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  Author: Ileas Mia MOHAMMAD (Ritsumeikan University)
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Abstract

A-1 Environment, Resource and Energy

Chair: Makoto SUGINO (Yamagata University)

Presentation 1

Ayu WASHIZU (Waseda University), Satoshi NAKANO (Nihon Fukushi University)

An analysis of the carbon taxation method using the 2011 input-output table for the next-generation energy system

An input–output table for the analysis of a next-generation energy system (IONGES) was created. This IONGES effort incorporates renewable-energy sectors into the 2011 input–output table published by the Ministry of Internal Affairs and Communications, Japan. The sectors incorporated in the IONGES data cover power generation facility construction sectors and power generation sectors for 15 types of renewable energy. The IONGES data consist of the following two types of table: a table incorporating renewable-energy sectors as they existed in 2011 (2011 IONGES) and a table incorporating renewable-energy sectors up to the composition ratio assumed in 2030 (2030 IONGES). We designed the table in anticipation of future changes in renewable energy dissemination policies. IONGES was used to compare the input structure of each renewable-energy sector and each supply chain brought about by it. The ripple effect of the supply chain on entire economy was also visualized as a "unit structure." Using the IONGES data, we analyzed the effects of the following three carbon taxation methods on economic society: (i) Upstream taxation, (ii) Midstream taxation, and (iii) Downstream taxation. As a result, in the upstream taxation method, the effects of one unit of carbon tax are concentrated in goods such as energy goods, while in the downstream taxation method, the effects are relatively dispersed. We also calculated the taxable CO_2 emissions induced by each final demand. Compared with the upstream method, in the midstream and downstream methods, the CO_2 emissions induced by each final demand are distributed more evenly across various goods and services. Compared to the downstream taxation method, upstream taxation leads to higher CO_2 emissions from exports, but lower CO_2 emissions from household consumption. This is because energy-intensive industries, such as machinery with high export ratios, have high CO_2 emission intensity when the upstream method is applied.

Presentation 2

Tuyet Le VO (Nagoya University)

Examination of Green Leontief Paradox: Evidence from bilateral trade between Vietnam to China, Japan, and the USA

Along with the increase of international trade, the production of goods and services has become multi-national, indicating the possibility of exporting environmental

pollution overseas. This study aims to examine whether Vietnam has been transferring CO2 emissions to their top three trade partners, China, Japan, and the USA through bilateral trade or taking over CO2 emissions overseas in its own country, and further, whether such a pattern has changed from 2005 to 2015. Employing Single – Country Input-Output table and Multi-Country Input-Output Table from EORA database. The results show that: i) Vietnam is not a Pollution Haven in the bilateral trade with China if the domestic emission coefficient was employed. This result is considered as Green Leontief Paradox, which similar to the result of Dietzenbacher and Mukhopadhyay in the case of India; ii) Japan and the United States of America have avoided domestic CO2 emission by importing goods and service from Vietnam from 2005 to 2015; however, this result cannot be revealed without using the Multi-Country Input-Output table; iii) There is the trend of shifting the pollutant from North-South Country to South-South Country. Finally, from the volume of CO2 divided by sectors, policymakers may consider which sectors generate high pollutant. As a result, the policy implication could be a levy on carbon tax with environmentally unfriendly sectors.

Presentation 3

Makoto SUGINO (Yamagata University)

Effects of a nation-wide carbon pricing scheme on regional industry

Carbon pricing policies, such as emission trading and carbon taxes, has been implemented in many countries to tackle climate change. Carbon prices increases cost of carbon emitting energy, which leads to changes in technology and/or fuel switching in the long-run. In the short-run, however, technology or fuel switching is difficult. Thus, production costs are expected to raise, which could reduce the firms' profits and/or international competitiveness. Previous studies have focused on the effects of carbon pricing on the entire country/region and the impacts on trade. Thus, national level or international input-output tables have been put to use, assuming that the effect of carbon pricing policies are equally distributed within the country. However, industries are not distributed equally within a country. In other words, carbon pricing policies effects regions differently according to the industrial structure of each region. In this study, we will investigate the effects of a hypothetical carbon pricing scheme that 1) sets a 4,000 Yen/t-CO2 on all CO2 emissions and 2) sets a carbon tax that raises the effective carbon rate of each industry above 4,000 Yen/t-CO2. We find that the carbon price will raise the cost of production for energy intensive industries more than non-energy intensive industries. However, the cost increase differs between regions, due to region specific industrial structure. If we assume that firms alter production from high-cost regions to low-cost regions, then income in regions that have higher than average cost increase will decrease. From the equity perspective, the results suggest that a nation-wide uniform carbon price will increase disparity among region. Thus, a carbon pricing scheme that increases the average effective carbon rate above 4,000 Yen/t-CO2 while equalizing the cost increase between regions for the same industry. This can be achieved by implementing a carbon tax that is regional and industry specific.

B-1 International Economy and International Development 1

Chair: Takahiko HASHIMOTO (Ritsumeikan University)

Presentation 1

Bangkit Aditya WIRYAWAN (Nagoya University)

Fiscal Decentralization and Structural Involution in Developing Countries

Fiscal decentralization has been labeled as the silent change in world's development. The policy was first associated with developed countries, but in the last three decades numerous developing countries had also been implemented it upon strong advocation from international organizations. The basic notion of this policy is to increase growth and equality in country's sub-national level as well as promote openness and accountability. This in turn would lead to productive structural transformation when combined with industrial policy. However my finding suggests that the reversal is true. Using data derived from IMF's Government Financial Statistics for the period between 1995 and 2017, it is found that fiscal decentralization has led to structural involution where the output share of agriculture increased at the cost of declining share of other sectors, particularly industry sector. Result is particularly robust for low and lower-middle income country group as well as with different estimation method. The phenomenon goes in line with premature decentralization narrative, stating among others the prior need of a strong institutional capacity at the local level in order to mitigate rent-seeking and local elite capture. With the institution set at the local level, vertically coordinated industrial policy between the central and the local government can kick in to support productive transformation.

