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Punctuality and Economic Development

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The objective of this research is to study whether the cultural perception of time, especially punctuality, contributes to economic development of a nation. The reason behind is that people who are from linear-time culture focus on scheduling and punctuality. So, the efficiency of production process is expected to be improved. To answer the research's question, a production function was estimated. The explanatory variables are index of punctuality, various inputs of production, such as technology, physical capital, and human capital, and control variables, which are inflation rate and trade openness. The hypothesis is that time punctuality has positive effects on economic development, which is represented by the higher per capita income. In order to estimate the production function, the cross-sectional data of 217 countries in 2014 was employed.

The estimation results tend to support the hypothesis that time punctuality affects economic development. Countries with greater time punctuality seem to be higher income countries. However, the estimated models suffer from multicollinearity problem, so the conclusion cannot be precisely drawn. Moreover, the estimation results show that physical and human capitals are important inputs of production.

The Effect of Internet Penetration on Economic Growth

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The objective of this research is to study whether the use of the internet contributes to economic growth. The reason behind is that the internet conveys information to economic agents more rapidly and perfectly. So, it leads to higher efficiency in many sectors of the economy.

A production function was estimated. The independent variables are various inputs of production, such as labour, physical capital, and human capital. According to the hypothesis that the use of internet positively influences the technology of production, thereafter economic growth, the internet use rate was considered as an independent variable. The internet contributes to economic growth as a result of it spreads technology and reduces transaction costs. The panel data was employed. The cross-sectional dimension is 76 provinces in Thailand. The time dimension is 2006-2014. The total observations are 684.

The result of Hausman test indicates that fixed effect model and random effect model are statistically different. So, this study uses the fixed effect estimates. The estimation results support the hypothesis that the internet use influences outputs of production and it has level effect on economic growth. Moreover, it is found that its effects are greater in the case of provinces in North and Northeast regions, which are the regions that the internet use rates are still low. The estimation results also show that labour and physical capital are inputs of production statistically significant.

Traffic Accident Fatality and Economic Growth

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The objective of this research is to estimate traffic-accident fatality models using 2 sets of data, which are time-series data and panel data of Thailand. The reason that two sets of data are employed in this study is that both models allow different variables in the model. So, the study can cover more determinants of traffic accident fatality.

In case of time-series data model, it is estimated by ordinary least squares method since all variables are stationary. The dataset employed is monthly data during October 2002–June 2013. It is found that some determinants do explain traffic-accident fatality rates significantly. An increase in the ratio of motorcycle to total car will make the traffic-accident fatality rates increase. An increase in manufacturing production index, which is a proxy of economic environment, has negative effect on traffic-accident fatality rates. Moreover, it is found that the average of traffic-accident fatality rates is higher in April, December, or January, which are the months with long national holidays. However, the effect of government first-car rebate scheme cannot be concluded in this study.

In case of panel data model, the result of Hausman test indicates that fixed effect model and random effect model are not statistically different. So, this study uses the random effect estimates. The dataset comprises of annual data of 76 provinces in Thailand over the period of 2010–2012. It is found that some determinants can explain traffic-accident fatality rates significantly. These

determinants are per capita gross provincial products, per capita cumulative cars, provincial highways distance, and the numbers of highways utilization. Their impacts on traffic-accident fatality are as expected. An increase in either per capita cumulative cars, provincial highways distance, or the numbers of highways utilization will result in increases in traffic-accident fatality rates. On the other hand, an increase in per capita gross provincial products, which is a proxy of economic environment, makes traffic-accident fatality rates decline.

In summary, the results of both time-series and panel data confirm that the favorable economic environment makes traffic-accident fatality decrease as hypothesized by the latter part of Environmental Kuznets Curve.

Cigarette Tax Avoidance Behavior of Smokers in Bangkok Area

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Whatever cigarette price has been increased by soaring in cost, changing in imported price, enhancing its tax, smokers usually has responded by trying to search for the cheap cigarettes from wherever they can find i.e., boarder shops, duty-free shops, on-line shops, and informal small retailed shops. If the tax avoidance behaviors are widespread they would ultimately cause more severe smokers' avoidance behavior called "tax evasion" i.e., illicit cigarette sold. Tax avoidance then has resulted in loss in government tax income. The research objectives are comprised of (1) to study smoking and purchasing cigarette behaviors of smokers live in Bangkok area (2) to explore those smokers' knowledge and attitude toward cigarette tax avoidance and (3) to identify factors determined smokers' behaviors on the cigarette tax avoidance. The survey method with 400 smoker samples that have lived in 8 districts of Bangkok area selected randomly is applied. The economic model called Logit binary model is then developed to come up with those research objectives, in addition, the cigarette reservation price of sample smokers will also be analyzed.

The survey results show their basic profile data as follow: most of smokers are male by 89.25 per cent, aged by 31.40 years, with private employee, graduated bachelor degree, monthly income about THB 10,000 – 20,000, married, small family size by 1-3 members. Most of respondents have

smoke cigarette more 10 years by 64 per cent, smoke for soothing stress by 96.50 per cent, smoke at anyplace by 89.00 per cent, daily smoke by 5-10 rolls. The most popular cigarette bands smoked are Krongthip, and LM by 31.25 and 19.75 per cent, respectively. Next, smokers' behaviors on cigarette purchase with in 30 day priori the survey started, most of smoker purchase cigarette for themselves by 81.00 per cent. Cigarette tax stamp on case has usually been found by smokers by 95.00 per cent. The most first three cigarette bands purchased are Krongthip, LM, and Sai Fone by 39.75, 21.00 and 18.50 per cent, respectively. In addition, smokers' behaviors on cigarette purchase with in 180 day priori the survey started, cigarette tax avoidance behavior of smokers has only been found in term of cigarette purchasing at unofficial small retail shops by 6.00 per cent, by THB 26.67 worth per time, by 2 times frequently per month. Saving cigarette expenditure is the key reason by 73.91 per cent. The average cigarette price per case is lower by THB 10-15 on average. Almost of 84.80 per cent among smoker reveal their reservation price for a cigarette case by THB 61-80 approximately. Next, most of smokers have more recognized on knowledge about cigarette tax avoidance by 68.75 per cent. The question on "if the cigarette tax stamp on the cigarette case is not found, it indicates the cigarette tax avoidance" is answered correctly by 89.50 per cent. In contrast, the least correct answer by only 25.00 per cent is found on the question that the tax avoidance is identical as the tax evasion. Furthermore; most of the smokers' attitudes indicate that cigarette tax avoidance behavior is not proper but it is not smoker's mistaken because of the loop-hole of law and regulations found and weak law enforcements, by 3.62 point from 5.00. They also have positive attitude toward on wherever they behave by searching for and purchasing the low price of cigarette, they would be deserved by 3.57 point from 5.00. The factors determined cigarette tax avoidance behaviors are examined and revealed from the Logit models as follows: Smokers' average monthly income, occupation, and education are

considered as controlled variables for the first, the second and the third Logit models. Result from all models show that smokers' occupation, their average monthly income and knowledge on tax avoidance are statistically significant key factors determining for the cigarette tax avoidance behaviors.

Three suggestions could be conducted as follows: (1) Enhancement on controlling the legally avoided cigarette trading for all sources to prevent cigarette sold in black market. (2) Cigarette price sold in the officially permitted shops and the unofficial sources should not be different more than THB 15 per case. (3) The combined policy with non-price measurement should be implemented to lessen smoking effectively. Further studies should be focused on supply side of cigarette tax avoidance as well as the in-depth survey data on smokers' cigarette tax avoidance behavior in each specific sources should be conducted.

Post Survey Study: Monitoring and Evaluation (M&E) Thailand

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The “Better Rice Initiative (BRIA) Thailand” is the project which has the overall goal to improve the livelihoods of rice farmers through sustainable production and improved market access. The project was started in 2014. The target groups are the small-scale farmers in the northeastern and central regions of the country who are producing at relatively low productivity due to an inappropriate use or low quality of agricultural inputs.

The objectives of the study are to assess the impact of project initiatives regarding change in behaviour of participating rice farmers, improvement of farmers’ livelihood and effectiveness of using mass media to transfer knowledge. The study area covers two regions including the Northeast of Thailand where Ubon Ratchathani, Sisaket, Roi Et, and Surin provinces were selected as the study areas and the Central where Suphan Buri, Phra Nakhon Si Ayutthaya, Nakhon Sawan, and Uthai Thani provinces were selected as the study areas. In order to get the latest information, data of last cropping period in each area was collected and used in this study.

The primary data was collected by interviewing through structured questionnaire. Number of samples for interview was defined in the total of 355 whereby 250 and 100 samples were selected from the farmers in the northeastern and central regions respectively. In addition, in order to assess the achievement under “Young Agripreneurs Promotion” scheme, 5 students in the central region were also selected as samples.

In order to investigate the impact of recommended farming practices on the improvement of farmers’ livelihood in northeastern study area, 25

demonstration rice farming plots that implemented farming practices recommended by the project were identified and used as samples for the collection of information for the estimation of gross margin.

The data collected in the survey was derived from the objectives of the study and achievement indicators including socio economic background of the target groups, farming practices, farming business and knowledge requirements. Farmers' attitudes towards contract farming, project implementation and farming occupation were also investigated in the study.

The results of the study can be concluded as follows:

1) Changes in behaviour of participating rice farmers: The project's training and extension approaches were able to change the behaviour of participating rice farmers in various aspects positively. The achievement indicators No. 1-3 are considered fulfilled. The key success in changing farmers' behaviour is the adoption or intention of all farmers in the Northeast to utilize drilling method.

2) Improvement in farmers' livelihood: Training services and extension approaches of the project were found to be able to improve farmers' livelihood as targeted in indicator No. 4. The outcome of the demonstration plots in farmers' planting areas shown that the increase in gross margins from recommended farming practices was more than 20 percent of provincial average in baseline study. In this case, drilling method was considered to be the key recommended farming practice. By utilizing drilling method, farmers could get higher yield with lower cost in their rice production when compared to other methods.

3) Effectiveness of using mass media: The project's TV program was viewed by noticeable amount of farmers and considered useful and attractive by viewers. Various improvements in farming practice of farmers in the Central in accordance with the advice in TV program were found in the study. The improved farming practices as compared to baseline are related to the activities

such as soil testing, straw burning, use of soil improvement substances and biopesticide application. Besides, high percentage of farmers was also found to do in-field rice stubbles and straw decomposition and none of them applied the prohibited WHO class Ia and Ib pesticides. Another impact of the TV program is the help to increase communication and knowledge transfer among farmers. Farmers from other provinces could observe the practices and advice of farmers in the program and contacted them for further advice or exchange of knowledge.

4) Future farmers approach: The promotion for the participation of new generation as young agripreneurs by presenting “Farmers Love Seed” DVD in schools was positively responded by the students. In addition, farmers in both regions had positive attitudes and satisfaction towards rice farming occupation except for the current prices of production. They agreed with the idea to provide knowledge of rice farming in schools. However, the desire for their own children to be rice farmers was rated positively at slightly above the moderate level.

5) Other achievements: Three post-harvest management concepts including harvesting, drying, and storage were submitted to the RD in 2017. These concepts were used in project’s training program. In addition, long-term business arrangement or market linkage model among farmers, miller, and trader (Olam) was created and implemented. The implementation is considered successful as some amount of rice has been traded under this arrangement since 2016 and the traded amount was increasing in 2017. These two activities can fulfill the achievement indicators No. 5 and 7 of the project.

For further development of project implementation, the recommendations that were derived from researchers’ points of view are provided as follows:

1) Demonstration plots should be expanded to other places as many as possible as it is considered as effective method in encouraging farmers to

apply appropriate farming practices. To have demonstration plots in different locations will allow the project to modify farming practices to make them more suitable in each specific area.

2) As there were farmers who intended to utilize drilling method but they could not find the drilling machine for planting when needed. Therefore, there should be an arrangement to support the need of farmer in this case.

3) As in the case of drilling machine, the arrangement for farmers to have combine harvesters at the right time will help to improve the quality of rice and bring about higher incomes to them.

4) The prices of rice should be more responsive to the quality. Under long-term business arrangement or market linkage model of the project, if the difference in prices between the good and the normal quality rice can be set to big enough, farmers will have more incentive to perform the good and sustainable farming practices as recommended by the project or other agencies.

5) The TV program should focus more on the technical aspect and be problem solving oriented to make it more interesting and useful to target farmers. The project should also find the way to facilitate farmers to be able to view the TV program again after the first broadcasting because it is unlikely that farmers will watch the program through internet or YouTube.

6) The project should extend its services by focusing more on farmers who are considered as laggards in adopting new technology. The project can identify the laggard farmers by coordinating with other agencies such as the Bank for Agriculture and Agricultural Cooperatives (BAAC). The financial records of each farmers from the BAAC would be helpful in identifying farmers who have problems which can be supported by the extension services of the project. By this way, the project can also help to release the debt burden of farmers.

Better Rice Initiative Asia” (BRIA)

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The Strategic Alliance “Better Rice Initiative Asia” (BRIA) is implemented in Indonesia, Philippines, Thailand, and Vietnam. BRIA was launched in order to contribute towards the optimization of rice supply chains and improving rice-based nutrition in Southeast Asia. For this purpose, the project partners developed an integrated concept with the following three thematic priorities:

- Better rice production (e.g. through optimizing agricultural inputs);
- Better rice-based nutrition (e.g. through rice and oil fortification with vitamins);
- Better education and training in the rice production (e.g. through introducing new technologies).

The overall goal of the project is to improve the livelihood of rice farmers through higher incomes generated by improving the rice value chain all along from production to wholesale and retail markets.

It is the overall goal of BRIA Thailand to improve the livelihoods of the rural rice farmers through the promotion of sustainable production and improved market access. Interventions aim at enabling small-scale farmers to increase their income through “better rice” production. This means to improve the ratio of output to input in an ecologically sustainable manner using better quality inputs and to strengthen the farmers’ position within the rice value chain in partnership with private partners and the public sector. Interventions shall cover all areas of the rice value chain: production, processing, and marketing.

The project has four components: the first component, Trainings for Sustainable Rice Production, aims at training farmers and farmer groups as well as public and private extension workers, and rice value-chain actors in the safe, responsible, economic, and ecological way of using production inputs. Target group of this component will be farmers in the regions of Sisaket, Surin, Ubon Ratchathani, and Roi Et, where productivity is relatively low in comparison to agrochemical use per area. Similar to the first component, the second component, Awareness Raising for Sustainable Rice Production using Information Technology, also aims to contain the inappropriate use of fertilizer and pesticides within rice production. However, the component uses a more media-based approach with extended outreach at farm level rather than personal training for a certain number of farmers. Therewith, the component aims at emphasizing on broad grower coverage and outreach with the intention to induce changes in farmer behavior by using deliverable integrated technology. Initial target group are farmers and farmer groups in the central and lower Northern areas as well as other actors within the rice value-chain; in a later phase of the project, other regions might be included. Interventions within the third component, Postharvest Efficiency in the rice postharvest system, will focus on both preventing food losses and improving the efficiency of technologies that are used to add value to rice and its by-products. Within the fourth component, Strengthening Market Linkages and Promote Young Agripreneurs, market access for farmers shall be further supported.

Achievement of the objective will be measured using the following indicators:

- 1) 80% of 300 lead farmers use their new knowledge on recommended farming practices in farmer trainings.
- 2) 60% of 10,000 farmers trained apply recommended farming practices.

3) 50% of 10,000 farmers trained reduce the application of WHO Ia and Ib pesticides by 40%.

4) Recommended training methods increase gross margin by 20% compared to provincial average.

5) At least three improved post-harvest management concepts are developed and submitted to the Rice Department.

6) In 50 schools of the region the “future farmer approach” was presented by the project and positively assessed by 70% of the pupils.

7) At least x potential local rice millers, retailers, wholesalers or exporters are identified and have signed at least x long-term business arrangements among each other and/or with project farmers.

In the process of conducting the project, BRIA has planned and required the project’s monitoring and evaluation process. This process needs to be pursued with seriousness and intensity through a result based monitoring system to achieve its vision. The result based monitoring system requires establishment of a baseline information in order to be used as reference situation to compare with the results from evaluation and monitoring processes.

The result-based monitoring (RBM) will start with a baseline right at the start of the project implementation before the first crop in 2015. The mid-term monitoring will take place in February 2016. During the mid-term monitoring, the same methodology as during the baseline shall be used to collect data comparable with the baseline. The final monitoring in October/November 2017 will again follow up on the same data as collected during the baseline and the mid-term monitoring. The final monitoring will thus provide proof for the successful outcome of the project.

The Department of Agricultural and Resource Economics, Kasetsart University was commissioned by the project to conduct the study to provide baseline information for the project relying on its objectives and indicators whereby information of socio economic background, farming knowledge,

accessing and adoption to knowledge and farming as a business of the target farmers will be depicted. The results from the study will be used for the further evaluation and monitoring.

Customer Segmentation of Functional Food with Application of Kano's Model: a Case Study of Riceberry Drink in Bangkok

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The global value of functional drink segment has grown dramatically including in Thailand. Riceberry drink is one of the nutraceuticals captured as a new natural health food. Key factor to launch a product successfully is an understanding of customer needs and a creation of product attracting consumers. Therefore, this study applies Kano's model to classify the product quality attributes of riceberry drink and determine their influences on customer satisfaction. Approximately 400 samples of customers in Bangkok were collected by multi-stage sampling technique.

Expert interviews and focus group exercise yield 20 product attributes in this research (Riceberry as ingredient, High antioxidants, Low sugar index of rice, "Suitable for vegans" label, GDA label, Various levels of sweetness, Low GI added sugar, Milk free, Gluten free, Fiber-rich and creamy texture, Fiber-beads in drink, Mix with other ingredients, Various packaging sizes, Glass bottle, Box with resealable cap, Microwavable package, Selling in convenient stores, Keep in cold storage, Taste-test before buying and Product sample) The results indicate that most customers are indifferent of riceberry as the main ingredient of the beverage despite the popularity of riceberry in market. Some basic attributes such as distribution channel, promotion and packaging have greater influences on customer satisfaction if fulfilled. Health information attracting particularly the older customers to the product is the use of low Glycemic Index (GI) sugar as added sweetener. Providing Guideline Daily Amounts (GDA) label on beverage

product is important because this attribute is not only a new regulation by the Ministry of Public Health but also it is concerned by customers aged over 20 years as one-dimensional requirement.

A segmentation based on Kano model is also proposed in this study. Two-step cluster analysis results in a four cluster solution. The segments are interpreted as health-conscious consumers, packaging concern seekers, family shoppers and convenience store seekers respectively. It is anticipated that the segmentation developed here will help firms understand what their targeted customers seek from the offering.

