with the Grant-in-Aid for Scientific Research (A) on “Financial Risk: Quantification and Statistical Inference”
Torben Andersen (Northwestern University), Tim Bollerslev (Duke University), Peter Hansen (European University Institute and Stanford University) and others
229th (November 1, 2011)
Industrial Organization and Labor Economics Workshop
co-organized with the TCER Seminar
Mitsukuni Nishida (Johns Hopkins University), “Explaining Reallocation's Apparent Negative Contribution to Growth in Deregulation-Era Developing Countries”
230th (November 5-6, 2011)
6th Applied Econometrics Conference
co-organized with the Osaka University Global COE

- Program “Human Behavior and Socioeconomic Dynamics” and TCER
- 231st (November 10, 2011)
31st Global COE Research Workshop
Dashtseren Khashbaatar (Hitotsubashi University), “Bootstrapping the Largest Eigenvalue in Principal Component Analysis”
- 232nd (November 15, 2011)
Industrial Organization and Labor Economics Workshop
co-organized with the TCER Seminar
Dainn Wie (National Graduate Institute for Policy Studies), “Projection Bias and Divorce Cooling-off Periods”
- 233rd (November 19, 2011)
Workshop on Analytical Political Economy
co-organized with the Center for Research on Contemporary Economic Systems
Simon Mohun (University of London at Queen Mary), “Rate of Profit and Crisis in the US Economy: A Class Perspective,”
Takashi Ohno (Ritsumeikan University), “The Roles of Monetary Policy for Economic Growth: From the Viewpoint of an Endogenous Market Structure,”
Hiroyuki Yoshida (Nihon University), “Economic Intermittency in a Two-Country Model of Business Cycles Coupled by Investment”
- 234th (November 24, 2011)
32nd Global COE Research Workshop
Ryo Makioka (Hitotsubashi University), “Trade, Unemployment, and Reallocation with Search Frictions”
- 235th (November 25, 2011)
Japan-Korea Joint Workshop: “Workshop on Measurement Issues in Productivity Databases for Asian Countries”
co-organized with Gakushuin University’s Grant-in-Aid for Scientific Research (S) Project “Empirical Research on Intangible Investment in Japan (ERII),” the Korea Productivity Center (KPC), and the Research Institute of Economy, Trade and Industry
- 236th (November 29, 2011)
Industrial Organization and Labor Economics Workshop
co-organized with the TCER Seminar
Ryuichi Tanaka (National Graduate Institute for Policy Studies), “Estimating the Effects of Pro-Natal Policies on Residential Choice and Fertility” (with Ryo Nakajima)
- 237th (December 1, 2011)
33rd Global COE Research Workshop
Yasuhiro Shirata (Hitotsubashi University), “Formation of Decentralized Manufacturer-Supplier Networked Markets”
- 238th (December 10-11, 2011)
The Hitotsubashi-UNSW Conference on International Trade and FDI 2011
Richard Baldwin (The Graduate Institute, Geneva), Arpita Chatterjee (University of New South Wales), Rodney Falvey (Bond University), Taiji Furusawa (Hitotsubashi University), Arghya Ghosh (University of New South Wales), Jota Ishikawa (Hitotsubashi University), Carol McAusland (University of British Columbia), Phillip McClaman (University of Melbourne), Mark Melatos (University of Sydney), Xuan Nguyen (Deakin University), Alan Woodland (University of New South Wales)
- 239th (December 15, 2011)
34th Global COE Research Workshop
Jumpei Hagiwara (Hitotsubashi University), “Model Averaging with Dependent Data”
- 240th (December 21, 2011)
11th Panel Survey Conference
co-organized with the Institute for Research on Household Economics, the COE Programs of Keio University and Osaka University, and the Institute of Social Science at the University of Tokyo
- Past Seminars
http://gcoe.ier.hit-u.ac.jp/english/events/past_seminars/index.html

Awards

Nakahara Award from the Japan Association of Business Cycle studies

Prof. Toshiaki Watanabe, Program Member of the Global COE Hi-Stat Program, won the Nakahara Award from the Japan Association of Business Cycle studies (JABC). He delivered a presentation titled "The Application of Markov chain Monte Carlo (MCMC) Methods to Macroeconometric Models" at the commendation ceremony on November 19, 2011.

Member of the Japan Academy

Professor Emeritus Kotaro Suzumura of Hitotsubashi University, the leader of the 21st Century COE Program "Normative Evaluation and Social Choice of Contemporary Economic Systems," the predecessor of the G-COE Hi-Stat program, was selected as a member of the Japan Academy.



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