Presentation 2

Takahiko HASHIMOTO (Ritsumeikan University)

Exploitation of the Working Class with the Burden of Financial Services

This paper examines the consumption structure of workers and households in five developed countries (the United States (US), the United Kingdom (UK), Japan, Germany, and France) and one developing country (China) using the labor allocation approach and the final demand component for the years between 2000 and 2014. We compared between the Gross Domestic Expenditure approach and the total labor allocation approach. Then, we found the advantage of total labor allocation. This advantage is that each labor allocation is the independent variable against relative prices. Thus, we could capture the features of economic structures among countries that had different national currencies. The results show that there are two types of decreasing essential consumption levels for workers and households. First, in developed countries, the labor allocation for final consumption expenditures by households decreased moderately. Second, in China, the labor allocation for gross capital formation and net exports increased rapidly between 2000 and 2014. These two cases could be classified as traditional exploitation. Third, the main conclusion of this paper is that the burden of financial services and insurance activities on the working class and households in the US and the UK is considerably higher than in other countries. As a result, actual household consumption declined and exploitation

increased. In short, a part of labor allocation was transferred from household income to financial and insurance services. This transfer could be classified as a second type of exploitation. In this paper, we clarified the degree of burden imposed on households by financial intermediation and insurance services.

Presentation 3

Kosuke KATO (NARO)

Community Detection in International Industrial Linkages Based on World Input-Output Tables Using a Stochastic Block Model

Due to the current progress of international trade under the various regional trade agreements such as FTAs, EPAs, and TPPs, the linkages between international industries are becoming more complicated. It is important to discover such international industrial linkages to analyze the time series changes in past international trade relationships and to predict future international trade relationships. Input-output tables provide widely used data for the analysis of industrial structure. The input-output table records the amounts of intermediate transactions, value-added, final demand, etc., between each industry that consists of inputs and outputs, and the intermediate transactions are in matrix format. Intermediate transactions between industries that show input relationships can be regarded as adjacency matrices in graph theory. Therefore, the industry is the node, the intermediate transaction is the link, and the transaction amount is the weight. Furthermore, the asymmetrical relationship between input and demand is also considered to be directed. In this paper, we use the stochastic block model to analyze the community detection of international industrial linkages based on the international input-output table. As a result, we clarified the existence of some stable communities. The stable communities established the stability of the relationship of domestic industries detected from the international industrial linkage.

20 March (Saturday) [Venue C: Room 805] 10:30-12:00
C-1 Regional Input-Output Analysis 1

Chair: Kazuo INABA (Ritsumeikan University)

Presentation 1

Harry AGINTA (Nagoya University), Masakazu SOMEYA (Nagoya University)

The differential regional impacts of monetary policy and the role of regional structure: New evidence from Indonesian provinces

Monetary policy transmission mechanism has always been an important topic in the field of monetary theory and practice. In recent years, analyzing monetary policy transmission on regional economy has gained an increasing interest, mainly driven by two developments. First, given the heterogeneity in regional economic structure, there has been a critical question that ask whether a common monetary policy will have differential impacts across regions. Second, the access to regional level data have improved substantially. Motivated by the same background, this study analyzes regional impacts of monetary policy in Indonesia, a developing country that well-known with its diversified regional economic characteristic. Consistent with the goal of Indonesian monetary policy that aims price stability, our study focuses on the response of regional inflation to national monetary policy. In doing so, we implement a two-steps

analysis. First, we measure the regional impacts of monetary policy by using factor-augmented vector autoregression (FAVAR) model, a new approach in recent literature. Second, we investigate the influencing factors of differential regional impacts of monetary policy. The results from FAVAR model show substantial cross-regional variation in regional inflation responses to monetary policy, both in magnitude and timing, suggesting the necessity to scrutinize regional dimension of monetary policy impacts. Next, we shall utilize logit model to evaluate the role of regional economic structure in affecting the differential effects of monetary policy. In particular, the relevant measures of regional structure will be evaluated; the share of interest sensitive industry and finance sector to regional GDP (the role of industry mix), the share of foreign import to regional GDP, and labor productivity. Not only contributing to the literature on differential regional effects of monetary policy, more importantly, our results also attract attention to consider an effective national monetary policy that appraises the diverse nature of Indonesian regions.

Presentation 2

Kiyotaka ISHIKAWA (The University of Tokyo)

Networks in Japanese Regional Agro-food Supply Chain

Network linkage is important even in evaluating aggregated macroeconomic indicators when input-output networks across industries are asymmetric and respond differently to demand shocks (e.g. international trades) or supply shocks (e.g. TFP changes). However, most network linkage studies implicitly assume unit elastic substitution between intermediates or production factors, following Cobb-Douglas function systems in the original concept of Acemoglu et al. (2012), which is improbable especially in studying supply side issues. Besides, network linkage model has not been empirically verified in interregional contexts. Provided asymmetric input-output network linkages in agricultural and food industries, in different structures over Japan's domestic 9 regions, this study identifies propagation channels of productivity shocks across industries and regions. Since regional agriculture often connects to the local food processing industries in its supply chain, the shocks are supposed to propagate intra-regionally. Based on the framework by Baqaee and Farhi (2019), this study incorporates dynamic network linkage where network structure (or input-output structure in the data basis) could be changed by the shocks, with nested CES function system. The dynamics of network structure affect macroeconomic performances in the case of elastic/inelastic substitution of intermediates caused by sectoral productivity growth, which depends on each sector's production technology. This study empirically estimates the corresponding parameters and by incorporating them into the model calculates the intensity of propagation in multiple years. The results show with statistical significance that among agro-food sectors, the shocks propagate within the region more intensively than across to the others. Acemoglu, D., Carvalho, V. M., Ozdaglar, A., & Tahbaz‐Salehi, A. (2012). The network origins of aggregate fluctuations. Econometrica, 80(5), 1977-2016. Baqaee, D. R., & Farhi, E. (2019). The macroeconomic impact of microeconomic shocks: beyond Hulten's Theorem. Econometrica, 87(4), 1155-1203.