Key words: riceberry drink, customer needs, Kano's model, cluster analysis, customer segmentation

Factors Influencing the Decision to Join Good Manufacturing Practice in Rice Mill

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This study investigated the factors influencing the decision to join the rice mill's GMP standard. The 100 questionnaire mills were collected, classified as 50 certified mills and 50 non-accredited mills. The data was analyzed through descriptive statistical tools such as frequency and arithmetic means. To find out factors that affect decision for joining the rice mill's GMP standard, Chi-square statistic and Probit model were employed.

The study indicated that most of the samples were Northeastern mills, the age of the business between 11-20 years, medium-sized mill, less than 100 tons in production capacity, main source of income came from sale of bagged rice, and received the dissemination of knowledge about GMP from government agencies. The Chi-square statistical and the Probit model generated the resemble results, namely the type of mill operation, the main source of income, obtaining dissemination of knowledge about GMP and the knowledge about good practices of the mill affected the decision to join the mill's good practice standard. The results of the questionnaire from the mills that did not participate in the good practice standard revealed that the main reasons for not attending the good practice standard was that the product price did not increase enough, the cost of improvements rice mill was very high, there was some difficulties in improving building and store improvements in order to be clean and free from rice pests.

The results of the study lead to suggestions for more participation in the mill's good practice standard which were government should disseminate the benefits from participate in rice mill's GMP standard and find a way to increase the price of the standardized product by create consumer awareness or do price discrimination.

Capital Tax, Labor Tax, Consumption Tax and Economic Growth in Thailand

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This research seeks to find out whether or not tax collecting from capital, labor, and consumption, undermines economic growth. The statistics used in this study are quarterly data of Thailand from 1993-2015 derived from the National Statistics Bureau of Thailand, Fiscal Policy Office and Bank of Thailand. To start, the descriptive analysis is provided. Then, the regression method is adopted.

The results drawn from this study suggest that average tax burden on labor is negatively related with Thailand's economic growth whereas the burden on capital and consumption do not have a significant association with the growth rates.

A Study of Iodized Salt Production Cost in Bangkok Metropolitan Region

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Since the Universal Salt Iodization (USI) for all the salt of human consumption in the Kingdom of Thailand has been regulated by the Thai government Food and Drug Administration (FDA), salt producers have to ensure that the iodized salt contain the iodine level of 20-40 mg iodine/kg (20-40 ppm). To standardize the quality of salt, the FDA has subsidized the small scale mixing machine (40 kg/batch) and the large scale mixing machine (150 kg/batch) depend on the entrepreneurs' needs. The salt producers have to bear the machine cost only 30 percent of total price. This paper aims to calculate iodized salt production cost by small scale and large scale mixing machines in Bangkok Metropolitan region where there are more than 75 percent of the salt producers who have been subsidized in the central region. The data were collected by in-depth interviewing of 10 samples from the total population of 28 by non-proportional purposive sampling during February and March 2015. The interviews and observations were conducted at the salt production plants from 6 small-scale mixing machine operations and 4 large-scale mixing machine operations. The prices of building, iodine mixing machines and equipment for iodine mixing and packing are considered as fixed cost and variable costs are labour cost, packaging materials, electricity and water. The costs for iodized salt production are 6.096996 baht/kilogram for small scale machine-mixing method and 6.117138 baht/kilogram for large scale machine-mixing method. The large-scale mixing machine does not benefit from the larger amount of iodized salt

because the machines are running at the average of less than half of the total capacity.

A Comparison Study of Iodized Salt Production Cost with Mixing Machines

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Since the Universal Salt Iodization (USI) for all the salt of human consumption in the Kingdom of Thailand has been regulated by the Thai government Food and Drug Administration (FDA), salt producers have to ensure that the iodized salt contain the iodine level of 20-40 mg iodine/kg (20-40 ppm).

Salt producers in Bo Klua Tai village, Bo Klua district, Nan province, North Thailand are mostly small scale entrepreneurs and still use ancient method of boiling brine into pure salt for more than 800 years. They boil brine from underground rock salt deposits and pure salt are used for consumption and selling. Due to a lack of knowledge and technology of the iodization process in the area, the FDA has to assist them by providing potassium iodate and I-kit for quality control and iodine inspection. The typical iodization method for the salt producers is manual mixing. This is when the salt producers spray the potassium iodate solution on the pure salt and mix them in by hand. The salt are iodized without prior cleaning or grinding, followed by manually packing for consumers or local food manufacturing markets. In the past 3 years, sometimes the iodine content in iodized salt has not reached standard by manual mixing method, therefore, the FDA provided the small scale mixing machine (40 kg/batch) for them to solve the problem of inconsistent iodine levels. However, the machine capacity was less than the salt production in the village. Recently, the large scale mixing machine (150 kg/batch) has been replaced the small one.

This paper aims to compare iodized salt production cost by manual, small scale and large scale mixing method. The prices of mixing machines are considered as fixed cost; (foggy spray for manual mixing) and variable costs were labour cost for transportation, cleaning operating and packing, electricity and water. Cost for iodized salt production are 8,443.95 baht/ton (PV = 8,116.06 baht/ton) for manual mixing method, 10,091.68 baht/ton (PV = 9,893.81 baht/ton) for small scale machine-mixing method and 7,646.65 baht/ton for large scale machine-mixing method. Therefore, the cost of production of iodized salt by large scale mixing machine is the cheapest because of the economy of scale.

The project " Enhancing the Capacity of Stakeholders to Improve the Tilapia value chain in Thailand "

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This reports collects the primary data from the selected case studies and analyses those data by the method of value chain the project "Enhancing the Capacity of Stakeholders to improve Tilapia Value Chain in Thailand". There are three essential contents: 1) an overview of the tilapia value chain in Thailand 2) value chain analysis for the selected case 3) strategies for moving up the value chain. Besides, the secondary data are employed to analyse and reported in the first part of this analysis. As a result, the findings from enhancing capacities of farmers and stakeholders in the value chain become the main strategies in the training book to implement the next phase of this project.

The study of an overview of the tilapia value chain in Thailand points out that there were of 300,840 tilapia farmers in Thailand, total aquaculture areas was approximately 1,503.77 million square meters with the total production about 212,724tons. Most of the farmers (96.52%) cultivated in earthen ponds. In addition, the main costs of farmers were feed, fingerling and harvesting.

The domestic market were the major market of the tilapia. 97% are sold for domestic consumption. The rests were exported in form of the frozen tilapia and frozen fillet. Important export markets were the Middle East, United States, ASEAN and EU.

Meantime, in part of the study of the characters of farmers including stakeholders in the tilapia value chain, are related in term of factor supplying, production, collaboration, marketing and government's support. The major problems of the farmers were drought, shortage of funds, knowledge and information and suitable technology for farming and lower bargaining power on product price. Furthermore, there were also a few challenges for those involved of the value chain, for instance, enhancing the product's quality to meet the good agricultural practices (GAP) and food safety standard in order to achieve business of the sustainability.

The essential findings of value chain analysis from the selected case lead to the suggestions for the strategy framework to moving up the value added of tilapia products via the value chain management of the framer groups. The first step of development will start with the process of learning and development (Learning & Growth) to enhance capacity of farmers and stakeholders in the value chain. This process focuses on development both of the attitude and knowledge skills for involvement of the value chain management strategies to achieve mutual success goals.

Integrated Risk Management under Climate Variability for Enhancing the Potential of Agricultural Production Sector in Eastern Region of Thailand

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This study aims to: (1) assess agricultural impacts and risks under climate variability; (2) assess farmer's potential in risk management; (3) study integrated risk management of the fruit farmers and aquaculture fishermen in Chanthaburi and Trat provinces.

The results show that the majority of the fruit farmers and aquaculture fishermen have realized and faced the impact of climate variability by means of observing the pattern of season changes, for examples, unusual rain, long drought and heavy storm. These factors impact directly to the farmers in terms of damaged fruit outputs and slow growth of marine animals derived from lower in salinity. For the farmer's potential assessment in risk management, the study indicates that the fruit farmer can adjust their production process in accordance with the season changes while the fishermen seek supplemental occupation and arrange to purchase additional fishing gear to fix the damaged one caused by climate variability. In addition, both fruit farmers and fishermen manage their climate risks with respect to receiving precise meteorological information, especially the information about beginning and ending points of the rainy season, in order to adjust their production plan to the climate variability.

The recommendations of this study acknowledge that: simple-to-understand knowledge and production-and-meteorology information are

required for both fruit farmer and fishermen; product development is suggested in case of damaged outputs according to climate variability; related parties should consider about the output insurance based on the climatic damages. Moreover, the government should support the farmer to exchange and learn about the climate adaptation among each other in terms of small seminars and training courses. This can be done by transferring knowledge and experience of the skilled to low skilled farmers in form of integrated climate adaptation.

Research Impacts Analysis and Evaluation of the Research Utilization Projects under the Agricultural Research Development Agency (Public Organization), 2015

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The Agricultural Research Development Agency (ARDA) has played an important role in financing agricultural research projects whose outcomes are beneficial to academics, business sector, and society as a whole. Yet, since each agricultural research project is rather costly, the appraisal of such a project – where its benefits are contrast to its costs– is increasingly called for by the public. Therefore, the main aims of this study are to make an economic assessment of the benefits and costs of the agricultural research projects which were funded by ARDA and to investigate whether the benefits of the funded projects are able to offset their costs and thereby assure the most efficient use of the limited public funds. For these purposes, five flagship research projects that lead to the development of new/improved products or technologies were selected and scrutinized.

Results show that the social benefits generated by the five selected projects far exceed their costs. This means that ARDA's spending is economically justified and that ARDA should continually provide funding for future research projects. Furthermore, insights obtained from the economic assessment of the desirability of the five projects give rise to the following recommendations. First, ARDA should focus their spending on the projects that can generate a wide economic impact as they are more likely to attract further funding from the private sector and rely less on the future public support as a

result. Second, in response to the lack of both quantity and quality of Thai researchers, those research projects that bring about a capacity building impact should be given more attention. Third, more focus should be put on promoting research partnership between academics and business sector. Forth, ARDA is advised to reconsider two contractual issues with respect to the loyalty fee to its patents and the transparency as well as the accountability of the project outcomes. More specifically, the loyalty fee to ARDA's patents should be adjusted to reflect their true economic value and the future grantees should be obligated to reveal any pieces of information researchers see as necessary for the appraisal study.

“Strengthening the Maize Seed Industry in Thailand”

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The research focuses on 3 main objectives: (1) to overview the maize seed industry in Thailand, (2) to assess the seed research and development potential of the SMEs, and (3) to propose a model to strengthen the SMEs. According to the objective 1, the results indicate that there is an increasing trend in maize demand leading to a shortage in maize supply derived from a reduction in planting area. This is mainly stemmed from both competitive crop promoting and feed import tax reduction policies. In terms of maize farmers, they rely more on the seed sold by large Thai and multi-national companies than the ones from SMEs and public institutions. Due to its quality to meet the farmers' demands: high yield, pest and disease resistance, and easy cultivation, the seed from the large companies is more popular among farmers. Under the objective 2, the results show that the SMEs depend significantly on the maize seed R&D undergone by the public institutions are associated with technical and financial limitations, of which are totally different from the large companies. The results under the objective 3 indicate that the close cooperation among maize R&D public institutions, universities, related independent institutions, and large companies is one of the major solutions to strengthen the SMEs, especially in an aspect of research and development. This cooperation is proposed in a form of a forum to provide supports in various needs of the SMEs such as researchers, research funds, testing sites, technologies, and labor. Consequently, the SMEs are able to produce and access good quality and legal seeds in affordable prices. This can exhibit a mechanism to strengthen the maize seed industry as follows : (1) Short-term

mechanism is the short-term goal of the cooperation agreement between the main two parties be composed of National Corn and Sorghum Research Center and the Department of Agriculture, the propose of this mechanism is to drive a joint-research and development of maize varieties. (2) Long-term mechanism is the long-term goal of establishing a neutral organization. The organization consists of government agencies, educational institution, independent organization and maize seed companies. The roll of the neutral organization is to set up research and development policies and programs, including production and marketing management plans for the entire maize industry.

Impact Evaluation of the Thailand's Livestock Research Projects

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Over the years, the National Research Council of Thailand (NRCT) has played a crucial role in financing research in various scientific disciplines whose outcomes benefit academics, business sector, and society as a whole. An important area of research that the NRCT has continually funded is animal science. This is because livestock is one of Thailand's most important industry. Yet, since livestock research project is rather costly, the appraisal of such a project –where its benefits are contrast to its costs– is increasingly called for by the public. Therefore, the main aims of this study are to make an economic assessment of the research benefits of the livestock research projects which were funded by the NRCT during 2008-2016 and to investigate whether the benefits of the funded projects are able to offset their costs and thereby assure the most efficient use of the limited public funds.

To achieve the above-mentioned objectives, this study collected detailed information on 4,654 NRCT-funded research projects. On top of that, 8 livestock research projects were selected to represent those that generate the highest level of social benefit. These projects are related to 1) beef cattle and buffalo 2) dairy cattle 3) swine 4) poultry 6) fish 7) shrimp 8) crocodile. The impacts of these 8 representative research projects were then analysed. Overview on these livestock research projects were as follow. The livestock research projects that received the most funding were those related to fish, shrimp, and beef cattle and buffalo. Most of the research projects received a 1-year funding. The average amount of funding of such projects was 500,000 baht

(67.98%) and 87.75% of all funded projects could be considered as “upstream research projects.” Out of the 8 representative research projects, 6 of them already yielded social benefits while another 2 were expected to yield considerable future social benefits. All in all, the benefits of the representative projects were able to offset their costs.

Results from this study lead to the following recommendations. First, the databases on livestock research projects, which at present are being collected by several different government agencies, should be consolidated on a national level. Second, more funding should be given to those research projects that are in the “mid- and downstream.” Third, research projects related to more important animals (in terms of their economic values) should be given priority. Forth, apart from financing research related to animal science, the NRCT should also fund research related to business and marketing of animal products. Fifth, the NRCT should consider increasing the fund for small research projects. Last but not least, the NRCT should continually fund impact evaluation studies in order to assess the economic impact generated by the research projects it funded over the years.

“The Potential of Green Tourism under Community Participation of Samui Island”

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This research aims to obtain the tourism information of the Smaui Island under the 7 Greens approach. The study also investigates the existing problems and the potential of green tourism integrated with the communities' and all the stakeholders' participation. In the study, the supply and demand of the green potentials are taken into account in order to design the strategies of the green tourism development for the Samui Island. The database is based on 213 interviewed respondents consisting of the major stakeholders in the Samui tourism industry.

The study shows that all the accommodation and spa entrepreneurs including the communities meet the first requirement of the 7 Greens in terms of the Green Heart for environmental awareness. For the other 6 approaches of the 7 Greens, only some parties can fulfill the requirements. For instance, the tour agencies, transportation, and spa entrepreneurs provide their green and safe services based on environmental and cultural preservation. In the aspect of the Green Attraction, the tour and transportation agencies encourage the tourists to clean up and reduce quantity of wastes. However, the green practices and knowledge of the service providers related to waste management, energy and resource use reduction, and green-and-cultural information dissemination are found limited. The major limitations are stemmed from the lack of persistent cooperation and supports from the main stakeholders in terms of the proper waste management and resource-and-environmental

preservation. Fortunately, most tourists have awareness in the environmental issues, get pleasure from local food, and are willing to use bicycle to commute around the island. On the other side, the participation of the tourists in the local community's activities is low.

Under the potential of green tourism with community participation, the study indicates that Taling Ngam, Lipa Noi, Mae Nam, Na Muang, and Hin Lad Waterfall districts are highly populated with the fruit (coconut, durian, mangosteen, langsat) farms. These areas should be developed to be the agrotourism connected with the community's lifestyle and activities – coconut business chain (coconutpicking monkey and coconut products) and bike tracking activities with multiple stops for participating in the community activities. On the other side of the tourism services, Chaweng, Lamai, and Bo Pud areas can potentially provides the beautiful scenery enjoyed by the most tourists, but the waste, wastewater, and the organization of the beach need to be well managed. In addition, Hin Ta Hin Yai and Pru Chaweng should be developed into the green attractions associated with the community's culture and lifestyle. These can be done in a form of the tour or hotel package so as to earn value added. Likewise, Na Thorn area has high potential in cultural attractions such as Buddhism ceremonies and Hua Thanon area is known as the fisherman village that well portrays the Muslim lifestyle. Overall, all the Samui's attractions and districts should prioritize in solving their waste and wastewater problems plus adding more of green activities such as coral reef and sea turtle conservation, tree planting, cultural events in associations with the related stakeholders especially the school youths.

Keyword: Potential, Green Tourism under Community Participation, Samui Island

Potential and Adaptation of Maize Farmers under Climate Variability

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This study aims to assess potential and climate variability adaptation of maize farmers in the major maize production areas: Saraburi, Nakhon Ratchasima, and Chiang Mai. The results show that most farmers are aware of and impacted from climate variability by observing from unusual changes of seasons such as heavy rainfall, long drought, and heavy storm. These extreme events lead to decreases in farm production. In addition, it reveals that the maize farmers are associated with low potential of climate adaptation, especially in terms of institutional and economic dimensions. However, the farmers who: 1) have been trained in farm practice programs; 2) have participated in activities under farmer's groups; 3) have saving discipline; and 4) have access to water irrigation, tend to be able adapt to the climate variability. Upon climate adaptation, farmers require accurate climate information and forecast, especially the start and stop of the rainy season in order to well adjust the farming plan.

The recommendations of the study are: (1) the government should provide accurate and understandable climate information to the farmers; (2) the local government should encourage and train its farmers to practice in household saving; (3) microfinance should be available and accessible for farmers' loan in case of climate damages; (4) farmers should seek ways to install private or local common water wells on farms; and (5) the institutions related to maize cultivar and production such as Department of Agriculture and

universities should develop maize varieties resisting to climate variability and increasing yield.

Keywords : Maize, Climate Variability, Potential, Climate Adaptation

Willingness to Pay for Drinking Milk with 100% Fresh Whole Milk Labeling

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As the consequence of drinking milk campaign for good health and nutrition, Thai government has come out the school milk programs. The demand for milk has, at the same time, been rising because of health trend. An increase in milk demanded has brought up demand for fresh milk and powdered milk since they are the main raw material of producing milk. Milk sold in Thailand is thus separated into two products that are combine milk and drinking milk. Combine milk is combined with fresh and powdered milk while drinking milk is mainly produced by fresh milk. According to milk nutrition, it clearly points out that fresh milk has higher nutrition which is from natural. Unlike the powdered milk, it has less natural nutrition due to the producing process with high temperature that destroys the vitamin and other nutrition of fresh milk. However, cost of import of powdered milk is lower than the fresh milk produced in Thailand. This is explained by disadvantageous fresh milk of Thailand compared to other countries, especially Australia and New Zealand, which has free trade agreement on milk and milk products. Milk product producer thus tends to produce combine milk in order to compete and catch up wider market. To make up the loss of natural nutrition, the concentrated vitamins and instant fat are added in combine milk. However, the label or information on the side of milk package is unclearly between the fresh milk and combine milk which could mass up the messages to consumers. Consequently, both types of milk have an indifferent market price. In other words, they have

been sold in the same market level. This unclearness could bring the problem of consumers' specifying utility and willingness to pay for fresh milk.