20 March (Saturday) [Venue P: Main Hall] 13:30-16:50
Plenary Session
Opening of the Plenary Session (13:30-13:40)

President's speech (13:40-14:20) Takashi YAGI (Meiji University)

Cost Structure Analysis: its application to 2015 Input-Output Table for Japan

The aim of this paper is to apply cost structure analysis to 2015 Japan Input Output Table. If we read input-output table vertically, we can grasp the direct cost structure of industries measured in terms of money. The cost structure analysis of Yagi (2017) enables us to measure the direct and indirect cost structure of industries in terms of unit of standard labour. Yagi (2017) assumed a uniform rate of profit throughout industries. In this paper, we will introduce a model with different sectoral rates of profits. In our cost structure analysis, the value of labour is kept constant when the rate of profit varies, and so the standard labour works as an invariable standard of value. In our cost structure analysis, the wage share measured in terms of standard net product is given exogenously. The sectoral rates of profits are given exogenously by the data of Input-output table and fixed capital. The wage share measured in terms of labour can be calculated by our model. The uniform rate of profits to the ordinary capital is also calculated by our model. The price of each sector is decomposed into 6 components, direct and indirect costs by domestic labour, direct and indirect costs by imports, direct and indirect costs by depreciation, direct and indirect costs by net taxes, profits for direct and indirect costs for fixed capital, and profits for direct and indirect costs by imports.

Special Session: Current status and challenges of Cultural Satellite Account (CSA) Compilation in Japan

KAWAMURA Tadashi (Agency for Cultural Affairs), FUJIKAWA Kiyoshi (Aichi Gakuin University), MAKI Keiji(Agency for Cultural Affairs), HAKUSHI Natsuko(Agency for Cultural Affairs), KAWAI Mitsuo(CDI Inc.)

The UNESCO Institute for Statistics (UIS) is playing a central role in developing a framework for the Cultural Satellite Account (CSA). In Japan, the Agency for Cultural Affairs, a cultural administration agency, is developing a Japanese version of the CSA in collaboration with UIS and other international organizations. As cultures vary with country, ethnic group and other factors, the basic structure of UNESCO's international CSA model was constructed with this in mind and allows for modifications and adaptations to the cultural diversity of/within each country. A CSA provides for the collection of production value, value added, employment and other cultural industry statistics in line with the framework of the System of National Accounts (SNA). Agency for Cultural Affairs policies aim to revitalize Japan's economy by effectively utilizing our rich extant cultural resources while simultaneously promoting cultural development. They collect and report on the comprehensive quantitative data of the CSA. This results in Cultural GDP statistics and enables the evaluation of the effectiveness and potential of their policies. In other words, CSA is a pillar for "Evidence-Based (Cultural) Policy Making (EBPM)". In this presentation, we report on the following: (1) An overview of the UNESCO model CSA: Definition and scope of culture targeted by the UNESCO model, and basic UNESCO model cultural GDP calculation methods. (2) Estimates of cultural GDP in Japan: Specifically, the six UNESCO model cultural GDP areas of cultural/natural heritage, performing arts, visual arts/crafts, books/press, audiovisual/interactive media and design/creative services. (3) The current status of

CSA in the world and issues of CSA in Japan: Aspects unique to Japan's methodology and how CSA is being publicized in Japan.

Coffee Break (15:20-15:40)

Lawrence R. Klein Award Ceremony and Awardee Speech (16:00-16:45)
Oscar LEMMERS (Statistics Netherlands), Stephen CHONG (Statistics Netherlands), Rutger HOEKSTRA（MetricsForTheFuture.com）, Ilke Van BEVEREN (De Nederlandsche Bank), Marcel Van Den BERG(Statistics Netherlands), Ron Van Der WAL(Statistics Netherlands) and Piet VERBIEST (Statistics Netherlands)

The role of small and medium sized enterprises in the Dutch economy: an analysis using an extended supply and use table.

Firm size is increasingly acknowledged as an important factor for (macro-)economic policy. It is known that the overall importance of small- and medium-sized enterprises (SMEs) is different relative to large multinationals in terms of their impact on economic growth, international trade and innovation. Yet empirical evidence to substantiate the different roles of firms of different sizes in domestic and global value chains is rare. So are methods and data. To tackle this problem, we develop a novel approach by extending the Dutch supply–use framework to firm size. We utilize firm-level data to construct a supply–use table distinguishing between SMEs and large enterprises and derive an extended input–output table. In doing so, we adopt a more evolved definition of SMEs, accounting for the fact that small firms may be subsidiaries of large (multinational) enterprise groups. The analysis shows that due to their function as suppliers to large exporting exporters, SMEs benefit much more from Dutch exports to foreign markets than the traditional export figures show. Their share in gross exports is 25 percent, but their share in domestic value added embodied in exports is 43 percent. Such outcomes hold for most industries and for exports to all major trading partners. As a consequence, the OECD suggests that next to policy instruments helping SMEs to cross the border themselves, instruments to help them find domestic partners that already export could be established.

B-2 International Economy and International Development 2

Chair: Nagendra SHRESTHA (Yokohama National University)

Presentation 1

Rido THATH (Meiji Gakuin University)

The Impact of Japan's ODA on Economic Growth in Southeast Asia

Southeast Asia has received large amount of ODA from Japan, which has contributed to the development of the region in many sectors, particularly in infrastructure, trade and human capital development. Although located in the same region, the gap of development among Southeast Asian countries are wide. Some countries are highly developed and are in high-income group on par with developed countries in the West, while other are very much under-developed. In addition, the size of their population, geographical areas, economies and market are diverse; so do the volume of foreign aid each country has received. Using data published by the Japan International Cooperation Agency, this study analyzed the overall impact of Japan's ODA on Southeast Asian economies. Then, grant and soft loan are analyzed separately to see if there is any different impact, and analyses are also conducted on each country case. The result shows that generally Japan's ODA contributed positively to the economic growth of Southeast Asia. When analyzed separately, grant had stronger and more consistent positive impact than soft loan. In addition, the result was mixed when each country was analyzed separately, indicating that ODA is necessary but is not sufficient to effectively drive economic growth by itself. Other compliment factors such as the level of human capital also plays important role together with ODA for a country to grow.