To solve out the miss-specifying utility and willingness to pay for fresh milk, the clear message should be on the side of milk package. The separation of drinking milk and combine milk are worth to implement. However, this market differentiation could result the different cost between fresh milk and combine milk due to the cost of raw material and certifying process. In order to provide the information to policymakers, the investigation of consumer' behavior and willingness to pay for fresh milk labeling are then needed. This study focuses especially on people who have experience of buying or drinking milk and live in Bangkok and Bangkok Metropolitan region as the representatives. To control the various milk products and size, this study concentrates on 250 milliliter of UHT.

Before investigating consumers' behavior and estimating the willingness to pay, related literatures, and reports of milk and milk products are gathered and synthesized. The pilot questionnaire is later designed based on those of literatures and reports. The pilot questionnaire is tested with 52 respondents and 540 representatives for real survey. The willingness to pay is a closed end and double-bounded question. There are four bid levels. The first and second bids are based on the pilot survey. The bid price and levels are designed under the adhoc method to cover the marginal utility or willingness to pay of consumers. Consumer's behavior is analyzed by using various statistics. The marginal utility framework and contingent valuation method are employed to find the mean willingness to pay that is calculated from cumulative distribution equation. Values of log-likelihood function are applied to select the proper cumulative distribution. Again, the coefficients used to calculate mean willingness to pay are estimated by Maximum Likelihood method associated with double-bounded model or interval model. Finally, the estimation of the change of chance to willing to pay for label

is assessed by marginal effects of each factor, which are calculated from the most accurate binary model.

According to finding, respondents seem to have a fair understanding about drinking milk and combine milk. Their buying decision significantly depends on vitamin, nutrition advertisement and taste. Most of respondents hard and perceive news about quality and standard of fresh milk from other sources, but government. They pretty much agree and pay more for drinking milk without powdered milk and label to separate fresh milk from powdered milk. Other main reasons of agreement are to support farm owners and substitute the import of powdered milk.

There are 369 respondents from the 540 total respondents who show their willingness to pay for drinking milk with label to certify the 100% fresh milk. To separate the "true zero bid" respondents from the "protest bid" respondents, the respondents' results for not willing is thus emphasized. The 156 respondents who provide the result of no benefiting from fresh milk label or indifferent between fresh milk and milk powder are said to be "true zero bid" with zero willingness to pay. On the other hand, the 56 respondents actually gain their utility from this fresh milk label, but they do not want to provide their willingness since government should take all the responsibility in order to improve welfare. Therefore, the mean willingness to pay is weighted with those of 156 respondents to take zero value of willingness into account which could help resolving the overestimated assessment.

As the coefficient of initial bid price is significantly negative, technique of double-bounded question strongly faces the starting-bid bias problem or anchoring effect. The coefficient of relevant variables are thus estimated by single-bounded model by adjusted the double-bounded question to the single-bounded question technique. The respondents who answer "yes" to the initial bid price is marked as "one", otherwise is "zero".

To test for accuracy, log-likelihood function and adjusted R^2 statistics are calculated. They clearly reveal that both logistic and probit model are indifferent to assess the willingness to pay for 100% fresh milk label. In order to make comparison with the double-bounded estimation, the probit model with lognormal cumulative distribution is applied. Moreover, the likelihood ratio statistic also implies that initial bid price, 100% fresh milk label, made from fresh milk, education, concern on powdered milk, and frequency in buying milk are statistically significant in explaining the willingness to pay in this case of study. The initial bid price, 100% fresh milk label, and made from fresh milk are significantly negative, while others positively affect the willingness to pay.

Consequently, the estimated parameters from that of probit model with lognormal cumulative distribution formula (Haab and McConnell, 2002) are thus employed to calculate mean of willingness to pay (MWTP). According to lognormal formula, MWTP is 2.79 baht per 250 milliliter with the upper and lower MWTP of 1.17 and 5.16 baht per 250 milliliter, respectively. To circumvent the overestimation, the weighted MWTP is possibly prospered to implement, instead of general MWTP. The weighted MWTP is 1.96, and the upper and lower value of 0.82 and 3.63 baht per 250 milliliter, respectively. This finding indicates that marking price could be marked up or the marginal cost could increase around value of weighted MWTP with the range.

Based on the single-bounded framework, the marginal effect analysis are established to measure the change of opportunity of people to be willing to pay for label on 100% fresh milk product. There are six factors are statistically significant at conventional level to determine change of chance in this study. The bid price, concern on fresh milk, and attention on fresh milk are negative to opportunity of people to be willing to pay for label on 100% fresh milk product. Contrarily, education, concern on powdered milk, and frequency in buying milk support the increase of people's chance to pay more on label of fresh milk.

In conclusion, if government decides to take the unclearness problem of label in to its consideration, consumers would carry over the increases in marginal cost of milk by the value of MWTP. On the other hand, producers can also mark up the drinking milk of 100% fresh milk by the value of MWTP. However, it must be noted that 171 respondents or around 31.37 percent of 540 respondents present not willing to pay even though they strongly agree with the label. This is because of less concern on nutrition of powdered milk, and government's responsibility to cove out marginal cost. The double-bounded question technically suffers from the starting-bid bias, this problem have to be taken care in the future study as suggested by Herriges and Shogren (1994) and Calia, and Strazzera (2000). Again, the real auction game under the experimental economics framework is also worth to enhance this research area since it could better capture the true willingness.

The Cointegration and Adjustment Speed of Inflation, Output Growth, Volatility of Inflation and Volatility of Output Growth

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Under the economic connection of globalization, the Thai economy has to endure not only the internal circumstances, but also the impact of turmoils in other countries, which can be an external risk factor to its growth. In order to present empirical evidence and help understand the interaction between price levels and economic activities in Thailand, this study investigates their relationship. This should provide agencies involved, both the public and private sectors, fundamental information necessary for the formulation of policies to handle the impact of external phenomena. This information can also be useful for an improvement in resource allocation, people's welfare, and academic knowledge.

This research employs Error Correction Model (ECM) to study the short run equilibratory relationship between inflation rate and economic growth rate. At the same time, the long term relationship and impulse response among economic growth rate, inflation rate, the economic growth uncertainty, and the inflation uncertainty are also investigated. In order to measure the economic growth and inflation uncertainty, the Ordinary Least Square (OLS) and ARCH-type Models are employed. The study focuses on the period between the first quarter of 2001 and the first quarter of 2014 because this is a period when the ramification of the 1997 economic crisis has lessened as well as the Bank of Thailand has pursued the policies of inflation targeting and managed-float exchange rate. In addition, during that period, Thailand has faced with economic

difficulties due to the rise in oil prices, uncertainties from world financial and economic crises. All these incidents brought about the volatility of economic growth and inflation.

The results on the test of the long term equilibratory relationship between the values of GDP (LGDP) and general price levels (LCPI) show that these 2 time series data have an symmetric cointegration property. Therefore, the ECM model, which has been used for the short run relationship test, is then associated with symmetric error correction model. An estimated ECM indicates that AR(2,3) and AR(1,3)-ARCH(1) are most proper to estimate the economic growth rate (GGDP) and inflation rate (INF), respectively. The estimations of coefficients for Error Correction Term (ECT) of both equations present the statistically and significantly negative relationship at a conventional confidence level. This shows that a speed of adjustment towards a long term equilibrium or the size of standard deviation from equilibrium could be eliminated in the next quarter. When comparing the size of coefficients, it can be seen that the speed of adjustment of LGDP is faster than that of LCPI. Furthermore, ECM's results reveal short run effects among independent variables.

To test of the long term equilibratory relationship and examine the size of adjustment for deviation from equilibrium in the case of an immediate change of 1 unit among economic growth rate, inflation rate, the volatility of growth rate, and the volatility of inflation rate, this study applies VAR-based Impulse Response Test. The volatility of economic growth rate (GUN) and the volatility of inflation rate (UINF) are measured by residuals from OLS and AR(1)-ARCH(1) estimation, respectively. To sum up, the estimation on the relationship among variables by VAR model indicates that some endogenous variables does not show the long term relationship with dependent variables, especially the volatility of economic growth rate, which insignificantly relates to other variables. On the contrary, economic growth rate can significantly affect the adjustment process in most cases. This reflects the fact that economic growth

rate represents all economic activities taking place in the country and their influences on price levels, thereby people's welfare.

The estimation on the size of response of inflation rate and the volatility of inflation rate shows that both variables can respond to their immediate self-changes too. However, in the long run, all variables adjust to its equilibrium after surged by any sudden incident. The adjustment process of inflation rate and the volatility of economic growth rate to sudden changes in economic growth rate is slower than other cases. It should be noted that economic growth rate, inflation rate, and the volatility of inflation rate negatively respond to disturbances in the volatility of economic growth rate.

This research's results present implications for the implementation of macroeconomic policy to maintain continuous economic growth as well as better standards of living and welfare. The findings provide important insightful information for government agencies involving in formulating policies. For example, GGDP reflects economic activities, consequently, price stability and economic growth. Thus, maintaining continuous economic activities can sustain or improve people's welfare and inflation cost. At the same time, agencies involved can also adjust the forecast of output more effectively than price level. This can be done because of the availability of more accurate and efficient information about economic activities than price level. The economics growth is more likely manageable than inflation rate. Moreover, changes in price levels have long run relationship more with narrow money supply than GDP and interest rate. All 4 variables can eventually adjust towards long term equilibrium when there are disturbances occurred.

As for future researches, such issues as oil or other alternative energy prices should be included in the analysis of long run relationship with economic growth rate and inflation rate as well as the response to sudden changes in oil or other alternative energy prices. Information derived from the study should benefit the public sector in executing macroeconomic policies. As for the

private sector, it should provide a guideline for the forecast and determination of business strategy. Also, it adds up to the body of knowledge in related fields.

Productivity Transition in the Thai Economy

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The Thai economy can continuously develop if the government implements suitable policy to stimulate economic growth. Understanding factors promoting economic growth could allow the government to plan for future economic stimulating scheme. This study, therefore, applies time series analysis, particularly ARMA and ARCH Approach to analyze factors and the size of their impact on the country's economic growth, covering 13 years or 52 quarters, from the first quarter of 2005 to the fourth quarter of 2017. The rate of change of GDP per Capita is an indicator for economic growth.

The AR(1)-GARCH(0,1) model represents the fluctuation of inflation, reflecting the role of domestic stability on economic growth. On the other hand, the Navie OLS-GARCH(1,1) model is the most suitable model to estimate the baht fluctuation, indicating of external stability. The results of the study on the cause of economic growth show that AR(2) equation which includes 7 variables is the most suitable model. Besides, from the findings of the Recursive Coefficient Model from the State Space Model, it is found that the rate of change of investment expenditure, the increase in per capita labor productivity, and the fluctuation of Thai baht are significant in explaining the country's economic growth.

These findings suggest that the government should implement promotion measures to attract foreign direct investment, especially quality investment. In addition, labor productivity issue should be taken care of by the

adjustment in education curriculum and on-the-job training. And lastly, risk from trade openness should be handled by government's measures.

Individual Characteristics and Trade Policy Preferences

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This study aims to analyze the extent of Thai people's understandings and opinions towards the country's international trade policy as well as investigates factors determining those opinions. The analysis is based on both secondary and primary data which are retrieved from questionnaire survey conducted with 503 respondents in Bangkok area. It employs such descriptive statistics as percentage, frequency, and average to explain respondents' understandings and opinions towards international trade policy. Pair t-test is also used to comparatively examine the difference between supporters and non-supporters of free trade regarding various issues. At the same time, the determinants of people's opinions towards international trade policy is analyzed using either logistic or probit model and marginal effect.

The results show that supporters and non-supporters of free trade are statistically different in their attitude towards risk, working experience with foreigners, and plan of working abroad. As for the determinants on preference reveled to 10 different questions about the economic integration between Thailand with others countries, with the total of 20 estimated equations, the support of free trade under RCEP and other bilateral FTAs can be explained by the most variables, i.e. 8 variables. Regarding independent variables, among 18 variables included in this study, the best performers consist of people's perception towards international trade policy, attitude towards risk, and working experience with foreigners. The statistical significance of these 3 variables can be found in 6 out of 10 equations.

From the above results, the government should implement policy measures to educate and publicize to ascertain that all parties involved have correct knowledge and understanding about the formulation and implementation of international trade policy. This should increase the chance of people supporting or expressing less resistance for government policy which will eventually bring about the success.

Investigating Why Tourists Revisit Thailand

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This research aims at analyzing the behavior of foreign tourists visiting Thailand and examining factors affecting their decision to visit the country. The study uses both primary and secondary data. Survey questionnaires are undertaken in Bangkok with 420 foreign tourists.

To analyze data, samples are divided, according to their education levels, into 2 groups: quality and general tourists. They are also categorized into first timer and revisitor. The investigation of tourists' behaviors is carried out descriptive statistics, such as, percentage, frequency, and mean. Moreover, F-test and ANOVA are used to analyze the difference in tourists' behaviors between quality and general tourists. Among quality and general tourists, the difference between first timer and revisitor is examined separately. In addition among first timer and revisitor groups, the difference between quality and general tourists is explored separately. Lastly, the factors affecting foreign tourists' decision to visit Thailand are analyzed using logit model together with marginal effects.

The results show that tourist types can differently affect the expenses they spent while traveling in Thailand as well as various attributes of the country's tourism. On the determinants of foreign tourists' visit to Thailand, tourists' age and current country of residence can significantly influence their visit. On the other hand, foreign tourists' satisfaction towards personnel and procedure relating to the country's tourism is statistically significant in explaining their visit to Thailand.

Economic and Marketing Capability Improvement for Small Scale Aquaculture Farmers through Community Organizations

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The majority of aquaculture practices in Thailand are small scale, composed of individual farms and, therefore, the development of aquaculture needs to be managed by community organizations to increase the power of negotiation with middlemen. There are various community organizations: non-juristic organizations, juristic organizations and cooperatives. The purposes of this study include the following: 1) the study of cost-return, and, 2) SWOT analysis to improve community organisation. Data were collected from in-depth interviews of 30 group members, 10 community leaders and local government officers in each organization. The research methods employed were cost-return analysis and SWOT analysis. The net profit of members in community organizations is a factor indicating the capacity of the aquaculture organization. The net profit organisations are from Pan, Pak Phanang, Tatong, Chachoengsao, Tasoong and Chanthaburi while the others (Nakhon Nayok and Samroi-yot-Pranburi) were non-profit organisations. SWOT shows that internal factors including leaders and members, production and marketing development and funding were the most significant in driving the success of the community groups. External factors including government support, disease risk reduction and water problem reduction support the capacity of the community organization. Recommendations for community organization development include: 1) members' collaboration, 2) skills of leaders, 3) convenient offices serving the members, and, 4) Full supply chain services to members.

Keywords: Aquaculture; Thailand; Community organizations

Analysis of Potential Yield of fishery resources, socio-economic impacts and co-management role under the National Plan of Action-IUU (NPOA-IUU) in the Inner Gulf of Thailand

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This project aimed to assess of aquatic resources status and population dynamics of economic fishes, to study status, trends of fishery resources and socio-economic impacts of fishery management measure, and to analyze role and competency in co-management of governances, local leaders, and community for coastal resource conservations in the inner Gulf of Thailand under NPOA-IUU. The Important results showed that crab gillnet fishery was the most frequently found in small-scale communities, followed by shrimp trammel fishery. Blue Swimming Crab were caught year-round in which 26% of total catch were smaller than 9.5 cm (size at first maturity). For commercial fishery, Thai purse seine had the average catch per unit effort (CPUE) of 2,322.47kg/day, which pelagic fish was the main target group (81.98-91.64%), followed by demersal fish (3.35-7.00%) and trash fish (3.55-6.75%). Teleost fish of the families Carangidae, Clupeidae and Pristigasteridae were the most frequently caught by Thai purse seine.

For socio-economic aspect, results showed that the majority cost of small-scale fishery and commercial fishery was variable cost (87.38% and 81.24%, respectively). The highest variable costs were fuel cost for small-scale fishery (20.95%), and labor cost for commercial fishery (42.07%). The average net profit

of most small-scale fisheries was 1,5441.22 Baht/trip, except some entangling nets for fourfinger threadfin and mullet, and krill push net with an average loss of 483.23 Bath/trip. The average net profit of commercial fishery was 26,297.20 Baht/trip, except pair trawl, and purse seine fishery in Chonburi and SamutSakorn with an average loss of 19,676.31 Bath/trip.

Regarding the co-management role for fishery resource conservation, results revealed that there were differences among areas in which fishers in Chonburi and SamutPrakan differed from fishers in SamutSakhon and PhetBuri. Level of competency on adaptation for co-management differed also among areas in which an average value of competency was higher in PhetBuri, SamutSakhon and SamutSongkhram than in Chonburi and SamutPrakan.

Factors affecting competency on adaptation for fishery management measures were expectancy of fishery governance under economy efficiency concept ($r_s=0.440$), difficulty of learning on fishery law, related laws and fishery resource management ($r_s=0.330$), participation in fishery management ($r_s=0.575$), including action role of fishers and leaders in co-management in aspects of exchange learning, fishery resource conservation, and utilization control ($r_s=0.603$ and $r_s=0.328$, respectively).

STRENGTHENING SEA BASS AQUACULTURIST CAPACITY VIA SEA BASS AQUACULTURIST GROUP NETWORK IN CHACHENGSAO PROVINCE

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Sea Bass Aquaculturist Group Network in Chachoengsao, an informal network group, is selected to study the factors affecting to the successful organization management for the enhancement of the Sea Bass Aquaculturist Group Network capacity strengths. The objectives of the study are 1) to study a structure of Sea Bass Aquaculturist Group Network and a capability of Sea bass production and income 2) to evaluate Sea Bass Aquaculturist Group Network management and 3) to propose the enhancement of the Sea Bass Aquaculturist Group Network capacity strength strategies and to be a pilot for other aquaculturist Groups. Data were collected from intensive interviewing 30 sea bass aquaculture group networkmembers and 10 leader communities and local government agencies using purposive sampling. Descriptive analysis is employed to explain the structure of Sea Bass Aquaculturist Group Network, Context Input Process and Product (CIPP model), and Strengths Weakness Opportunities and Threats (SWOT analysis) and the quantitative analysis is used to explained the production and income capability.