Presentation 2

Nagendra SHRESTHA (Yokohama National University)

Trade Frictions: Who Will Gain?

Trade friction between the United States and China has been escalating these days, the same has been occurred in Asia in the past. Intuitively, large trade surplus country (among two countries with trade friction) is assumed to lose more. However, interactions among the global economies are so complicated that the outcome of the trade friction will affect another countries indirectly. So, this paper aim to investigate the effect of trade friction on domestic and global economies using the International Input-Output Analysis. We use the Inter-country Input-Output (ICIO) table published by Organization for Economic Co-operation and Development (OECD) to see the effect on the global economy by assuming that two countries is stop its export to the partner country and the import is substituted by domestic productions in respective countries. Although it seems to be unreal assumption, but this type of exercise will enables us to show the indirect effect of the trade friction will harm all the countries in the World in terms of gross production and value-added also. Specifically, negative effect on the value-added will harm global gross domestic production (GDP) meaning that the economy and hence well being of human being will suffer for the mere benefit of a single country or a group of countries.

Presentation 3
Hor CHANTHA (Nagoya University)

How Does Cambodia Attract Relative Share of Inbound Tourists from ASEAN?

This paper attempts to attract an additional share of inbound tourists for Cambodia from the total inbound tourists in the Association of Southeast Asian Nations (ASEAN). We measure the impact of six subcomponents of institutional quality on the relative share of inbound tourists (64 countries of origin) in Cambodia to total inbound tourists in ASEAN. We consider the two-step system Generalized Method of Moments (GMM) estimation to analyze panel dataset covering 11 years (2007–2017). The estimation result shows that better rule of law, control of corruption, regulatory quality, political stability, government effectiveness, and voice and accountability increases the relative share of inbound tourists for Cambodia. The business environment, internet access, and doctors show a positive and significant effect on the relative share of inbound tourists (64 countries of origin) in Cambodia. Higher tourism price discourages tourists who visit ASEAN from visiting Cambodia. Higher transportation cost does not discourage inbound tourists who visit ASEAN from visiting Cambodia. The substitution price (Lao PDR, Thailand, and Vietnam) shows an expected sign and significant influence on the relative share of inbound tourists (64 countries of origins) in Cambodia to total inbound tourists in ASEAN. The results are robust in using another measurement of tourism development. Therefore, the government should consider ways to improve six subcomponents of institutional quality to significantly increase the relative share of inbound tourists for Cambodia from ASEAN.

21 March (Sunday) [Venue C: Room 805] 10:30-12:00
C-2 Regional Input-Output Analysis 2

Chair: Mitsuo YAMADA (Chukyo University)

Presentation 1

Mitsuo YAMADA (Chukyo University)

Impact analysis of future consumption changes on the municipal economy in a depopulating society using the 2011 Aichi prefecture's inter-municipal input-output table

It is feared that future population decline will reduce the vitality of the local economy by declining household consumption expenditure. Here, for 54 municipalities in Aichi prefecture, Japan, we will estimate the future changes in the household consumption expenditure by using the projected numbers of population and household of the National Institute of Population and Social Security Research and the consumption expenditure by item by householder age group of the 2014 National Survey of Family Income and Expenditure. Then, we convert these estimates suitable for the consumption expenditure by sector in the input-output table for each of 54 municipalities. Furthermore, we will analyze the impact on the production and added value of each municipality by using 2011 inter-municipal input-output table for 54 municipalities in Aichi Prefecture. Here, in addition to estimating the inter-regional spillover effect of consumption demand by municipality, we could discuss the regional interdependence through inter-municipal leakage of compensation of employees due to commuting by the consumption-endogenous (or the households-endogenous) model of input-output analysis. According to our analysis, consumption will decrease significantly in the northern part of Owari area, the southern part of Chita area, and all

part of Higashi-Mikawa area. For example, Toyohashi City and Ichinomiya City have a large decrease in consumption, then the induced production of them decreases largely. On the other hand, though Nagoya City's population and household does not decrease so largely compared to others, its production is reduced by the decrease of consumption expenditures in the surrounding municipalities.

Presentation 2

Md ARIF-UR-RAHMAN (Ritsumeikan University), Kazuo INABA (Ritsumeikan University)

Foreign Direct Investment and Productivity Spillovers: A Firm-Level Analysis of Bangladesh in Comparison with Vietnam.

Foreign direct investment (FDI) is expected to generate external effects—usually termed FDI spillovers—for a host country, and these spillovers are thought to have consequences on the productivity of domestic firms. Despite this strong expectation, the empirical findings on FDI spillover are still indecisive. This study examines firm-level panel data to determine the effects of FDI spillover on firms' productivity in Bangladesh in comparison to Vietnam. We consider both the horizontal (intra-industry) and vertical (inter industry) spillover effects of FDI. Researchers are now more interested in searching for the possibility of FDI spillover across industries. Schoors and van der Tol (2002) for Hungary, Javorick (2004) for Lithuania, and Blalock (2002) for Indonesia all find positive spillover effects through vertical linkages.   To measure inter industry or vertical (backward and forward) spillover variables, we use the input-output matrices of individual country provided by the Asian Development Bank (ADB). Empirically we find evidence that Bangladeshi firms gain productivity improvement through intra-industry or horizontal linkages, whereas Vietnamese firms gain through backward linkages. Our findings suggest that increases in foreign presence in the same industry for Bangladesh and in downstream industries for Vietnam are related with increase in output of domestic firms.
Key words: Foreign direct investments; horizontal spillover; vertical spillover; Bangladesh; Vietnam.