The results show that the structure development of the Sea Bass Aquaculturist Group Network in Chachoengsao depends on leaders of community. The leaders have integrated business related to sea bass aquaculture such as feed mill entrepreneurs, aquaculturists, and collectors/merchants to support the network business. Leaders are superior coordinators and advisors to support the

network business of sea bass aquaculture. Benefits and costs present that total cost of sea bass aquaculture is 189,158 baht/rai/round while the profit is 61,471 baht/rai/round. Sea bass products are mostly sold to community merchants 40%. The overviews of the Sea Bass Aquaculturist Group Network evaluation found that context evaluation of the group network are that general income, aquaculture career, second career, and neighborhood are ranked in the good level. Input factors supporting aquaculture and marketing are in the good level. Management of the network group is properly directed by the leaders and members are satisfied with the benefits. In contrast, the network group is lack of share investment and members are still not much participated. To purpose the development strategies of the enhancement of the Sea Bass Aquaculturist Group Network capacity strengths, there are four main strategies. Firstly, SO strategies present that group network should increase of price negotiation power of seeds and decrease transportation cost from improving sea bass product collection of group network. Secondly, ST strategies offer that the group network may enhance collaborations of farm registration, develop value added seabass product, and support input and knowledge. 3) WO strategies are to plan seed usage and sea bass aquaculture quantities, to increase seabass product collection for bargain power, to process seabass product and to develop group network to be cooperatives. 4) WT strategies; government agencies should be a linkage to plan and coordinate between the network group and hatchery and nursery to produce seeds and seabass and the network group should increase network connection from private companies.

Keywords: Sea Bass Aquaculturist Group Network, Strengthen Strategies for Group

The Economic Impacts of Increased Labor Productivity in Thailand's Service Sector: A CGE Analysis

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Thailand's service sector has shown the lowest productivity growth over the past thirty-five years, mainly due to a lack of knowledge and skills as well as industry-related work environment problems. Unlike the majority of prior studies which tend to focus on factors affecting labor and the causes of low productivity, this research aims to investigate the impacts of increased labor productivity in the service sector on both industrial sectors and the economy as a whole.

This study uses a standard computable general equilibrium (CGE) model and a constructed social accounting matrix (SAM) for Thailand for the year 2010 to analyze the impacts. Three different scenarios are simulated, namely an increase in labor productivity for Thailand's service sector by 1, 2, and 3% from the base-year value. The results indicate a rise in real GDP by 1.75, 2.19, and 2.64%, and an increase in total domestic output of 1.16, 1.45, and 1.75%, respectively.

In relation to impacts on industrial sectors, public administration is shown to have the largest direct effect, followed by healthcare, banking and insurance, trade and other services, communication, transportation and logistics, public utilities, real estate, and construction, respectively. The Thai government should also take into consideration the inter-linkage sectors receiving positive indirect impacts. These include: the paper industry and printing; mining and quarrying; rubber, chemical, and petroleum

industries; metal, metal products and machinery; and food manufacturing, respectively.

Impacts of Reductions in Exports on Thai SMEs: An Input-Output Analysis

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This paper assesses the impacts of reduction in Thailand's exports on nominal GDP and sectoral domestic output of SMEs and large enterprises (LEs) in Thailand. An input-output model for Thailand's SMEs for the year 2000 was constructed and used to investigate these impacts. We assume that inputs are used in fixed proportion to output and production in all industries is subject to constant returns to scale. This model has some distinctive features in that it incorporates the interrelationship between SMEs and LEs in various Thai industries with respect to the production and uses of their products. The automotive industry was also classified into six sectors: the motor vehicle; motor cycle, bicycle and other carriages; and repairing of motor vehicle in both SME and LE sectors.

According to Thailand's production and export structure, the results indicated that a 1% decrease in export value in all industries will lead to a fall in nominal GDP and total domestic output by 0.57% and 0.39%, respectively. A 0.39% reduction in the domestic output can be decomposed into direct (0.28%) and indirect effects (0.11%). Indirect effects count the multiple rounds of inter-industry purchases spurred by export expenditure. Moreover, a 1% decrease in export value in the agricultural, manufacturing, and trade and service sectors will lead to a decline in the national GDP by 0.50%, 0.07%, and 0.01% and total domestic output by 0.004%, 0.33%, and 0.05%, respectively.

The industries of beans and nuts, rubber, and forestry, restaurants and hotels, transportation, and business services in both SME and LE sectors as well as the real estate industry in the SME sector are expected to have a strong negative impact from the decline in exports of agricultural products and services. For the contraction in manufacturing exports, the most negatively impacted industries include processing and preserving of foods; basic chemical products; rubber products; non-ferrous metal; and electrical machinery and apparatus in both SME and LE sectors as well as the textile industry in the LE sector. The government should also take into consideration the inter-linkage sectors which might receive negative indirect impacts. These include fertilizer and pesticides; metal ore; and spinning, weaving, and bleaching in both SME and LE sectors and the motor vehicles and repairing industry in the SME sector.

Effects of BOI's Revising Investment Promotion Strategies on SMEs in Thailand: A Dynamic CGE Analysis

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The strategic goal of the Five-Year Investment Promotion Strategy (2015-2019) of Thailand Board of Investment (BOI) is to adjust the economic structure of Thailand for sustainable growth and to be able to break out of the middle income trap. Unlike the current strategy which applies a set of broad-based incentives to promote the investment in all sectors, the new strategy strongly promotes the development of competitive advantage and value added creation of the industry by prioritizing the investment promotion by sectors according to merit-based incentives.

This present study investigates the economic impacts of BOI's revising investment promotion strategies on small and medium enterprises (SMEs) in Thailand by changing from broad-based incentives to merit-based incentives. A dynamic computable general equilibrium (CGE) model and the social accounting matrix for SMEs in 2005 are jointly employed to analyze the economic impacts of the change of BOI investment promotion strategies on SMEs. The social accounting matrix for SME has been developed by using the Input-Output table of SME in 2005 compiled by the Office of Small and Medium Enterprises Promotion.

At the macro-level, the result suggests that the focus-and-prioritized investment promotion is more successful in raising real GDP compared to the broad-based investment promotion. Specifically, real GDP increases by 1.83 percent under the new strategy while the increase is only 0.08 percent under

the old strategy. The capability to bring down the price of overall goods and services by 0.02 percent explains the success of the new strategy. In contrast, the price had gone up by 0.2 percent during the course of the old strategy. Other disadvantages of the broad-based investment promotion include the high dependency of intermediate inputs on imported materials and the failure to create strong inter-linkages among industries.

At the sector-level, the result shows that under a given scenario that total investment increases by 1 percent from the baseline scenario, the focus-and-prioritized investment promotion is more appealing than the broad-based investment promotion in terms of stimulating domestic production by SMEs and Non-SMEs. The focus-and-prioritized investment promotion leads to the overall increase of domestic production by 0.53 percent (56 thousand million baht), where the production by SMEs and Non-SMEs increases by 0.63 percent (25.15 thousand million baht) and by 0.46 percent (30.86 thousand million baht), respectively. The broad-based investment promotion leads to the overall increase of domestic production by 0.31 (33.3 thousand million baht), where the production by SMEs and Non-SMEs increases by 0.35 percent (13.81 thousand million baht) and by 0.29 percent (19.23 thousand million baht), respectively.

In the overall picture, focus-and-prioritized investment promotion shows more positive impacts on macroeconomic variables and sectoral economic variables than those of broadbased investment promotion. However, the government which will be changing the investment promotion strategy to the focus-and-prioritized investment promotion on January 2015 should take into consideration the negative impacts on other economic sectors that might halt the investment promotion, especially saw mill and wooden products, mining, leather products, plastic ware products, and basic chemical products, As well as, inter-linkage sectors which might receive negative indirect

impacts include fertilizer and pesticide, business services, and other services which account for high proportion of the total SME production value.

The Possibilities of International Labor Migration of Physician to prepare for AEC: The Case Studies of Thailand, Singapore and Malaysia

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This research is intended to study for Thailand, Singapore and Malaysia about the feasibilities of international migration of physicians to prepare to be Asian Economic Community (AEC). Objectives of this research are to study demand and supply of physicians, study all regulations relating to physician international migration, recommend concepts to prepare physician international migration of Thailand.

Research methods consist of two parts. Quantitative research intends to study and forecast using exponential smoothing, moving average techniques and regression time trend with data from medical council and ministry of health. Qualitative research intends to study the trends of physician demand, all regulations relating to physician international migration, basic data, strategies, physician salaries, problems of works using secondary sources.

Research results are found that AD 2014 – 2018 Thailand has a chance to over-demand for physicians, therefore importing physicians. However, Thailand hasn't sufficient factors to attract Singaporean and Malaysian physicians to work in Thailand in spite of all regulations in Thailand quiet easy to register. Moreover, Thai physicians have no trend to migration out to Singapore and especial Malaysia. In Singapore, there are nearly matching between number of physicians and demand for physicians. Nevertheless,

Singapore still imports qualified physicians annually. In Malaysia, there is a trend to over-supply for physicians therefore possibly migrating to Singapore

Analyzing all factors, Thailand has a potential to attract regional physicians other than Singaporean and Malaysian physicians to work in Thailand. Specification of qualified physicians therefore is critical issues to screen and protect medical ethics releasing physician sue. Improvement of work-life balance can be developed as a valuable factor reducing re-migration of physician and effecting labor productivity and training costs of physicians.

Additional Payment of Universal Healthcare Rights

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Research on Universal Expenditure of Universal Health Care Coverage is intended to; 1) to study the necessity and the facts about the additional payment of the universal health care user; 2) to study the structure and estimate the additional payment per capita of the right user 3) to study the relationship between possible variables (e.g. demographic variables, health variables) related to size and probability. The data were collected through 500 questionnaires (400 for additional payment and 100 for no additional payment). Group discussions were organized to exchange and listen to the comments on 4 additional expenditure groups (Aging Men and Women and Working Men and Women). Data were analyzed by chi-square statistics and Path analysis.

The results showed that through the chi-square test there were eight factors (age, educational, status, income level, physical disability, chronic illness, in-patient and out-patient) related to additional payment at a statistically significant level of 0.05. The results of path analysis showed that other health insurance coverage had direct effects on the need to spend more on health insurance. In addition, patients with congenital disease were more likely to have higher levels of personal income and had an aspect for treatment as not emergency and not serious disease while personal income levels had not directly affect the size of additional payment. The serious illness had direct positive effects on emergency treatment. Emergency treatment was a tendency for patients to pay more for health insurance, however, cannot be

concluded to the size of additional payment. Patients who were more likely to pay more when using universal coverage were those with other types of coverage, serious illness, emergency treatment. The size of the additional payment still cannot be proved through statistical test with all these variables.

Guidelines to Enhance the Industrial Potential of Eri Farmers

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This research aims 1) to study current situation of production and marketing of Eri silk in Thailand and world markets, 2) to analyze the linkage of Eri silk supply chain in Thailand, 3) to analyses costs, returns, and marketing margins of Eri silk and its processed products production, 4) to analyze the commercialized production capacity of Eri silk famers and 4) to synthesis guidelines to enhance the industrial potential of Eri farmers in Thailand. The results find that the major driving force of world silk market is from the growth of garment industry. The garment industry itself has grown by technological advancement, production subsidy policies and higher purchasing power of middle-income. The important problem of Eri silk industry in Thailand is shortage of Eri silk cocoon supply. It is caused by many reasons; namely, an improper transportation method of Eri eggs causing a low hatching percentage, a decreasing and discontinue production of Eri silk farmers, lack of incentive to follow good Eri silk production practices as production yield of cocoon is much less than complete pupae, lack of labors and a flow of information about market demand and price between famers and fabric factories. To solve these problems, planning and linkage through the supply chain of Eri silk from up- to down-stream should be implemented, so that the information of production and market flows though out Eri silk supply chain from factories to farmers. Moreover, formulation of a group of Eri farmers in proximate location, research and development of cocoon quality, improvement transportation process of Eri eggs, setting up an intermediary to collect Eri silk cocoon and pupae in a local area, research and development of processing pupae to add more value,

Setting up a social enterprise to build brand for Thai Eri silk products by emphasizing a green and social product, and farmer groups' competency assessments and support farmer groups' production according to their competency Should be promoted to enhance industrial potential of Thai Eri silk

Economics of Maize Seed Production in Thailand

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This study attempts to answer three important questions. (1) what benefits outgrowers receive from maize seed production, (2) how can they be engaged in the contracts of seed production scheme that benefit them most, and (3), what are policy suggestions for the maize seed industry.

It is found that maize seed growers of MNCs in Thailand has highest profit among all types of sponsors and considerably have higher profit compared to maize grain production. Although with strict agronomic requirements and intensive labor and skills requirements, farmers are offered with high output price, and also guaranteed price and market. None of the seed output will be refused by the contracted sponsors, but maybe offered at lower price if it does not meet the quality standards. In practice, seed companies generally will not pay lower price, but reject the output of substandard (via field inspection and removing contaminated plants) even before the harvest.

Farmers will be more likely to be contracted by the MNCs if they can follow the farm management requirements, specifically able to invest in appropriate irrigation, find sufficient and available labor, have not too large size, and being flexible to modern (younger) to adjust to the production requirements. Those who are contracted by national and local companies will not gain the same profits. The review of companies' performance and industry conduct especially on R&D found that the small companies will need to have competitive varieties and high quality products so that they can gain power in setting price of their segments. This implies that the small companies may have capacity develop and product products for several market segments, but they should focus on

small segments that MNCs may not pay much attention. This study suggests that the public-private collaboration under the joint venture model (cooperative research and development agreement) will provide small private companies with exclusive rights for the innovation unlike existing model that none of the companies have exclusive licenses of public varieties.

Organize the collection of crop germplasm improvement research related direct outcomes

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The commercialization of the hybrid maize in Thailand in the 1980s boosted yields and domestic production significantly. The success of varietal development of commercial maize hybrids is owed to the investments of international donors during the 1980s and continuous breeding efforts of multinational seed companies even as public institutions played a key role in maintaining genetic resources conservation and pre-commercial lines research. Today hybrid maize varieties are planted in nearly all domestic cultivation areas, Thailand is the second largest field crop seed exporter in Asia with maize contributing the highest value to seed exports. This paper reviews the history of maize varietal development in Thailand and the roles of public and private institutions. Furthermore, a collection of commercial maize varieties adopted by farmers in 2013/14 cropping calendar is disclosed using an expert elicitation method. The estimated market shares from adoption areas and the comparison of differentiation and similarity of adopted maize varieties suggest that the maize seed market in Thailand is moderately concentrated with tendencies towards oligopolistic competition. It is suggested that the public sector continues to lead in pre-commercial R&D and provide support to small- and medium- sized local companies for them to be viable and competitive in the market.

Rice Study Project

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The objective of this study is to examine the economic value of information on geographical indication (GI) labels for jasmine rice in the Thai market. By using the random n-th price sealed auction method, which is incentive compatible, willingness to pay (WTP) measures have been examined for the group with information and the group without information. The study covers economic values of the information on GI labeled jasmine rice from ThungKula Ronghai were examined along with non-GI labeled rice from ThungKula Ronghai and Chiang Rai among Bangkok consumers. The existence of the difference in WTP has been statistically examined between groups and among rice with and without the GI label.

Demographic factors also contributed to the difference in WTP for Jasmine rice. The important determinants for the difference in WTP are taste, occupation, location of residence, years of education, and concerns on food safety, rice variety and jasmine rice certification label and the design of the rice package, besides the information on the GI label. Information on geographical indication (GI) has economic values to differentiate the GI jasmine rice from non-GI jasmine rice in Thailand suggested that the WTP for non-GI rice declines while the WTP for the GI jasmine rice does not change in absolute terms with the GI information. The WTP for the GI jasmine rice increases in a relative term. The GI jasmine rice producers would benefit from the GI certification and label if the GI information is properly explained to the consumers in Thailand. The welfare of non-GI jasmine rice producers would get worse in contrast.

Feasibility Study of Risk Management in Oil Palm Industry (1st phase)

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Palm oil growers encounter with risks from the changes in volume of palm production from natural disasters and climate variability, which results to the fluctuations in the price of oil palm and palm oil in the downstream industries. In addition, the movement of crude palm oil (CPO) price in Thailand depends on the movement of the price of crude palm oil from Malaysia and according to potentially volatile external factors, such as the trend of slowing demand in India and China. The increment in substitutable soybean oil production and the decline in world oil prices. Besides that the palm oil price declines also depend on the reduction of biodiesel demand, supply insufficiency and an allowance of palm oil imports from neighboring countries which, consequently resulted in a decrease in farm income. During the decreasing prices of oil palm, State Subcommittee of Oil Palm and Palm Oil Marketing Management Board has intervened the market price of fresh oil palm which has a heavy burden on the national budget. Therefore if the government has the appropriate and effective tools to manage risks in terms of the risk in agricultural production, which are most often used in the form of crop insurance and tools to manage price risk, such as the use of future market mechanisms or SWAP, these should provide the alternative for those involved in this industry, such as farmers, oil palm crushing and palm oil refinery mill to use to manage the production and price risk in order to alleviate the government burden.

According to the results of the first-year study, oil palm growers in Surat Thani province identified drought/delayed rainfall and flood as the top two agricultural risks that concerned most. In addition, those two perils are those that farmers are interested in buying the insurance product. The possibility to develop crop insurance applied to oil palm growers is to develop a weather index based insurance product (WII) for productive palm trees and an Indemnity-Based Insurance product covering flood for young oil palm trees. The WII is simplified to a rainfall deficit insurance.

While the tools to manage price risk is the application of SWAP called “Quasi SWAP” to solve the problems of oil palm quantity and quality and to generate the benefit-sharing between farmers or farmer groups and oil palm crushing mill in order to contribute the sustainability of the palm industry in the future.

Keywords: Risk management, Weather Index-Based Insurance, Quasi SWAP, Oil Palm

Feasibility Study of Risk Management in Oil Palm Industry (2nd phase)

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The main objectives of this research were to (1) analyze farmers' behavior and production and price risks that oil palm growers face; (2) examine the possibility of developing crop insurance as a tool for production risk management and (3) explore the possibility of developing tool for price risk management while ensuring palm oil quality. The stakeholder analysis had been utilized to analyze the key stakeholders involved in the upstream of palm oil industry together with the survey of farmers in Suratthani and Krabi provinces with a total of 404 farmers.