21 March (Sunday) [Venue A: Room 901 & 902] 13:00-15:00
A-3 Organized Session: Towards Carbon Neutrality: Chinese and American Strategies

<div align="right">
Chair: Kiyoshi FUJIKAWA (Aichi Gakuin University)
Discussant: LEE Soocheol (Meijo University)
Discussant: Tadashi HAYASHI (Shiga Prefecture University)
</div>

Presentation 1
Kiyoshi FUJIKAWA (Aichi Gakuin University)

Structural changes in embodied CO2 trade due to US return to Paris Agreement

On November 4th, 2020, the US officially withdrew from the Paris Agreement which is an international framework for combating global warming. However, after that, President-elect Joe Biden has promised to rejoin the Paris Agreement. As the US is the world's second-biggest emitter of greenhouse gases, behind China, its withdrawal and return would affect the effectiveness of the agreement and carbon leakage. This

study analyzes structural changes in embodied CO2 trade due to the US return to the Paris Agreement by fusing CGE and I-O analysis. We simulate three policy scenarios: (1)The Paris Agreement scenario where main countries and regions with NDCs including the US implement carbon reduction policies from 2015, (2)the US withdrawal scenario where the US does not implement any carbon policy, and (3) the US return scenario where the US starts carbon reduction policy from 2021.   We found that with the US return to the Paris Agreement, GDP in 2030 will increase by 0.1% to 0.3% in most countries and regions except the US compared to the US withdrawal scenario. The world's CO2 emissions in 2030 will decrease by 2.2 billion tons compared to the US withdrawal scenario. This would be due to a decrease in CO2 emitted by the US. However, our I-O analysis reveals that about some part of CO2 decrease is due to consumption-based CO2 emissions decreasing in countries and regions other than the US. Namely, if a large country like the US joins the agreement, it will enhance the effectiveness of carbon reduction policies by decreasing embodied CO2 imports. From the structural decomposition analysis, we found that improvement of CO2 output ratio contributes to carbon reduction much more than intermediate input coefficient changes and final demand decreases. The US return would reinforce CO2 output ratio contributes.

Presentation 2
Hikari BAN (Kobe Gakuin University), Kiyoshi FUJIKAWA (Aichi Gakuin University)

US and Chinese power selection and usefulness of international emissions trade

In recent years, the introduction of renewable energies such as wind power and solar power has been progressing in China. Wind power generation has almost achieved the target of 13th 5-year plan, and solar power generation has achieved twice the target regardless the final year of the 13th 5-year plan is 2020. Regarding Greenhouse Gas emission trading, regional exchange markets have been opened in eight regions since 2013 while nationwide emission trading system is scheduled to start soon. Though the United States has no numerical targets for the introduction of renewable energy as the federal government, some states in the USA have introduced a Renewables Portfolio Standard for energy utilization and an GHG emissions trading system. This study examines the effects of environmental policy on the power source composition and the effects of emissions trading, mainly in the United States and China. GTAP-E-Power model is used as the analysis model. The GTAP-E-Power model is a model that enables the substitution of 11 types of power generation activities including renewable energy and nuclear power.   Renewable energy introduction policies include production subsidies for the renewable energy sector, taxation on the use of coal power, enhancement of technological progress in the renewable energy sector, etc. For example, a 50% production subsidy for wind and solar power increases their power production and reduces CO2 emissions, but the distortion of the production structure due to the subsidy reduces GDP to some extent. And it can be confirmed that the United States and China have higher elasticity of CO2 emissions to GDP than that in other countries/regions. We will also analyze the economic and environmental effects of domestic and international emissions trading in achieving the goals of the Paris Agreement, and examine the usefulness of the role of renewable energies.

Presentation 3

Jiayang WANG (Renewable Energy Institute)

Optimal location for large-scale wind farms in China

In this study, we examine the economic rationality of the location for large-scale wind power generation in China. Since wind power generation has a low energy density, the area required to install equipment for generating the same power is larger in renewable energy power generation than in thermal power generation. That is why the location of large-scale wind power farm in rural area where the land price is low. On the other hand, as the transmission line becomes longer, the transmission cost gets higher with transmission line construction and transmission loss. Therefore, the cost curve becomes a U-shape, and there is a location with the minimum cost. In this paper, we calculated the minimum cost location for wind power generation around Beijing, considering the distance from Beijing and the location cost. As a result of the analysis, it was found that the distance where the location cost including the transmission cost is the minimum is about 110km from Beijing. However, at present, large-scale wind farms are far from the lowest cost location. One of the reasons is the separation of power generation and transmission in China. Since Chinese power producers do not bear transmission costs and the cost to be considered is construction costs only, large-scale wind farm tends to be built in remote areas where land is cheap. However, in remote areas, there are not enough transmission lines and power demand is low. In reality, there are cases where renewable power generation cannot be fully utilized and output is suppressed. Such mismatches have a negative impact on the spread of renewable energy.

Presentation 4

Yiyi JU (University of Tokyo), Kiyoshi FUJIKAWA (Aichi Gakuin University)

Initial allocation of emissions trading among sub-regions in China

In the context of the 2060 carbon-neutral pledge, the role of the national market-based climate policy instrument, China emission trading scheme, is becoming increasingly important. The market design of it calls for an approach that can allocate the initial allowances considering the equality in the development in each region, specifically, considering the electricity transmission and emission relocation among regions. A large number of effort-sharing approaches have been proposed following different equity principles. They are found to have some basic tenets, such as responsibility, capability, equality, and cost-effectiveness. This study conducted two main approaches: emissions generated from energy use (Energy consumption-based) and emissions induced by the consumption of final goods and services (Final consumption-based), together with three reference approaches (Per capita convergence, Ability to pay, and Cost-optimal) to provide such references to a further adjustment of the initial allowance allocation. Based on the 30-region input-output table in 2012 and emission data in 2015, the results of the two main approaches share the same total amount but differ in the structure of regions. Such difference provides important references to a further adjustment of the initial allowance allocation. A proper emission allocation of ETS can speed the shift towards electricity-saving technologies and lifestyles in regions that consume a large amount of electricity (e.g., Jiangsu, Beijing, and Guangdong), as well as to support the improvement of emission intensity in regions generating more

electricity (Shanxi and Inner Mongolia). The discussion of sub-regions under the coverage of a national emission trading scheme in China provide important references for a potential international emission trading scheme covering more countries.