The results showed that most of the samples grow only oil palm and are smallholder farmers with the average size of planted area less than 20 Rai. Hiring services for harvesting is commonly found in the research area. Oil palm growers sold the production mainly to private and cooperative ramps. They received market price for average quality, but not premium price regarding higher quality. Oil palm farmers identified price as the top agricultural risks that concerned them most. Price risk is likely to occur every year and have high impact on income. Risks from natural perils such as drought and flood were ranked as the next top problems.

Drought is a major natural peril that affects palm oil production as the amount and pattern of rainfall affects the development of fruit bunches and affect production. The rainfall-index drought insurance has the most potential to develop. However, it is currently difficult to implement due to technical

challenges, arising from the limitation of data availability and rainfall station as well as low interest from farmers and insurers.

This research studied the process of price risk management and product quality control and found that most Thai oil palm growers do not follow good farm management practices. In addition, they do not control on harvest only ripe fruit. Major reasons include (1) the harvesting labors from the hiring services for harvesting focused on the maximum volume per round of cutting and (2) the crude palm oil factories buy the fresh fruit bunches at the market price for the average grade. Most of the factories cannot offer a premium price regarding higher quality due to low ripe fruit availability for each round of crushing which required high amount of fresh fruit volume. In Malaysia, palm oil cultivation are large-scale in form of estates and has a quality assurance system along the entire supply chain together with efficient laws regulating palm oil industry.

For the case study of Thailand with higher proportion of small-scale farmers, three forms of contractual arrangements: informal model between crushing mills and farmers; intermediary model between crushing mills and farmer groups/ramp/cooperatives; and multi- parties model such as mega farm. The contractual arrangements has potential to implement as some oil palm growers can ensure high quality with ripe fruit and both crushing mills and farmers are interested in having contractual arrangements with the incentives for stable market. However, contractual agreements must take into account the transaction costs, search and information costs, bargaining and decision costs, policing or Monitoring and enforcement costs so that the agreements of quantity, quality and price can be achieved.

Policy recommendations to develop tools of production and price risk management are as follows. The government should develop a system of information dissemination and provide the knowledge of the whole system of palm oil production, farm management, harvesting, mature of oil palm, Crude

palm oil extraction process, production standard and and marketing to stakeholders in the upstream palm oil industry in order to have a consistent and the same understanding. In addition, the government should set a professional standard for oil palm management and harvesting practices, quality control and assurance for crushing mills and ramps. The Pilot Project for contractual arrangement should be promoted by a group of farmers / ramp / cooperatives that make a quality palm and small to medium-sized plants that can trace back to the quality of fresh fruit at the farmer level. Moreover, strengthening the data collection and the weather automation systems for timely and accurate data should be focused in developing the index insurance in the long run.

Keywords: Risk Assessment, Rainfall-Index Drought Insurance, Contract Farming, Oil Palm

Health Human Capital and Economic Growth: The Case of ASEAN

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This study aims at studying the relationship of health human capital, health investment and economic growth and empirically investigating the effect of health human capital on economic growth of ASEAN. The study employs multiple regression technique with two model variants for the political factors. Other variables are the growth rate of GDP, the change in health human capital stock, the change in physical capital stock, the health investment in the last period, and education as the percentage of GDP. The data are from various sources such World Bank, the United Nations, and the World Health Organization.

The findings suggest that health human capital stock, health investment are highly related to the growth in the same direction. For empirical test results, many countries find the same result above. In general, education is not a promising factor in determining the growth in this study while the political indexes are one of the determining factors for a few countries.

Keywords: health, human capital, economic growth, ASEAN

The Role of Habit Formation on Determinacy in a New Keynesian Model with Capital

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This study aims at defining the habit formation in consumption and studying the role of habit formation in consumption on determinacy in a New Keynesian model with capital. The study employs a standard approach for calibration assuming the same values of parameters derived from the US data as found in the existing literature in this line of research.

The finding indicates that habit formation can be separated into 2 types: internal and external. Internal habit formation means the current consumption depends on the individual consumption in the past while external habit formation means the current consumption depends on the aggregate consumption of others.

In addition, if habit formation is assumed in the utility function, the determinacy area is none. This means that habit formation assumption yields an adverse impact on how the monetary authorities can react to inflation.

Keywords: capital, determinacy, habit formation, New Keynesian models

Analysis of Cosmetic Competitive Potential and Development Approach of Thailand

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This research has two objectives 1) to analyze the competitive potential of Thai cosmetics industry 2) to establish guidelines for the development way of Thai cosmetics industry.

The analysis result of the competitiveness of Thai cosmetics industry by analyzing four factors found that factors contributing to the development of competitiveness were as follows: 1) production factor side was to increase the employment 2) demand factor side was the continuous growth of sales and the balance of trade surplus in cosmetics 3) the related and support industries were the supporting from the increase of the cosmetics enterprise integration and 4) strategic, structure and competitive condition were the number of enterprises increased. Factors that barrier to the development of competitiveness were 1) production factor side was the access to the financial source was difficult, the uncertainty in labor productivity, most of the raw materials were imported from abroad and lack of development and technology expansion. 2) demand factor side was the profit depended on the price of raw materials, which was uncertain. 3) the related and support industries were the low linked to other branches of production in the economy, considering from the total forward linkage index equaled to 0.7550 and the total backward linkage index equaled to 0.9550 4) strategic, structure and competitive condition were most of the enterprises were small, with relatively low production potential. GMP certified cosmetics factories were relatively low, cosmetic patents were relatively small compared

to all patents in the country, most leading brands were foreign brands and Thailand was a small exporter of the world market.

Moreover, the role of government sector was good for supporting the development of competitiveness were the cosmetics industry had been promoting the competitiveness from many organizations. For government roles that barriered to the development of competitiveness were the import tax on cosmetics had a high rate.

An analysis of the competitiveness of Thai cosmetic industry in comparison with the competitor countries, resulted from the four factor indicators found that Thailand disadvantages to five competing countries. Thailand was the most unfavorable to United States equaled to 33.40%, followed by South Korea, China, France and Germany equaled to 20.28, 19.00, 9.66 and 7.49, respectively.

Analysis of the development way of Thai cosmetics industry found that there were five Thailand strategies, eight strategies, eight plans and 19 projects to develop the competitiveness of the Thai cosmetics industry, consisted of 1) human resource development strategy in cosmetic business 2) development strategy to enhance the ability to produce cosmetics 3) strategy to promote cosmetic exports 4) strategic linkage in cosmetic collaboration 5) strategy for the development and upgrading of international cosmetics standards.

Role and Guideline for Sustainable Tourism Development in Lopburi Province

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This two objectives of the research were: 1) to analyze the importance of tourism affecting other industries in Lopburi province and 2) to make guidelines on the sustainable tourism development in Lopburi province.

The analysis of importance of tourism affecting other industries in Lopburi province found that sectors which total forward linkage index values of tourism industry and related to tourism industry were high in three sectors, namely 1) construction sector, 2) warehouse and transportation support activities and 3) information service, motion picture, radio and television programme production and other related services which had indexes equal to 1.138, 1.325 and 1.975, respectively, these three sectors had total forward linkage index values more than 1. It implied that these sectors were used as inputs to other sectors and were higher than the average of all sectors. In case of total backward linkage, it found that there were six sectors of high indexes, namely 1) construction 2) restaurant and beverage stores 3) library and museum 4) land transportation and warehouse 5) retail and 6) wholesale, which had indexes equal to 1.385, 1.368, 1.208, 1.196, 1.169, and 1.153, respectively. These six sectors had total backward linkage index values more than 1. It implied that these sectors used other sectors as inputs and were higher than the average of all sectors. Hence, if there were expansion in these important sectors, it could stimulate production to other sectors in the economy.

The analysis of impact of final demand changes found that if expenses of Thai visitors to tour in Lopburi province increased by 370,109 thousand baht, expenses of Thai government in tourism in Lopburi province increased by 166,479 thousand baht, investment of private sector in tourism in Lopburi province increased by 90,800 thousand baht, and expenses of foreign visitors to tour in Lopburi province increased by 6,033 thousand baht, It made an impact on value added of Lopburi province to increase by 0.264 percent or in valued term increased to 275,853 thousand baht and return on labor in Lopburi province increased by 0.078 percent or in valued term increased to 22,169 thousand baht.

The analysis of impact of final demand changes above affecting the value added and return on labor found that manufacturing sectors were impacted by value added increased to the top five were 1) information service, motion picture, radio and television programme production and other related services 2) hotel and other accommodations 3) household production and service activities, which can not be classified clearly 4) travel agency, tour operator, reservation service and related activities, security and investigation activities, office administrative and office support and other business support activities and 5) real estate activities, respectively. In case of manufacturing sectors were impacted by return on labor increased to the top five were : 1) information service, motion picture, radio and television programme production and other related services 2) hotel and other accommodations 3) household production and service activities, which can not be classified clearly 4) travel agency, tour operator, reservation service and related activities, security and investigation activities, office administrative and office support and other business support activities and 5) manufacture of basic metals, respectively.

To make guidelines on the sustainable tourism development in Lopburi province were based on the satisfaction survey and the opinion on sustainable tourism in Lopburi province from 400 visitors, 35 entrepreneurs, and interview

on issues of requirement, problem and suggestion on the tourism in Lopburi province from the government and private sectors, amount of 17 persons. It was found that visitors were satisfied with sustainable tourism in rather high level in economics, social and environment aspects, with the average score of 64.32 percent, 67.26 percent and 66.55 percent, respectively. Entrepreneurs had comments on the sustainable tourism in all aspect as rather high level, with 62.42 percent. i.e., social aspect: sustainable was rather high, environment and economics aspects: sustainable was moderate, with 67.90 percent, 59.88 percent and 48.60 percent, respectively. The data were used to analyze strength, weaknesses, opportunity and threat to make guideline for tourism development in Lopburi province. The six tourism development guideline strategies were as 1) making money and building careers 2) tourism development in management aspect 3) strengthening the integration 4) strengthening the values and uniqueness of society, tradition, culture and way of life 5) encourage and support environmental consciousness and 6) strengthening and spreading the values and uniqueness of nature, scenery and agriculture, total of eight plans and 20 projects.

This research made suggestion for Lopburi province to improve sustainable tourism as follows: 1) The government should promote and support high-impact manufacturings from the government budget support in tourism and caused an increase in value added and labor returns in Lopburi province, namely, information service, motion picture, radio and television programmer production, waste water and waste disposals, real estate activities, library activities, archives, museum and other cultural activities 2) Private sector should consider investing in high impacted sectors from the expense increase of Thai and foreign visitors and cause an increase in value added and labor returns in Lopburi province, namely, information service, motion picture, radio and television programmer production, accommodation, travel agency activities, tour operator, security services and entertainment and leisure

services. 3) Lopburi province should improve on the security aspects., such as, insurance and life insurance, personnel and security equipments, etc. 4) Lopburi province should improve and linkage transportation systematically aspects, such as, mass transit covers all tourist attractions and conducting connected and similar tourist routes, etc 5) Lopburi province should to improved and develop the quality/standards and the amount of hotels/accommodations, and infrastructure, such as, road improvements and repairs, increase the amount of electricity, and facilities such as center of gift shops in Lopburi province, improve the variety and cleanliness of stores and restaurants, etc 6) to make the tourism calendar in Lopburi province throughout the year, to present new activities and attractions in Lopburi province to let people know, such as, waterway travel routes in irrigation canal, renewable energy travel route, activities for tourists to interact with tourism resources, etc and 7) Lopburi province should be monitor and evaluated for the tourism industry in Lopburi province intermittently, to improve and define a sustainable tourism development plan or approach truly.

Suggestions for the further study are as following: 1) the visitor's behavior should be studied in relation to the tourist's visit, buying gift and souvenirs, choosing attractions and accommodation, environmental consciousness and to gain knowledge of the tourism sights, etc 2) It should study the nature of the tourism industry in Lopburi province and related to tourism in Lopburi province, such as, pricing, value creation of tourism products and the competition of business in the market, etc and 3) Measures should be set to assess sustainable tourism in Lopburi province, based on factual information on economic, social and environmental aspects related to direct tourism such as, value added, employment, investment, infrastructure, utilities, information service, industrial consolidation, the number of entrepreneurs who have achieved the standard of tourism business, conservation and environmental considerations, etc.

Educational Reform, Human Capital Development, and Economics Performance in ASEAN Economic Community

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Research on the educational reform, human capital development, and economics performance in ASEAN Economic Community (AEC) mainly comprises four objectives: 1) to explain the roles of educational reform on human capital development in AEC. 2) to examine the causal relations among educational reform, human capital development and economics performance in AEC. 3) to analyze the structural linkages among educational reform, human capital development and economics performance in AEC. 4) to analyze the relationships between human capital development and economics performance in Thailand.

This study uses the panel data where contain observations of 10 ASEAN countries during 1990-2015. Descriptive analysis is used to describe overall characteristics of educational reform and human capital development while several quantitative methods such as Bivariate Granger Causality, Random Effect, Fixed Effect, and Multiple Regression with ordinary least square method is employed to examine the relationships among educational reform, human capital development and economics performance such as the growth rate of GDP, the growth rate of per capita GDP, the unemployment rate, and human capital index respectively.

According to the research, the results based on the first objective show that Singapore is the best-performing country in the AEC in terms of educational system. The educational reform can assist people to adapt for changing in the environment and to prepare for the knowledge society. Most of the countries in the ASEAN Economic Community aware that the educational reform is an important tool for improvement in terms of variety, flexibility, and better alternatives. The educational reform use the student centric method to aim at maximum student learning performance via curriculum reform especially at the basic education level in order to develop knowledge and skills to become a part of the new global society. Such knowledge and skills are science, mathematics, English language and ICT as well as reading skills and problem solving skills.

Our empirical evidences based on causal relation among variables are in the second objective. Such evidences indicate that the raise in population with at least secondary education can cause a rise in human capital and economic growth at both macro and micro levels resulting in upward development spiral. The structural relations among education reform, human capital and economic development, according to the third objective, reveal that the difference in economic driving forces can cause structural complexity in the relationships among education structure, human capital accumulation, and economic and social structure in the region. The ascending ranks in the country's structural complexity are Philippines, Cambodia, Laos, Vietnam, Indonesia, Brunei, Thailand, Singapore, Myanmar, and Malaysia, respectively. The evidences also reveal that selected education variables used in this research has no significant direct effect to both of the GDP growth and the per capita GDP growth in some countries for example Thailand, Indonesia, Laos, and Singapore. Nevertheless, the average year of schooling and the population with at least secondary education can impact the unemployment rate. As a result, the relationships between human capital

development and economics performance in Thailand or the fourth objective reflect indirect impact on economics performance through the unemployment rate and human capital development consideration toward economic and social outcomes. The evidences reveal that the government spending on education significantly shift the level of human capital development and significantly reduce unemployment rate. On the other hand, the government spending on education cannot significantly alter the economic growth in Thailand. Furthermore, our empirical regularity indicate human capital development linkages across countries in AEC. Therefore, the policy recommendation of this research to drive Thailand is that the government should clearly classify and differentiate target groups and levels for educational reform in order to set alignment with the labor demand in the country and in the region. The objective of educational reform is to accumulate human capital for the development in Thailand and AEC. The job market and employment in the region significantly interconnected across countries with different segment of labor market. Low skill and semi-skill labor tend to move Thai economy and neighboring country such as Cambodia, Laos, Vietnam, and Myanmar. In order to step out of middle income trap with low unemployment rate, Thailand should not rely heavily on Low skill and semi-skill labor and has urgent needs for effective education reform that can transform Thai's economic structure getting new direction of human capital accumulation for economic performance in creating significant value added in both individual level and macro level.

Educational Reform, Human Capital Development, and Economics Performance in ASEAN Economic Community

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The Country Risk Analysis of Thailand

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Research on the country risk analysis of Thailand is mainly composed of five objectives: 1) to study general information about Thai economy, international capital flows, government debts, household debts and political situation in Thailand 2) to analyze and measure the liquidity risk generated from international capital flows. The surge and sudden stop in capital flows or capital reversals are considered as the relevant risk. The international capital flows mainly consist of foreign direct investment flows, portfolio flows, private loan flows and net capital flows 3) to analyze and measure the credit risk generated from government and household 4) to analyze and measure the risk generated from politics Finally, to analyze the impact of those risks on Thai economy.

This research employs time series data of Thai economic variables and Thai institutional variable that cover the period of 1998-2013. Descriptive analysis is used to study the general information of Thai economy and Thai political situation while quantitative analysis using Binary Logit Model is applied to investigate the risk generated from international capital flows, debts and politics. Moreover, the Multiple Regression Analysis is used to study the impact of those risks on Thai economy.

According to the research, the results show that the key factor that affects the liquidity risk generated from international capital flows is Corruption.

The corruption in Thailand is likely to be associated with a huge surge in foreign portfolio investment which considered as medium and short term flows. Furthermore, the corruption in Thailand tends to increase the probability of a sudden stop or capital reversal in private loan flows which considered as highly volatile flows.

In addition, the factors that affect the credit risk generated from debt are different between government and household. A rise in inflation tends to be relevant to a higher chance of building a huge government debts while an increase in economic growth tends to reduce the probability of credit risk generated by household. Moreover, corruption is related to an increase in political risk, particularly in the lack of legitimacy of state.

According to the analysis of the impact of risks on Thai economic key variables, the results suggest that the liquidity risk from capital flows and political risk have an significant influence on Thai economy. An increase in the liquidity risk generated from a sudden stop or capital reversal of private loan flows and a higher group grievance lead to a decline in Gross Domestic Product. In addition, an higher chance of sudden stop or capital reversal of FDI flows and an increase in *illegitimacy* of state will associated with a decline in investor confidence. In conclusion, the government must manage the political risks especially from group grievance as the first priority for the benefit of the country. Secondly, the private domestic debt problem must be managed and controlled immediately. Finally, the capital outflow from short term international debts should be awared.

Price Determinant Factors of Condominium Real Estate in Chiang Mai Province

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The objectives of this research are: (1) to explore and study the condominium real estate market built by private sector in Chiang Mai Province (2) to study and analyse factors affecting the value of condominium real estate and assess the implicit price (3) to estimate prices indices of condominium real estate in Chiang Mai Province. The secondary data of completed condominium projects covering 4 areas: Amphoe Meuang, Amphoe San Sai, Amphoe Saraphi, and Amphoe Hang Dong, was collected. The primary data was collected from 390 samples to use in analysing the price determinant factors of condominium real estate in Chiang Mai Province by applying Hedonic Pricing Method with Ordinary Least Square (OLS) technique.

The result of Chiang Mai Province general environment study indicates that Chiang Mai has great potential and opportunities for development. Chiang Mai Province issues her 4 years development plan (2015-2018) by setting development positioning in 5 issues: (1) becomes international tourism and service city (2) becomes the center of trading, investment and logistic (3) becomes the city of agricultural safety (4) becomes the center of international education toward universal (5) became livable city. Chiang Mai condominium market has been developed since 1975, the market was shrunk after 1997 economic crisis, then the market had turned around with high growth during 2013-2014. The analysis of price determinant factors indicates that the exclusive characteristics (7 factors) which affect the condominium price positively and

statistically significant are: living area, roomtype, bathtub, showerbox, fully decorated and higher floor. The condominium project characteristics which affect the price positively are: public utility fee collection, swimming pool, fitness room, security system, drinking water machine/washing machine, on main street and small size project. There are 2 factors which affect the price negatively are: car parking and convenience store. The locational characteristic analysis indicates that condominiums located in Amphoe San Sai and Amphoe Saraphi area have lower price than those located in Amphoe Meuang with statistically significant. Price index analysis indicates that on average condominium prices during 1998-2003 was lower than those before 1997 economic crisis and on average condominium prices during 2013-2015 was higher than those before 1997 economic crisis with statistically significant.

The recommendations from this study are as following. Consumers and real estate project developers in Chiang Mai should consider those characteristics which positively affect the condominium price such as living area, roomtype, bathtub, showerbox, fully decoration and floors. They should also take into account those project environment variables which are positively affect prices: public utility fee collection, swimming pool and security system. Condominium in large scale project has lower price than those in small and medium projects due to economies of scale. Condominium situated in Amphoe Meuang has higher price than those in San Sai and Saraphi holding other things constant. Price index analysis suggests that condominium prices decreased after the 1997 economic crisis and moved upword after 2012. In addition, the local and central governments should cooperate with private sector and civil society to control the market growth direction in order to prevent negative effect on Chiang Mai townscape and environments.

An Analysis of Waste Management Worthiness of Big Green Hotel

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The objectives of this study are to explore the support and obstacle factors influencing the implementation the green hotels (large, medium and small hotels) and to study the worthiness of the waste management of a large hotel. The study employed the in-depth interview method.

The results found that the most important factor was the management support and good communication between the management and staff. The green hotels did not get any financial support from the government. For the waste management, the study found that it was both financial and economics worthiness.

The recommendations government should have the financial support for the hotel to be green hotels because they have to invest in machinery and equipments. The government should have a learning center to educate the environmental management.

Potential on Waste Management by 3Rs Approach: A Case Study of Pranakorn Sri Ayutthaya Municipality

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Solid waste is one of the critical issues in NakornPhraNakorn Sri Ayudhaya Municipality that is required fundamental solutions to the problems. This has occurred due to a long period of inadequate waste collection and open dumping. The research aimed to explore existing potentials in the 3Rs concept for waste management of NakornPhraNakorn Sri Ayudhaya Municipality. Given the 3Rs concept, including Reduce, Reuse, and Recycle, it is basically considered as a fundamental approach to promote waste management at sources and, in turn, to drive on track of sustainable waste management. The specific objectives were to 1. examine the existing situation, current policies and plans of solid waste management in NakornPhraNakorn Sri Ayudhaya Municipality; and 2. study behavior, attitude, and satisfaction of the local households on 3Rs concept for waste management and the waste management services provided by the Municipality. The research type was a combination of qualitative and quantitative approaches. Data collection was done by the key informants interview and the questionnaire survey to 400 households. Data analysis applied a qualitative research technique and a statistical analysis approach.

The research found that NakornPhraNakorn Sri Ayudhaya Municipality was confronting a critical concern of the remaining large amount of waste in the dumpsite and the increasing rate of municipal waste generation. Limitations of

the number of waste collection truck and assigned staffs were found as a cause to the garbage leftover at different spots in the municipal area. It was found that the highest three portions of municipal waste composition are organic waste (33%), plastic (19%), and paper (14%). The waste problems brought into a review of existing policies and plans of municipal solid waste management. The latest waste management policy of NakornPhraNakorn Sri Ayudhaya Municipality has recently been updated and contained the new focuses on waste reduction and separation from sources, developed sanitary landfill to the new dumpsite, and promotes waste-to-energy technology. It was found out that new policies were partially executed and that made progress in terms of reducing garbage leftover, increasing waste collection truck for broadening service area, and allocating budget for developing waste-to-energy technology. However, there was limited in practice for the promotion of waste reduction and separation from sources.

The results of the questionnaire survey presented people's behavior, attitude, and satisfaction to the 3Rs concept and the municipal waste management of NakornPhraNakorn Sri Ayudhaya municipality. It was found that people's behavior on the 3Rs concept is generally adopted into common practices of the local households. As for their occupation types, the results showed that all types of occupation pay attention to household waste management in a simple way. However, the certain activities were not often adopted e.g. refusing plastic bag or foam box. Those who work outside e.g. wage labor, civil servant, and officer for the business company, had less participation to do waste utilization, to reuse, and to join waste management activities organized by the local organizations. Paper was the most common recyclables separated for sale. As for people's attitude in 3Rs concept for waste management, it was found that they were aware of 3Rs concept since when the Municipality, together with its partnership, implemented the promotional programs of waste management at sources to the local communities. Attitude

to the 3Rs concept was well accepted by the local people in terms of participation being a key of success in 3Rs; waste separation leading to waste reduction, utilization and sustainable waste management; waste being as the most important issue; motivation and incentives encouraging people's practices of waste separation. For people's satisfaction on municipal waste management, it was found that they satisfied the overall municipality's performance at a medium level. However, the complaints were left to improve the waste management service such as adding bins at the high-density areas, expanding waste collection routes to increase coverage area, improving waste collection service to be more organized and cleaned.

The research provides recommendation to NakornPhraNakorn Sri Ayudhaya Municipality, based on the 3Rs concept for waste management and study results, in order to improve performance of municipal waste management. The recommendation are: to encourage local households for waste separation and utilization at sources; to create recycling society of waste management at source by enhancing participation of all relevant stakeholders; to integrate more content on 3Rs concept into municipal waste management plan rather than just focusing on landfill solution, and to improve waste collection service in order to meet the requirement standard of well-organized service, clean collection, and reduced waste problems.

Resource Misallocation and Manufacturing Productivity after the Financial Crisis

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This study uses plant-level data from Thailand Industrial Survey from 2000, 2001 and 2003 to study the extent of resource misallocation across plants within the same industry and its effect on aggregate productivity in Thai manufacturing sector after the Financial Crisis, namely, 1999, 2000, and 2002. The findings indicate that resource misallocation in Thai manufacturing industries decreased between 1999 and 2000 but increased between 2000 and 2002. A decrease in resource misallocation can explain only approximately 12 percent of an increase in manufacturing aggregate productivity between 1999 and 2000. A change in resource misallocation, however, cannot explain an increase in manufacturing aggregate productivity between 2000 and 2002. The results also indicate that automobile manufacturing industry greatly contributes to the 2002 potential productivity gain from resource reallocation. Also, the top 10 industries contributing to the 2002 potential productivity gain jointly explain approximately 49.20 percent of such potential gain.

Effects of Culture on Corruption in Bank Lending

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Culture affects behaviors of individuals including bank officials and the director of banks. So culture may affect the corruption of bank officials and firms' need for special connections with banks in order to obtain loans. Different from a prior study that uses cultural data from Hofstede, this study uses data from the GLOBE project. Using data from more than 3,000 firms across 32 countries covering both developed and developing countries, this study finds that the in-group collectivism dimension of culture increases the corruption of bank officials while the institutional collectivism dimension decreases the need for special connections with banks. The results also indicate that the effects of these two cultural dimensions are not only statistically significant but also economically significant. If Thailand has the level of in-group collectivism of the United States instead, it will have 29 percent of all firms switching from reporting the corruption of bank officials as an obstacle to no obstacle. Also, if Thailand has the level of institutional collectivism of the United States instead, it will have 5 percent of all firms switching from reporting the need for special connections with banks as an obstacle to no obstacle.

The Effect of the Shareholdings of Banks' Controlling Owners on Connected Lending

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Bank ownership concentration may not only induce banks' controlling owners to become involved in connected lending but also deter them from doing so. This study examines how the cash flow rights of the banks' controlling owners are associated with the need for special connections with banks, which is a proxy measure of connected lending. Using data from more than 2,600 firms across 25 countries, this study finds that the cash flow rights increase the need for special connections, but the increase becomes smaller as the cash flow rights increase. No evidence is found that the cash flow rights result in a decrease in the need for special connections.

WILLINGNESS TO PAY FOR PAVEMENT MANAGEMENT BY PEOPLE IN BANGKOK

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Pavements are a kind of public good which the state provides for public use, so people participation is desirable to manage and to maximize the utilization of such areas. This study aimed to 1) investigate pavement management by the Bangkok Metropolitan Administration (BMA), 2) examine factors affecting willingness to pay for pavement management by the people in Bangkok, and 3) evaluate the value of willingness to pay for pavement management using a Conditional Logit Model. The study area was restricted to Rattanakosin Island (Phra Nakhon district) in the city of Bangkok where several tourist attractions and important places are situated. Data were collected from 705 respondents who used the pavement for travel purposes only (excluding any commercial use), during January to April 2016.

The findings indicated there were a number of agencies related to pavement management comprising the City Law Enforcement Department, the Traffic and Transportation Department, the Environment Department, the Public Works Department, the Health Department, and District Offices together with agencies requesting use of pavements, such as the Metropolitan Electricity Authority and the Metropolitan Waterworks Authority. There were also many provisions under legislation enforced by the responsible agency such as the Act of Cleanliness and Good Order of the Country, the Land Development Act, the BMA Ordinance

on Selling in Public Places and Pavements, among others. The complexity this introduced has led to the lack of integrated pavement management.

The demand analysis found that most respondents were female in the age range 31-40 years and held a Bachelor degree. They worked as private company employees and had a monthly personal income of 10,000 – 20,000 baht while the monthly income of their households was in the range 20,000 – 40,000 baht. They were domiciled up-country but had migrated and had lived in Bangkok for over 20 years, and most respondents lived in Phra Nakhon district. They had never been members, volunteers, or employees of any environmentally oriented organization. They usually walked on the pavements on Rattanakosin Island for 1.55 kilometers per time and spent 1.33 hours per time primarily for visiting places, shopping, and going to work, respectively. Most respondents felt secure and had never had an accident resulting from using the pavements on Rattanakosin Island. The main problem identified by the respondents were the homeless wandering along the pavement, the encroachment of stall sellers and street vendors on the pavement, inadequate electric street lighting at night time, and motorcycles riding on the pavement, respectively. The Choice Modeling analysis revealed that encroachment by stall sellers and street vendors, and not having to deal with the homeless affected the willingness to pay for pavement management by the people in Bangkok with statistical significance at the 99% confidence level. The implicit marginal price for the attribute of encroachment by stall sellers and street vendors was the highest, followed by the attribute of security from not having to deal with the homeless, with values of approximately 907 and 834 baht per year, respectively. Factors affecting the respondents' willingness to pay for pavement management were: the highest level of education, the use of pavement on Rattanakosin Island, the walking distance of the respondents, the security of the use of pavement on Rattanakosin Island, and cognition about the pavement function.

Therefore, the BMA, as the responsible agency overseeing and managing the pavement on Rattanakosin Island, should consider the study findings in order to develop a pavement management scheme. The recommendations are as follows: integrated performance between the concerned BMA departments and other external agencies should be initiated and coordination with other agencies should be introduced to manage accommodation for the homeless in specific areas, especially during nighttime. Moreover, the pavement should be designed and constructed to take into account suitability for the use of all groups of people. Selling on the pavement must be strictly prohibited and the stalls and street vendors should be relocated from the pavement to new areas close to the street. Rather than providing electric street lighting along all pavements, the lights should be located to adequately illuminate only the routinely used pavements in order to balance cost and effectiveness with public interest. In addition, in order to generate the willingness to pay for the pavement management, the BMA should provide pavement use guidance to pedestrians, so that people can use the pavement with confidence and a sense of security. Furthermore, the scenery along the pavements on Rattanakosin Island should be improved and decorated to encourage people to use them.

Willingness to Pay for Water Transport Management in Saen Saeb Canal by People in Bangkok

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The objectives of the research were: 1) to investigate the behavior and explore the factors affecting the use of the Saen Saeb boat service by people in Bangkok; 2) to examine the factors affecting willingness to pay for water transport management in the Saen Saeb canal by people in Bangkok; and 3) to analyze willingness to pay for water transport management in the Saen Saeb canal by people in Bangkok. Data were collected on both weekdays and weekends, during March–May 2015 from 676 respondents at 27 Saen Saeb boat piers. A Logit Model was applied to analyze the factors affecting use of the Saen Saeb boat service. The respondents were divided into 2 groups (422 and 254 respondents) who used and did not use the Saen Saeb boat service, respectively. The Contingent Valuation Method (CVM) and the Choice Model, in the form of a Conditional Logit Model, were employed to estimate the marginal willingness to pay for water transport management in the Saen Saeb canal.

The results showed that most respondents were female, single, aged 34 years on average and lived in the Bangkok district. They had a bachelor degree or equivalent and worked in private companies for an average salary of 25,720 baht per month. They had approximately 3 members in their households who earned an average income of 90,185 baht per month. Most of the respondents were not the head of the family and did not own a car. The respondents rated the factors supporting the Saen Saeb boat service at the

somewhat high level. The most important factors were safe and strong floating or fixed piers as well as safe mooring whilst passengers boarded and disembarked.

With regard to the reason for using the Saen Saeb boat services, the respondents revealed that boat services provided faster transport compared with the use of other vehicles, so that they were able to reliably estimate their travel time. The frequency of using boat services was uncertain. They frequently used the boat service in the morning and evening. The most used starting pier was Ramkhamhaeng 29 and the most used destination pier was Pratunam. The average distance from accommodation to the piers was 4.27 kilometers. The purposes for using boat services were usually for personal business, travel or shopping. Their boat trips were both inbound and outbound. However, most respondents had never experienced a boat accident. Respondents who did not use the Saen Saeb boat service commented that the service was unsafe and risky. At a significance level of 10 percent, the factors affecting the use of the Saen Saeb boat services were gender, total income of the household, level of education, car possession, ability to swim, opinions about factors supporting the Saen Saeb boat service, and opinions on the use of the Saen Saeb boat service. At a significance level of 10 percent, factors affecting willingness to pay for water transport management in Saen Saeb canal were starting bid, gender, marital status, family status and total household revenue. The mean marginal willingness to pay was 10.13 baht per trip, ranging from 9.35 to 10.91 baht per trip. The median marginal willingness to pay was 9.41 baht per trip, ranging from 8.77 to 10.04 baht per trip. It was found from Indirect Utility Function analysis that the attributes affecting the choices chosen by the respondents were availability of life vests and service. The marginal implicit prices (willingness to pay) of the attributes of service, ways of boarding the boat, piers (floating) and availability of life vest were 0.77, -0.15, -0.17, and -0.76 baht per trip, respectively.

Therefore, the concerned agencies such as the Marine Department and the Bangkok Metropolitan Administration (BMA), with duties associated with administration of water transport in the Saen Saeb canal should utilize these research findings in the preparation of a water transport management plan for the Saen Saeb canal to address several issues. There should be integration and co-operation among the agencies to discuss the problems and to control and strictly oversee the Saen Saeb boat service. Measures, such as the provision of adequate numbers of life vests, the development of safe piers, the rigorous control of boat navigation, and the supervision of private boat service concessions should be incorporated into the implementation plan to provide quality services and ensure the safety of passengers.

The Willingness to Pay for Cycleway Management and Cycling Behavior of People in Bangkok

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The purpose of this research aims at 1) studying the behavior and factors influencing on the use of bicycles of people in Bangkok, 2) investigating factors affecting the willingness to pay for cycleway management in Bangkok, and 3) analyzing the value of willingness to pay for cycleway management in Bangkok. Conducted as a case study of 719 households residing in Bangkok, this research applied Logit Model to analyze factors influencing on cycling behavior of the people in Bangkok as well as factors affecting the willingness to pay for the cycleway management in Bangkok. The Choice Model, in the form of Conditional Logit Model, was then employed to estimate the value of the willingness to pay for bicycling track management. With the age range between 21-30 years old, the majority of respondents are single male, holding BachelorTs degree. They are private company employee with personal income range between 10,000 - 20,000 Baht per month and an average household income range between 20,000 - 40,000 Baht per month. Most of them are not the members, staffs, or even volunteers of the organizations concerning bicycling and also have never participated in any bicycling activities and activities of the environmental agencies or organizations.

In regard to the use of bicycle in everyday life, most respondents have experienced bicycling for less than 3 years and spend 3-4 days a week on average with their bicycles, which are priced from 2,000 - 4,000 Baht. They

always individually ride during the time of 3.00-7.00 p.m., averagely less than an hour per day, with an average distance of 1-5 kilometers per day. Most respondents have been motivated by the idea that cycling in everyday life can be a substitute for exercise, so the main purpose of their cycling is for exercise. The respondents who do not use cycles in everyday life explained that cycling is not the proper means of transport as their destination is not within a reasonable cycling distance. At a statistical significance level of 0.10, it was found that factors affecting respondents' willingness to pay for cycleway management are participation to cycling and related activities, level of significance of the infrastructure to support the use of cycles in everyday life, level of attitude towards causes or reasons of the use of cycles, level of participation to environmental activities, total revenue, and occupation of employee. The study also found that factors affecting the willingness to pay for the cycleway management in Bangkok, at a statistical significance level of 0.10, are education, participation to environmental activities, occupation of government officials or state enterprise employee, the price of their cycles, and level of significance of the infrastructure to support the use of cycle in everyday life. According to the analysis of indirect utility function, the attributes of cycle way network, bicycle parking space, and offered each choice of willingness to pay are factors affecting willingness to pay for cycle lane management in Bangkok at a statistical significance level of 0.10. With respect to marginal implicit price of the attributes of cycle parking space, cycleway network, safety, and availability of cycleway are 84.30, 53.90, 24.60, and -4.99 Baht per year, respectively.

Therefore, the policymakers of Bangkok Metropolitan Administration (BMA) should take the research findings into consideration for cycleway management planning, such as providing more cycle parking spaces with lockup equipment in the several attractions, campaigning the program to encourage utility cycling and cycling value, coordinating with the BMATs schools to

organize the projects to introduce and promote utility cycling, cooperating with concerned public transport agencies to systematically integrate cycling with other transport modes, increasing short cycle lane especially in the ways connecting communities and places, and arranging activities or supporting private sector to arrange more cycling and related activities.

The Development of Textile Production for Export: A Case Study of Baanfaimudyom Co., Ltd.

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This research aims to fulfill three objectives which are: 1) to study the company's general information 2) to develop the textile production for export by being aligned with environmental standards concerning the chemical residues in textile products and 3) to evaluate the project outcome of the new textile production for export.