21 March (Sunday) [Venue B: Room 802 & 803] 13:00-15:00
B-3 Others 1

Chair: Ken ITAKURA (Nagoya City University)

Presentation 1

Michael HUANG (Ocean Policy Research Institute)

The Economic Impact of Technology Improvement, Shipping Routes and Economic Partnership Agreement: An Approach of GTAP Model

The share of shipping of goods as of the 21st century still exceeds 80% of global trades, indicating that the looking for the new route and technology improvement in navigation could improve the efficiency. Meanwhile, the technology improvement and climate change has made the Arctic routes an option during summer, saving the transportation cost by 40%. However, the increasing demand of trade and shipping in emerging economies such as Asia and the Pacific, Indian Ocean and the Gulf, reducing carbon emission reduction has become urgent issue. On the other hand, the mushroomed economic partnership agreements (EPAs) since the 2000's have also boosted the trade volume intra- and inter-regional. The position in Japan and other East Asian countries could be benefited by such trend.   A lot of literature focuses on the change of total volume, but it would be more precise to illustrate the impact specifically in order to further interpret the new type of trade agreement in the non-tradable measures (NTMs), such as legal system and market barrier. To capture the phenomenon with economic interpretation, the research applies GTAP model (v10.0) to make policy simulations for the economic impact results from the technology improvement in shipping and logistics sectors. Such change contributes to production efficiency improvement while these parameters are calibrated from Japan's SciREX Policy Intelligence Assistance System Economic Simulator (SPIAS-e). We construct scenarios of (1) Technology improvement; (2) Accessibility of routes and (3) Economic partnership agreements (EPAs) accordingly.

Presentation 2

Ken ITAKURA (Nagoya City University), Tomohiro IWAMOTO (Nagoya City University)

Incorporating a Sub-Region into a Global CGE Model

There has been an increasing interest in sub-regional economic impact of mega-FTAs, such as the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) and the Regional Comprehensive Economic Partnership (RCEP). Our aim in this study is to explore the linkage between a sub-region and global economy, by incorporating a sub-region into a global computable general equilibrium (CGE) model of international trade. We take Aichi prefecture in Japan as a sub-region to be introduced to the Global Trade Analysis Project (GTAP) database, and we modify the database and the comparative static GTAP model to accommodate this alternation. Input-Output (IO) tables of Aichi and Japan provide a starting point for our modification

process. Industrial sectors from the IO tables are aggregated to 50 sectors to match with the same aggregation obtained from the GTAP database. The nexus between production, international trade, and consumption is split accordingly by distinguishing Aichi prefecture from the rest of Japan. In the modified model, we add a new module of domestic inflows and outflows of goods and services within Japan. To illustrate sub-regional impact of national trade policy change, we experiment a set of trade liberalization scenarios. Tentative results from simulation experiments shows that the impact of trade liberalization differs in direction and in magnitude reflecting the difference in economic structure of Aichi prefecture from the rest of Japan.

21 March (Sunday) [Venue C: Room 805] 13:00-15:00
C-3 Others 2

Chair: Takashi YAGI (Meiji University)

Presentation 1

Satoru HAGINO (Statistics Commission Office), Shinji TAHARA (Chiba University of Commerce), Jiyoung KIM (Okayama University)

Firm Heterogeneity to be incorporated in Japan's SNA IOT

This paper examines the heterogeneity of Japanese firms and identify gaps in the ratios of their imported intermediates to total outputs. Using such gaps, we can develop the SNA Extended Input Output Table (IOT) for Japan and recalculate trade in value-added indicators for Japan by incorporating such an extended IOT in OECD's multi-country IOT. For this purpose, we measured the gaps in imported intermediate ratios using micro data of firm-based Basic Survey of Corporate Activities as well as establishment based Economic Censuses and Input Surveys for Mining and Manufacturing. Our micro data matching revealed that the distinction between exporting and non-exporting firms is relevant for assembly industries such as electronic and automobile industries, as discussed in many literatures. In contrast, other distinctions appear to be more important than such a distinction for primary materials industry. More specifically, chemical industry, in particular petro-chemical industry having integrated large manufacturing plant, has the largest gaps in imported intermediate ratios when distinguishing large firms from small and medium firms. Metal, textile and paper industries, which have exploited raw materials abroad, has the largest gap when distinguishing firms with foreign affiliates from those without foreign affiliates. Interestingly, it is not essential to distinguish foreign from domestic firms, as foreign firms do not dominate in Japan's export market.

Presentation 2

Ileas Mia MOHAMMAD (Ritsumeikan University), Kazuo INABA (Ritsumeikan University)

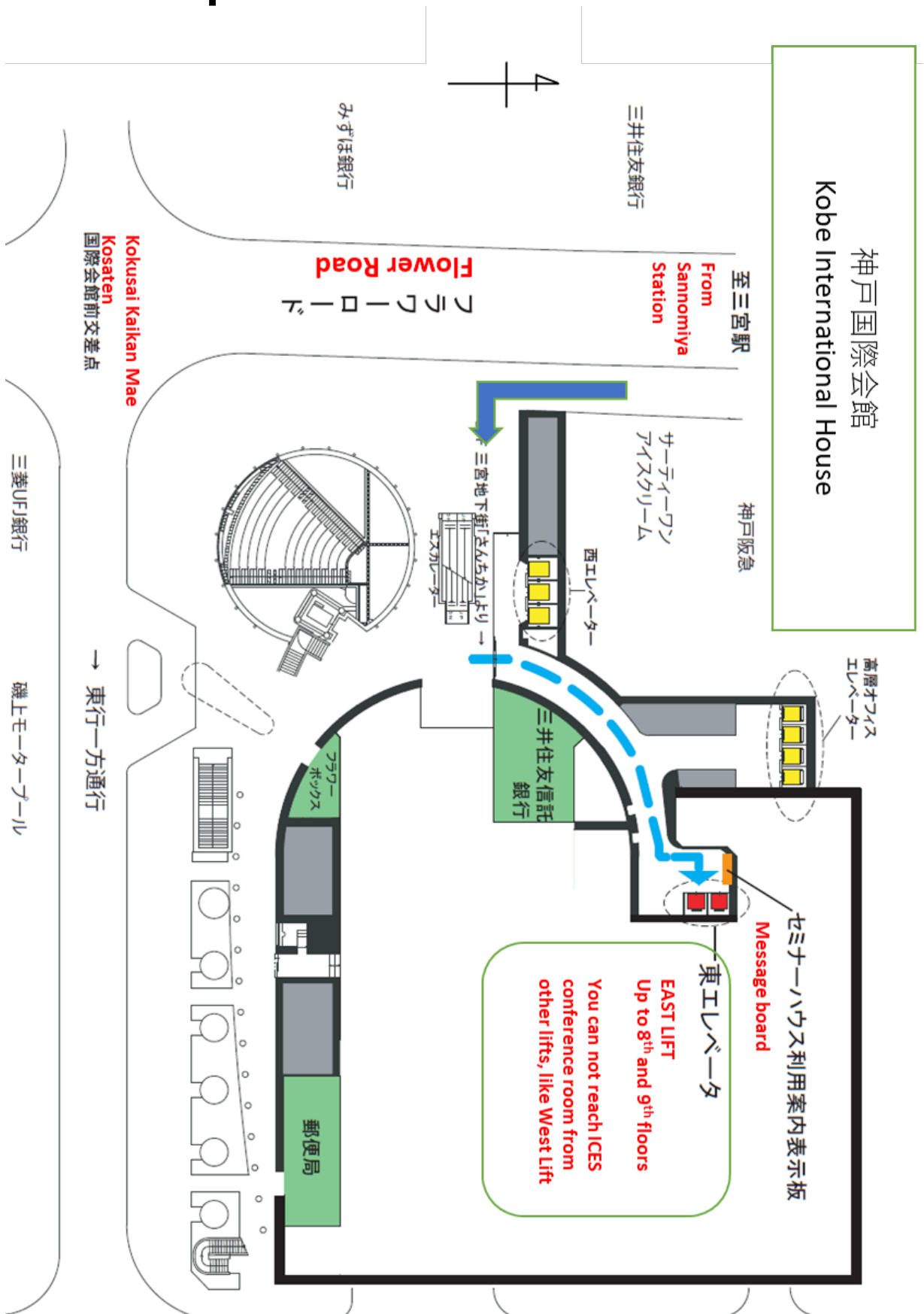**Does Education Reduces Wage Inequality? Evidence from HIES data in Bangladesh**

Bangladesh has experienced sustained economic growth of over 6% in the last decade. Economic growth often accompanies income inequality, and the Asian Development Bank (2017) finds that the household income inequality has risen in Bangladesh. As wage income is a major source of income, this study investigates the wage inequality