There are 14 steps in current production process including: 1) to purchase white and colored cotton, 2) to draw patterns as per the design on paper, 3) to cut the cloth as per the drawing, 4) to sew the cloth, 5) to wash the clothing, 6) to dye the clothing, 7) to tie the clothing with rubber bands, 8) to bleach the tied clothing with Chlorine, 9) to dip the tied clothing in Silicate, 10) to color the clothing, 11) to soak the clothing, 12) to untie and wash the clothing, 13) to soak the clothing in fabric conditioner, and 14) to spin the clothing until dry. To test the chemical residues on the white cotton before and after being processed in steps 1 and 13 using the current production process, it found that the Formaldehyde level passed the standard but pH standard did not pass in step 1. And to test after being processed in step 13, the Formaldehyde and 24 Azo Dyes passed the standards; however, pH standard still did not pass. The wastewater was tested in step 6 after clothing being dyed and in step 13 after clothing being soaked in fabric conditioner. It was found that pH level of wastewater in step 6 passed the standard and the chemical

levels of Mercury, Cadmium, Lead, Hexavalent Chromium, Trivalent Chromium, Formaldehyde, and free Chlorine passed the standards in step 6. And in step 13 after clothing being soaked in fabric conditioner, pH level of wastewater still passed the standard; unfortunately only 6 chemicals namely Mercury, Cadmium, Lead, Hexavalent Chromium, Trivalent Chromium, and free Chlorine passed the standards while Formaldehyde did not. To solve the problem of Formaldehyde not passing the standard, the researchers invited an expert to suggest a solution to add one more step to soak the clothing in Acetic Acid before being soaked in fabric conditioner. The wastewater was re-tested after adding one more step of clothing being soaked in Acetic Acid before being soaked in fabric conditioner and as a result, Formaldehyde level passed the standard. And pH level now passed the standard too.

To further improve company's operational development, this study suggests that 1) Production aspect: to give a quick response, some decisions can be made by a middle-level manager instead of the owner; to develop the standard operating procedures manual in every step of production process; to provide a staff training to better understand the best practices for standard systems; and to invest in machines instead of hiring unskilled labors to improve its productivity. 2) Marketing aspect: to further develop its brand name - "Baanfaimudyom" and build its clear brand identity via all communication channels; to do more online marketing activities through company's Instagram, Facebook and Website; in order to target the Japanese market, company's homepage must be updated using Japanese and to facilitate prospective Japanese clients with a new communication channel. 3) Administrative aspect: to recruit more skilled labors to support a new business expansion; to further improve cost management and increase its productivity. 4) Product standards: to develop the standard operating procedures manual; to keep the data recorded in a document instead of memorizing it; to invest in staff training by educating them with new production process for export; and to exploit the new product benefit - safe to wear clothing, an effective communication strategy

targeting at end customers must be developed e.g. having a claim on Non-Azo Dyes, Formaldehyde Approval, for instance. 5) The company should avoid losses by increasing revenue from new product design, sales channel at department stores and reducing manufacturing costs by controlling product and raw materials inventory in line with sales.

Financial Integration and Economic Growth

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Financial Integration in ASEAN as the result from ASEAN Economic Community (AEC) is the important tool for promoting ASEAN financial depth and financial sector competition. Increased competition in the financial sector should reduce interest margins and increase risk sharing, which in turn encourage investment and growth. The purpose of this paper is to investigate the relationship between ASEAN financial integration and economic growth.

The descriptive statistics of the study show that economic integration leads to trade integration and it becomes more apparent on ASEAN economic performances. During 10 years ago, intra-ASEAN trade increased continuously, especially in CLMV countries (Cambodia Lao Myanmar Vietnam). According to degree of financial liberalization, capital account liberalization index for ASEAN developing countries has increased in recent years, especially Cambodia in 2011.

For the quantitative analysis, the relationship between ASEAN financial integration and economic growth will be estimated by the growth model. The augmented Solow growth model is extended to incorporate the human capital and financial capital in this study. Estimations use the data from ASEAN-10 countries during 2000-2014. The model is estimated by method of system GMM following Allerano and Bond. The estimations are composed of two parts which are the model for ASEAN-10 countries and the model for CLMV countries.

For ASEAN-10 countries models, financial capital and human capital are significant and positively effect on economic growth. Financial integration as proxied by net inflow per GDP is statistically significant and has the expected

positive sign in all the estimations. Government consumption is insignificant positively effect on growth. Bank assets ratio has a positive and statistically significant impact on growth. Additionally, the study fails to support the implication that a country with low level of initial output per capita has higher growth rate than high level output per capita country (conditional convergence).

According to CLMV models, population growth has positive impact on economic growth which contradicts to the theory. Since the labor productivity in CLMV countries have significantly increased over the period of the study, output growth is greater than population growth, then output per capita increases even when the population increases. Financial integration as proxied by capital accounts liberalization index has a positive and statistically significant impact on growth for CLMV countries, emphasizing the important role of financial integration for economic growth.

Effects of Fiscal Policy on Macroeconomic Variables

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The paper studies the fiscal policy of Thailand. The issues of the study are fiscal environments and the effects of fiscal policy on macroeconomic variables. The study finds that Thailand government revenue depends on indirect taxes more than direct taxes.

The performance of tax collection is less effective, therefore an improvement of tax collection system is required. The government expenditures on investments and human resources are lower than the threshold for stability of debt repayment. Based on the projection of fiscal situation, the interest rate, and the economic growth rate, if the government wants to stabilize the debt repayment, the government's primary budget should be surplus. The study of the effects of fiscal policy on macroeconomic variables use a dynamic model based on Real Business Cycle model. In order to comparison for the standard model, the government expenditure on employment is introduced to the model. In the standard model, an increase in government expenditure leads to an increase in total output. Households' consumption decrease because of the wealth effects. Those effects lead to an increase in investment. In contrast, an increase in government employment expenditure leads to a decrease in output. Households' consumption increase because real wage increases. For fiscal policy regarding taxes, an increase in income's tax will impact on household wealth rather than capital income tax.

The Potential Development of a Local Cloth Product : A Case of Ratchaburi Province

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The purpose of this research were to study the history of Chok cloth of Thai-Yuan, known as Khu Bua cloth of Ratchaburi Province, to study problems and obstacles faced by the Thai-Yuan Cooperatives and to evaluate the potentials and provide suggestions for potential development. The study collected primary and secondary data. Primary data were collected by interview with questionnaires the cooperatives committee, interview with questionnaires the weavers, in-depth interview, focus group, participation observation and meetings. Secondary data were collected from various related documents.

The research results were a high score in potentials assessment in leadership and administration, operation plan, marketing management, knowledge and data management, membership management, product and services management, and overall performance.

The weavers were all female, used local wisdom in weaving that passed down, liked to improve and create new, modern patterns, and knew the history of Chok Cloth of Thai-Yuan in Ratchaburi Province. Most of the weavers had household debts. They did not use science knowledge to apply to their work very much and did not document the activities. They knew the Sufficiency Economy concept and also practice. The reason that they sold their product to the cooperatives, although there was no obligation, was that they understood the principle of cooperatives. The analysis of marketing mix found that producers put significant weight on product and price more than place and promotion. The customers that bought Chok Cloth were local government

officers, followed by Thai tourists and local community. There were few number of foreign tourists.

Relationships between tourism, economics and politics in Thailand

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Tourism industry is very important to Thai economy. In 2555 B.E., Thailand received income from tourism around 1.46 trillion baht, about 7-8 percent of GDP or 22.9 percent of service sector GDP. But, Thailand faced many occasions of political instability during 2543 – 2555 B.E. Therefore, a study on the relationships between tourism, economics and politics in Thailand is very interesting.

The objectives of the study were to study tourism, economics and politics in Thailand during the period 2543 – 2555 B.E. and to study the relationships between tourism, economics and politics in Thailand.

The study was based on the macroeconomics concept. The data used were secondary, time series data. It was the aggregate demand study, which was measured by the number of foreign tourists and tourist expenditure in Thailand. The independent variables were non-agricultural GDP, consumer price index, economic crises, and political crises. The analytical methods used were zero order correlation, linear multiple regression and cointegration. The study found that political crises had a statistically significant negative relationships with the aggregate tourism demand. Economic crises had no relationship. Nonagricultural GDP and consumer price index had a statistically significant positive relationships with the aggregate tourism demand.

Impact Assessment of Oil Palm Research Projects in Thailand

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Oil Palm research plays an important role in the development of the country. In order to manage the researches to maximize the benefit to society, Impact evaluation of research is crucial. This research aims to assess the impact of oil palm research in Thailand. The data of 571 projects are obtained from the National Research Management System (NRMS) database during 2008-2017 and 251 questionnaires. The impacts of oil palm researches are analyzed based on the impact pathway concept and economic analysis (NPV, BCR and IRR).

Considering the oil palm research structure during 2008-2017, the total investment was 699 million Baht, with a government budget of Baht 457 million and a targeted research budget of 242 million Baht. The average targeted research budget per project is higher than the government budget because they aimed at solving urgent problems. Most of the palm oil researches were based on basic and applied researches. The main outputs from the oil palm researches were machinery, technology and innovation (51%). Academic outcomes from oil palm researches searching from SCOPUS, WOS, Science Direct and the national database (TCI) were enormous. Researches were cited by many countries including Malaysia, United States, India, Brazil, Japan, Australia, Germany, Indonesia and Canada, respectively. There were 66 patent applications during the year 1992-2017. The positive impacts of the oil palm researches accounted for 77% of total samples. The highest economic impact was observed (63%), followed by the environmental impact (33%) and the rest for the social impact. The evaluation of research on Surat Thani (7, 8 and 9) oil palm seed varieties during the period 2003-2017 was found to be worthwhile

invested. The net present value of the project was about Baht 117 million in 2017. The impacts of the case studies of the upper-, mid- and down-stream researches will be very high if the technology will be seriously transferred to target users at the commercial scale.

Policy recommendations for the future oil palm researches in Thailand are that research funding bodies should continue supporting oil palm research throughout the value chain. Especially, research on economics, marketing, stakeholders and institutional factors should be principally considered. Oil palm research should be set as one of the most important agricultural policies in Thailand.

Keywords: Research Impact Assessment, Oil Palm, Thailand

Impact Assessment of Cassava Research in Thailand

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Cassava crop plays an important role for local community and Thai economy. Cassava research investment in the past might have generated positive impacts to economic development of the country. The main objective of the study is to evaluate the impacts of cassava research in Thailand. The secondary data of 554 cassava research projects are composed from the National Research Management Systems under the National Research Council of Thailand. The primary data of 99 cassava research projects are collected from cassava researchers using the online survey. Three case studies are investigated. The qualitative and quantitative methods are analyzed.

The results show that cassava plant breeding is the main research subject invested during 2008-2014. Most cassava researches in the past are placed under the research plan of economic crop development to create value added for competitiveness and self sufficiency. There are many cassava research papers published under peer review journals. The benefits of cassava researches in terms of intellectual properties are recorded by 72 items. Eleven new cassava breeding varieties have been registered. In addition, the cassava research investments in the past significantly affected the expansion of cassava area in Thailand. The economic return from cassava researches in the past at the short-run equaled to 1.63 and in the long run will be 2.21 indicated that cassava research investments in the past are worth and should be continued. The economic analysis of the three case studies, (1) cassava breeding: Huay Bong 60 and 80 (2) Cassava flour products (3) Cassava planting machine, show that net present value of case one equaled to 10,507 million Baht and that of

case two amounted to 115 million Baht indicating that they are worth to research investments. The benefits will be higher if their adoption of technology will be extended. The result of the case study three demonstrates that this research delivers as a prototype of the cassava planting machine nowadays. In conclusion, cassava researches in Thailand have produced new technologies for product development, outputs and outcomes which have beneficially and widely affected the economic development of the country.

Thus, continuation of cassava research is suggested. Cassava research directions should be emphasized on all up-stream, mid-stream and down-stream researches to create value chain of cassava products in the future. Finally, the support of technology adoption to target users by related agencies should be continuously promoted.

Keywords: Research impact assessment, Cassava, Thailand

Impact Assessment of Sugarcane Research in Thailand

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Impact assessment plays an important role for management and allocation of research investments to deliver highest benefit to society. This research principally aims to evaluate the impacts of sugarcane and sugar researches in Thailand. The data of 311 projects are obtained from the National Research Management System: NRMS during 2008 – 2016. Primary data from various stakeholders are assembled to analyze sugarcane research status, inputs, outputs, outcomes and impacts. Economic returns to sugarcane researches are investigated. Case studies of upstream, midstream and downstream research projects are evaluated using NPV, BCR and IRR.

Sugarcane and sugar researches have been implemented for almost 50 years ago. Research investments have been supported by many sources both government and targeted research budgeting. Data from NRMS during 2008-2016 showed that 517 million baht or an average of 57.4 million baht per year were invested in sugarcane researches. Most researches in the past emphasized on upstream researches (82%) e.g. sugarcane breeding, machinery and pest managements. There is a gradually increasing trend on midstream and downstream researches. The research outputs comprised of academic journal papers on sugarcane and sugar both international and national levels, 92 patents during 1982-2016 and 46 registered sugarcane varieties during 1999-2015. When considering the sampled sugarcane research projects, the main outcomes include yield enhancement, increasing incomes, reducing costs, preserve resources and environment, improved high quality products, and better living standard of farmers respectively. Overall, there were positive

impacts from sugarcane researches. The highest impacts were on economics (68%), followed by environment (27%) and social impacts (5%) respectively. The marginal value product of research found in the study indicates that for each bath invested in sugarcane research has resulted in economic benefit of 1.66 times the cost in the short run and 4.53 times the costs in the long run. In addition, the project investment analyses of the upstream, midstream and downstream sugarcane researches were highly worth. Hence, investment in sugarcane research is worthwhile to the Thai economy.

The suggested direction of sugarcane researches includes continuing research support throughout the value chain. Especially, a strong support on upstream sugarcane research is still required, e.g. varietal improvement, machinery, pest management. Moreover, upscaling the research outputs from laboratory to commercial scales by integration of all stakeholders: government, researchers, farmers, and entrepreneurial is crucial in order to gain the highest benefits from sugarcane researchers to the Thai society.

Keyword: Research Impact Assessment, Sugarcane and Sugar, Thailand

Outcome and Impact Evaluation of Research Program on Development of Alternative Livelihoods and Aquatic Resources (Tilapia)

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Tilapia is an important economic freshwater fish to the society of Thailand. Thailand Research Fund (TRF) has recognized its importance and support the Tilapia research Projects as a set of research program. This work aims to evaluate the outcomes and impacts of the Nile Tilapia research program. Secondary data are collected from the TRF. Primary data are obtained by interviewing with stakeholders, farmers and experts. The research method follows the OECD evaluation criteria. The outcome and impact evaluation apply the project evaluation methodology: Net Present Value, benefit-cost ratio and internal rate of return. The future Tilapia research direction are investigated.

The research status of the Program, there are 8 projects under the budget of 18,733,453 baht. Most of them are in the field of fish culture and farm management. Most of the projects are under the strategy of increasing productivity (62.50%). When considering the relevance indicator, the research program is consistent with the development strategy and productivity enhancement tactic. The research program is effective since the integration of different sub-projects has met the objectives of the Tilapia aquaculture development. The research program is efficient as they produce many academic outputs, in an average of 7 pieces per project. The project has generated economic and social impacts and already worth for the investment. The net present value at 2018 is equaled to 163 million baht and the benefit-

cost ratio is 6.18. Moreover, the research program is sustainable. The sustainability of the project has been reached because the research results continues to be used. After the ex-ante impact evaluation over the next five years, the value of net benefits will be almost four times higher. In conclusion, the Tilapia research program has already generated high outcomes and impacts to the society of Thailand.

Suggestions for the future Tilapia research direction in Thailand include TRF should continuously support Tilapia research from upstream to downstream, including research on breeding, production factor and farm management as well as research on Tilapia production network. Especially, economic research and the Tilapia market structure is crucial. Policy-related agencies should evaluate the success of the Tilapia Fish Production Strategy to find out about the problems and obstacles for the development of aquatic resources (Tilapia) in Thailand in the future.

Keywords: outcome and impact, evaluation, Tilapia research, Thailand Research Fund

Impact Assessment of Researches on Highland Development

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Researches are crucial for highland development. The objective of this study was to assess the impacts of the Highland Research and Development Institute (HRDI) in the past decade and suggest the future research direction. The data were obtained from 441 projects under the HRDI during the fiscal years 2005-2014. The questionnaires of 167 projects and 4 case studies of the successful projects were conducted. The economic analyses were performed i.e. Net Present Value, Benefit-Cost Ratio and Internal Rate of Return.

The results show that the HRDI researches in the beginning mostly emphasized on extending the activities of the Royal Project implemented into the Royal Project extension areas including the supporting areas of the Royal Project. The recent researches aim more on economic, social, and environmental aspects of the highland communities. The research outputs and outcomes on technology, innovation, products as well as registration of intellectual property (52 items) have resulted in the success of projects on natural resources and environmental conservation, biodiversity preservation, food security, local knowledge and community economy. The economic analysis of the four case studies were 1) coffee-based researches produced NPV (2008-2024) equaled to 28,170,547 baht, BCR 4.13 and IRR 43%; 2) food bank researches created NPV (2007-2024) equaled to 191,936,151 baht, BCR 5.52 and IRR 32%; 3) Rice Researches made NPV (2011-2020) equaled to 5,954,000 baht, BCR 1.54 and IRR 23%; and 4) Handicraft Researches produced NPV (2007-2024) equaled to 10,116,786 baht, BCR 1.47 and IRR 72%. In conclusion, the four case studied researches show that the HRDI researches investments in the past are

economically worthwhile. The benefits will be higher in the long-run when the adoption of technology will be expanded.

Suggestions to HRDI for the future researches directions are e.g. continuing researches to produce “high quality” of products, commodities, innovations and varieties; emphasizing on high value brands royalty which specialized in highland and royal project products; and continuing the natural resources and environmental researches that serve the sustainability issue and research dynamic perspective, medium and long term researches should be supported. Carrying on training and strengthening of monitoring and evaluation are crucial.

Keywords: Impact Assessment, Highland Researches, Highland Research and Development Institute

Policy Options for Environmentally Friendly Pest Management in Thailand²

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Adverse environmental and health affects from chemical pesticide use still remains crucial problem at present. The overall objective of the project was to draw policy options for environmentally friendly pest management. Data were collected from various secondary sources. Primary data were gathered from 303 interviewed vegetable farm households in Pathumthani, Nakorn Pathom and Ratchaburi provinces in 2016 cropping period. Descriptive and quantitative analysis were performed by describing the current pest management of vegetable farm households. Risk attitude was evaluated. Choice experiment was applied to obtain vegetable farmers preferences on options for environmentally friendly pest management (EFPM).