and how education affects the wage inequality in Bangladesh.   For this purpose, this study uses the Household Income and Expenditure Survey (HIES) data for the year 2005, 2010 and 2016 and examines the wage inequality of the period of 2005-2010 and 2010-2016. The Unconditional quantile regression examines the changes in quantile rates of return to education over the survey years. The decomposition of wages by year with Oaxaca-Blinder decomposition and Recentered Influence Function examines the wage inequality caused by education and also the part of wage distribution that affects the wage inequality.   The unconditional quantile estimates show that return to schooling increases at the higher point of wage distribution and level of educational attainment increases wage inequality within and across the group. The wage inequality measured by Gini decreased during the 2005-2016 in Bangladesh. The change in return to education significantly increase wage inequality during 2005-2010 and both the changes in education and return to education during the 2010-2016 significantly increase and decrease wage inequality, respectively.
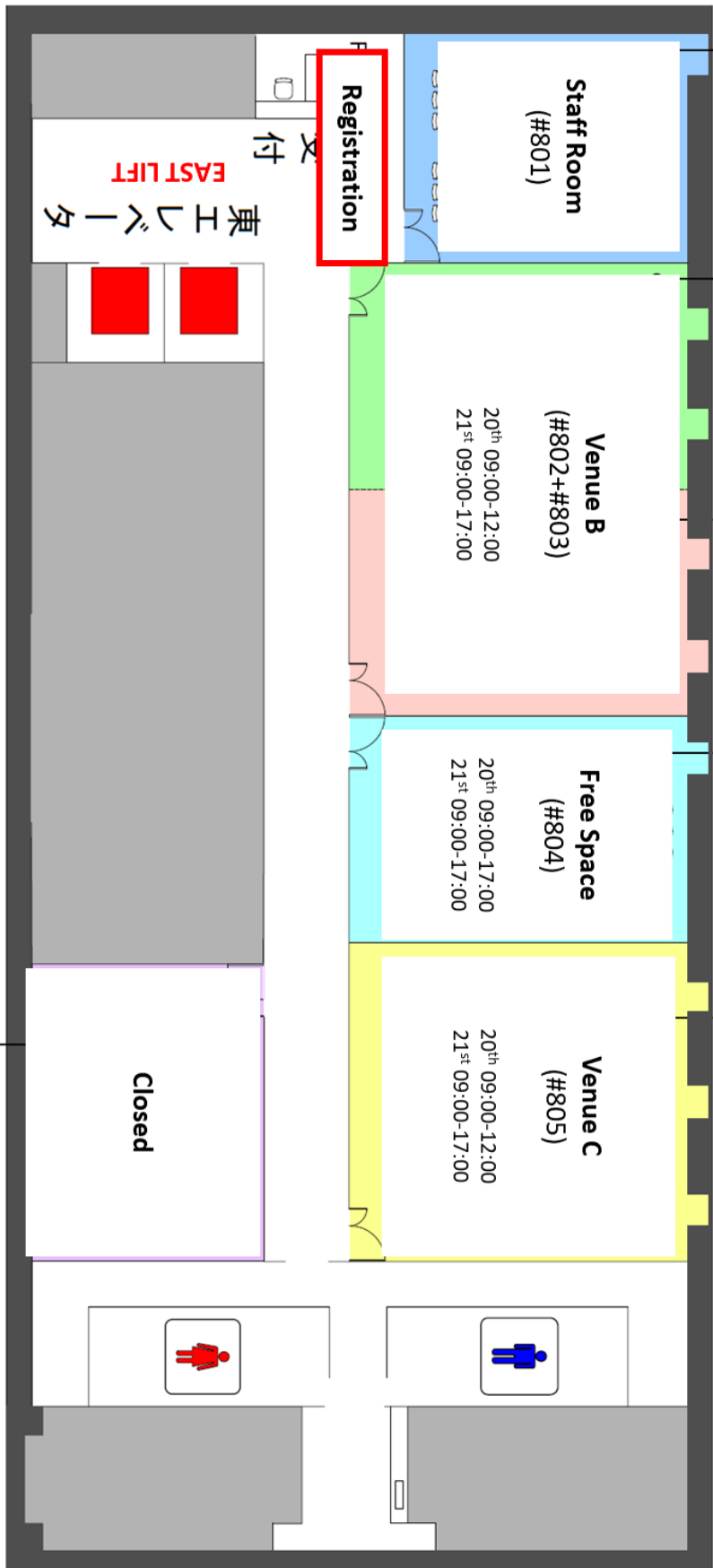
Key Words: Education in Bangladesh, Wage Inequality, Oaxaca-Blinder Decomposition, Recentered Influence Function.
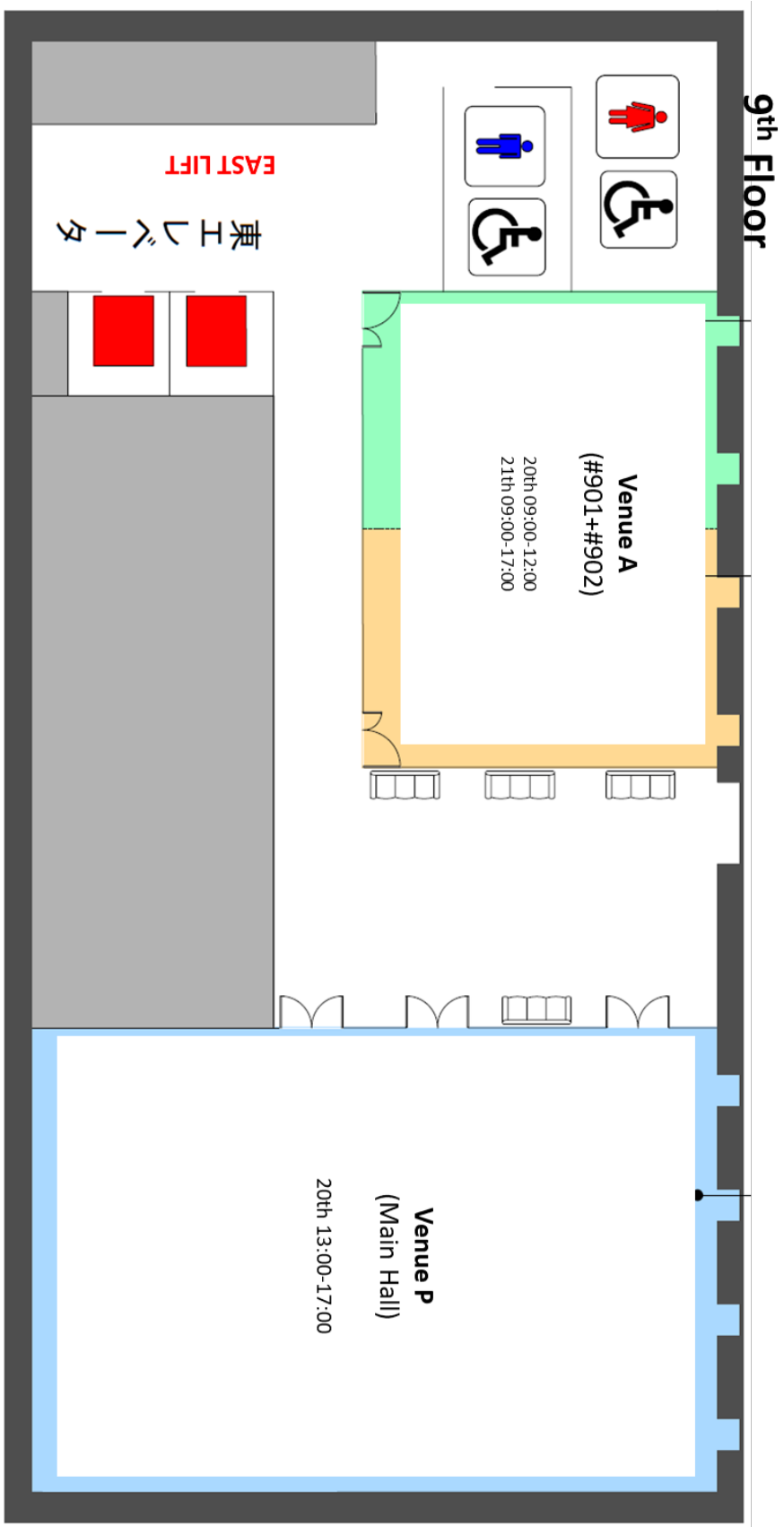
Floor Map

8th Floor

Staff Room (#801)

Registration

東コンベンター
受付
EAST LIFT

Venue B (#802+#803)
20th 09:00-12:00
21st 09:00-17:00

Free Space (#804)
20th 09:00-17:00
21st 09:00-17:00

Venue C (#805)
20th 09:00-12:00
21st 09:00-17:00

Closed

9th Floor

EAST LIFT
東エレベーター

Venue A
(#901+#902)
20th 09:00-12:00
21th 09:00-17:00

Venue P
(Main Hall)
20th 13:00-17:00

International Conference on Economic Structures 2021
Kobe International House, Japan, March 20-21, 2021

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