The results showed that pest management of most vegetable farm households was chemical pesticide (86%). The improper use of chemical pesticide use was commonly found in the area such as mixed several pesticides in cocktail before spraying and no management of pesticide containers after use. Environment affects from chemical use were soil degradation, air pollution, water pollution and reduction of natural enemies. When considering the risk attitude, most chemical pesticide farmers were risk aversion. The results showed that enhancing farmer knowledge on alternative pest management practices could significantly change farmers risk attitude towards more environmentally pest management. In terms of farmer preference on options for EFPM, the average willingness to pay of farmers to have a better farm

ecosystems, low chemical pollution, high natural enemies in the farm, good health and low risk to long run cancer was valued at 27,986 Baht/Rai/cropping season.

Therefore, government allocation of budget for EFPM is suggested. Environmental tax needs to be considered by related agencies as a source of funding. Department of Agricultural Extension should allocate sufficient budget to promote IPM throughout the countries. Department of Agriculture should consider a certified eco-label. More researches on EFPM should be supported.

Keywords: Environmentally friendly pest management, risk attitude, choice model, vegetable

Pesticides, Environment and Vulnerability to Poverty of Farm Households in Thailand²

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Problems of agricultural pollution and poverty of farm households still play an important role. This research aims to evaluate the impacts of chemical pesticide use to human and ecology that may affect the vulnerability to poverty of farm households. Data are collected from 198 sampling farm-households in Nakhon Rachasima, Chaiyaphum and Chiangmai provinces. Both qualitative and quantitative methods are utilized.

The use of chemical pesticide at national level within the past 10 years is constantly increasing. The results at farm-households level confirm that pest and disease are still the major problem. Consequently, the use of chemical pesticide to solve the problem continuously increases both in terms of quantity and frequency. The impacts of chemical pesticide use to environment found that most chemical pesticides affect to ecology (69-74%) followed by their impacts on farmers and consumers respectively. When considering the vulnerability to poverty, 79 farm-households or 40% fall to be vulnerable to poverty and 118 farm-households or 60% are non-vulnerable. One of the factors affecting the vulnerability to poverty of sampled farm-households in the cropping year 2013 is the impact of chemical pesticide use to environment. It indicates that when farm-households apply higher chemical pesticides that affect to environment, they will face a more vulnerability to poverty.

Hence, for a sustainable development of agricultural sector and economy of Thailand, the suggestions are the following. The related government agencies should support choices to pest control practices, especially the biological control agents as an alternative to chemical pesticide use. They should emphasize on strengthening the farmer group collection and field school at village level by seriously and continuously support both financial and equipment means. Further researches on economic study of alternative methods to chemical pesticide and risk behavior of farm-households on the use of chemical pesticide should continue.

Keywords: Pesticides, Environment and Poverty

โครงการ “อุตสาหกรรมรถตัดอ้อยและการลงทุนในรถตัดอ้อยเพื่อการพัฒนา ธุรกิจไร่อ้อยอย่างยั่งยืน”

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This research has five major objectives: (i) to investigate the number and type of sugarcane harvesters; (ii) to analyse the investments of sugarcane harvesters; (iii) to investigate factors affecting the adoption of sugarcane harvesters; (iv) to analyse farmers' satisfaction regarding the use of sugarcane harvesters; and (v) to carry out a strategic plan to develop the sugarcane harvesting industry. The targeted populations of this research were (i) sugarcane harvesters, producers, and sale agencies; (ii) the Office of the Cane and Sugar Fund, the Office of the Cane and Sugar Board, and other stakeholders; and (iii) farmers who invest in, rent, and own sugarcane harvesters. The study areas were in 4 provinces: Kanchanaburi, Saraburi, Surin, and Chaiyaphum. The purposive sampling technique was applied for data collection. The random utility model and investment analysis were applied in the analysis of this research. A switching regression model was adopted to identify factors affecting the adoption of sugarcane harvesters.

The total of 1,718 sugarcane harvesters surveyed in Thailand included around 67% local producers, and the rest were imported from different countries. Farming operations in sugarcane harvesting were lower than capacity. The net present values of mechanical harvesting in small and large harvesters (200-250 and 300-350 hp.) were positive in the seventh and tenth year of study, respectively. The prices of sugarcane harvesters produced internationally are

between 8-12.5 million. The present values will reach a positive value when the operation is in its eleventh year.

Factors significantly affecting the adoption of sugarcane harvesters include the labour shortage, quantity of sugarcane product, amount of sugarcane income, neighbouring farm use mechanical harvesting, farmers' attitudes toward the environment, and farmers' attitudes toward risk. The finding from the switching regression mode pointed out that sugarcane productivity and the value of commercial cane sugar (C.C.S.) for farmers who adopt sugarcane harvesters are higher than for those who do not adopt. The significant differences are 4.86 ton per rai, and 0.69 C.C.S. with 0.01 level.

Results gained from this study were used to investigate three strategic plans. The government and other stakeholders should collaborate to conduct research and development along the value chain of the sugarcane harvesting industry. The strategic plan to increase efficiency of sugarcane harvester usage is driver and repairman training. Farmer loan repayment should be identified based on investment analysis. A standard of sugarcane harvesters must be drafted to control the quality of imported sugarcane harvesters.

The Effects of Banking Competition, Monetary Policy and Fiscal Policy on Financial Market Activity

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To study the impacts of banking competition, monetary policy and fiscal policy on financial market activity, I develop the model in which banks serve important economic functions. The results show that an expansionary monetary policy results in an increase in investment project. Furthermore, the impact is stronger when the banking sector is more concentrated. For the impact of fiscal policy, I demonstrate that if the government runs a budget deficit, it seeks to obtain more funds regardless of the competitive structure of the financial system. As a result, the government crowding out diverts funds away from the investment projects. In this manner, economic outcomes depend on degree of financial competition, monetary policy and fiscal policy.

KEYWORDS: Banking Competition, Monetary Policy, Fiscal Policy

The Effects OF Banking Competition, Monetary Policy and Fiscal Policy on Interest Rates

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In this study, I develop the general equilibrium model in which interest rates in the credit market and the deposit market are endogenous. The framework generates a number of interesting insights regarding the roles of banking competition, monetary policy and fiscal policy. The results show that the degree of financial competition has significant impacts in the financial markets. For example, given the same level of risk in the credit market and bond market, interest rates in these two markets can be different due to imperfect competition in the banking sector. Furthermore, an increase in government budget deficit is associated with higher interest rates of long term deposit and loans. Moreover, an expansionary monetary policy results in an increase in the long term deposit rate and the loan rate.

Keywords: Banking Competition, Monetary Policy, Fiscal Policy, Interest Rates

The Effects of Banking Competition and Monetary Policy on Interest Rates in Thai Banking Sector

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In this study, I develop the theoretical model in which banks serve important economic functions. Spatial separation and private information generate a transactions role for money. Furthermore, pooled OLS, fixed effects estimator and random effects estimators are used to estimate the results of the empirical study.

In term of theory, both the degree of financial competition and monetary policy affect deposit rate and loan rate that banks offer. Furthermore, when a growth rate of money is higher and a bank can exploit market power, the degree of pricing distortion will be higher. For empirical study, all estimators give the similar results. In particular, interest rates in both deposit and credit markets depend on monetary policy. Consequently, monetary authorities should account for the adjustments of interest rates when they conduct monetary policy. In contrast, the degree of banking competition does not have impact on interest rates. Thus, the Thai banking sector may not be characterized by price competition. However, the impacts of monetary policy on interest rates depend on the degree of banking competition because it affects the amount of reserves in Thai banking sector so banks with different degrees of competition will adjust interest rates differently.

KEYWORDS: Interest Rates, Banking Competition, Monetary Policy

The Relationship between Tariff and Foreign Direct Investment

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This study focuses on factors affecting inward Foreign Direct Investment (FDI), with special focus on the relationship between tariffs and FDI. The study found significant and positive association between positive economic growth, degree of trade openness, FDI accumulation and the increase in the share of FDI to GDP. This highlights the beneficial effect of industrial clustering policy, in the countries with high economic growth as well as high degree of liberalized trade policy tend to be able to attract the larger share of FDI to GDP than that of their peers. Moreover, the study found that the age dependency ratio as well as tariffs rate have a negative association with the share of FDI to GDP. This finding serves to remind that increasing age dependency ratio, often associated with aging population, magnifies the labor shortage problem and shrink the dwindling pool of skilled labors required for FDI. Finally, the high tariffs barriers set to discourage trade inflow adversely affect inward FDI as well, especially the vertical FDI. To this end, lowering tariffs might be able to attract higher share of inward FDI to GDP.

Relationship between Foreign Direct Investment and Economic Complexity Index

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This study focuses on relationship between the Economic Complexity Index (ECI) pioneered by Hidalgo&Hausmann (2009) and inward Foreign Direct Investment (FDI). Hidalgo and Hausmann found increased complexity of the economy is a result of accumulation of diversity in production process, particularly in the products that is less ubiquity. The production process of such products are often complex, requiring new innovations and high skills labor. Production of these innovative and complexed products thus yield higher value-add and hence the higher national income per capita. In this regard, the group of countries that accumulate complex productions could positively affect inward FDI. However, this study shows ECI conversely associates with FDI when FDI is defined as a ratio of FDI to GDP. The result implies that complex economies will have lower FDI than the less complex economies. This could be explained by complexed economies usually invest in less complex economies and hence raise inward FDI into these economies. When dividing countries along income groups, the result is statistically significant in the upper middle income group. In addition, this study found that accumulated FDI stock positively associates with inward FDI implying a present of clustering effects or supply chain linked investments can positively induced more inward FDI, consistent with Campos and Kinoshita (2003). Furthermore, this study found positive and significant association between trade openness and inward FDI. The result is consistent with Resmini (2000), who

argued that inward FDI to expand vertical integration could benefit from trade openness, and Singh & Jun (1995), trade promotion policies can attract inward FDI.

The Land Rental Market in Thai Agriculture And Its Impact on Household Welfare

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Several studies have shown that land rental market can be used as a tool to reduce landholding inequality and poverty facing smallholders. The findings from this study are consistent with those of other research that studies the impact of land-rental market on household's welfare in several countries. The land rental market successfully facilitates the allocation of land use from a land-abundant but less-able household to a land-constrained but more-able household in rural Thailand. The result indicates that a rent-in household owns only 14.46 rai of farmland while renting in as much as 28.67 rai. A rent-out household's landholding is about 50.74 rai which is rented out as much as 20 rai. Key factors determining household's land market participation include farming ability, number of household members, age of household head, and farm income in previous year. Renting in an additional land can raise household's net farm income by as much as 1,161 baht per rai or 18,292 baht per household. The accumulation of farm assets, however, only has a marginal impact on farm income because most of them are light machinery. Despite its significant role in raising net income from nonfarm activities, the number of household's adult equivalent does not affect net farm income. The government should promote a land-rental market to raise farm income and to alleviate land constraint in agricultural sector. An efficient land market requires low transaction costs which could be achieved through the development of

Land Bank Project and the improvement of information and communications technology in the land market.

Key Words: Land rental market, farm productivity, net farm income, Townsend Thai Data

Thailand Poverty Alleviation in Old-Age:

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Thailand, like other developing countries, attempts to alleviate poverty with several measures and programs. Social security in old-age can be the one measure that carryout this point. This paper described that demographic change is aging society which old-age people (over 60 years old) is more than 10 percent of population. Social security provides 1,800 baht/month old-age pension at the 9,000 baht/month average wage (300 baht/day) which is more than 1,678 baht/month the national poverty line in 2010. This evidence shows that social security can be the one measurement which alleviates economic problem and poverty problem. Outlook of this study, Thailand is aging society and also poverty line is increasing, the social security office should carefully implement each policy for the stability of old-age reserve fund and income guarantee for poverty alleviation and security life of employee. As policy adjustment, which are 1) the rate of contribution 2) the rate of old-age benefit 3) the define of monthly wage rate and period of time which calculated in the old-age benefit 4) the retirement age 5) the wage base (the minimum and maximum monthly wage earning for contribution), and 6) the alternative investment these would be effect to old-age reserve fund and old-age benefit of employee.

Key word : Poverty Alleviation, Social Security, Thailand

The Development of Cooperatives Movement in Ayutthaya Province, Thailand

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The purpose of this research was to explore and encourage the network building and the learning process among cooperatives and organizations/groups based in Ayutthaya province in a form that follow the principles of Participatory Action Research (PAR) which allow freedom of decision-making and address their efficiency and sustainability. There were two parts of this research; 1) To display the purpose of research in terms of the network building and to find out cooperatives and organizations/groups who willing to cooperate the networking among them. 2) To explore a model and process for determining the direction of the networking.

The result was found that the way to proceed with networking among the cooperatives and organizations/groups was to open the learning process, to determine the networking practice and to build confidence and trust. The continuing cooperation in five businesses areas resulted in financial business, fertilizer business, milled rice business, goods interchange business and social network.

The results of the success in developing the public organizations/groups' networking in Ayutthaya province came from internal and external factors. Internal factors were, for example, the existing potential of each individual organization/group, their willingness, the need to join forces. And having joint objectives in continuing to work together, learning from experience and gaining mutual benefit. External factors were the research

project giving the opportunity to unite the forces already existing in each organization/group, together with providing technical input on networking when needed; the budget to cover the process during initiation; and receiving support from the wider community or external organizations/groups. Operational recommendations from this research cover the following four issues; 1) searching for shared interests; 2) determining the networking practice; 3) selection of the network leaders, and 4) seeking sustainability. The recommendations regarding policy are: 1) the provincial governor and/or government section heads at provincial level with responsibility for such public organizations should become involved at the beginning of network building; 2) the role of the government section heads at provincial level should change to a supporting role, and 3) for sustainable development, the number of different public organizations should be reduced to a minimum or there should be a single main organization that still genuinely belongs to the public.

Key word : Network, Cooperatives, Ayutthaya Province

Cooperatives in Austria

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A co-operative is an autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly-owned and democratically-controlled enterprise (International Cooperatives Alliance, ICA News, No. 5/6, 1995). In Austria, Cooperatives (Genossenschaften) are associations basically serving the promotion of the economic and entrepreneurial activities of their members (the cooperative law, Genossenschafts-Gesetz 1873 in the 1974 version). This special task is the distinguishing feature between cooperatives and companies limited by shares. The originally required limitation of commercial transactions to members was abolished in 1974. From 1851 the British “Rochdale Pioneers” inspired Austrians to establish co-operatives: as workers associations, consumer co-operatives (Konsum-Genossenschaften), according to the Schulze-Delitzsch system i.e. commercial cooperatives (Gewerbiiche Genossenschaften), according to the Raiffeisen system i.e. agricultural cooperatives (Landwirtschaftliche Genossenschaften), consumer cooperations and financial organizations. Later, house-building cooperatives (Wohnungsbau Genossenschaften) were founded. Cooperatives are subject to auditing associations.

The Role of Thailand Cooperatives in Poverty Alleviation

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Cooperatives has a long history of helping the urban and rural poor to uplift their social and economic conditions. Thailand, below are some facts about the cooperatives movement that demonstrate their relevance and contribution to alleviate poverty.

1. Create and maintain employment

Thailand, one of sixth or 17% of the population are members of cooperatives in 2010. This large segment of the population shows that cooperatives create and maintain employment.

2. Significant economic actor in national economies

Cooperatives in significant economic actor in national economies. In 2010, Thailand, Gross Domestic Product (GDP) is 4,596,112 millions of baht. Cooperatives is responsible for 37.25% of the GDP.

3. Economic and social aspect

Cooperatives is significant economic and social aspect. The result of research found the cooperatives activities obviously effected to the members by having the better changing in economic aspect much more being non-cooperatives member. Social aspect was agreed by the members that they all usually took part of community activities and took their roles in brain stroming more than they had ever been before. Moreover, the members insisted that they had better life since they were cooperatives member.

4. Create Opportunity

Cooperatives are based on the values of self-help, self-responsibility, democracy, equality, equity and solidarity. At the mean time, the cooperatives

principles are guidelines by which cooperatives put their values into practice. The values and principles of cooperatives create opportunity; for anyone to be a member of cooperatives and can get to source of input (physical capital, technology, education and training), for member to be educated and training consequently raises human and social capital, for member to have more power to bargain with others.

5. Income Distribution

Cooperatives is significant income distribution. The result of research shows that, the cooperatives members have better income distribution than the non-cooperatives member.

Determinants of Violations in the SET50 Index Options Pricing Relationships

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Although SET50 Index Options, the second product on Thailand Futures Exchange (TFEX), has been traded since October 29th, 2007, it has faced the liquidity problem. Therefore, to boost liquidity of SET50 Index Options, TFEX modified the contract specifications of SET50 Index Options on October 29th, 2012. The SET50 Index Options market must offer a risk premium to compensate investors for liquidity risk. It may cause violations in SET50 Index Options pricing relationships. This research therefore utilises daily data from October 29th, 2007 to December 30th, 2016 to test violations of SET50 Index Options pricing relationships, compare the test results before and after change in contract specification, and investigate determinants of violations in SET50 Index Options pricing relationships using Tobit model. There are 3 tests of SET50 Index Options pricing relationships as follows: (1) Put-Call-Futures Parity (2) Box Spread and (3) Call & Put Butterfly Spreads.

Comparing the percentage and the size of violations in the subperiods before and after contract modification, the analysis, ignoring transactions costs, shows that most violations in SET50 Index Options pricing relationships occur more frequently in the subperiod before the contract modification. Moreover, the size of violation in Put-Call-Futures Parity relationship is greater before change in contract specification when using long strategy. For other pricing relationships, the size of violations are greater after change in contract specification when using long box spread strategy and long

call butterfly spread & short put butterfly spread strategy. However, when the bid-ask spread is considered as transaction cost, the percentage and the size of the violations decrease substantially in the subperiods before and after contract modification. The size of Put-Call-Futures Parity violation is still greater before contract modification while the size of Box Spread violation is greater after contract modification. For Call & Put Butterfly Spread, the violation size difference between before and after contract modification is not statistically significant.

The estimation of Tobit model to determine factors affecting the violations of SET50 Index Options pricing relationships shows that the violation size, excluding transaction costs, depends on the liquidity of SET50 Index Options market measured by option moneyness and open interest. The size of violation is larger when liquidity is low since deviations from SET50 Index Options pricing relationships reflect a premium for liquidity risk. Therefore, investors, who want to earn profits from the violations of SET50 Index Options pricing relationships, can make investment decisions efficiently by taking into account the liquidity risk and transaction costs.

A Test of the SET50 Index Options Market Efficiency

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Thailand Futures Exchange (TFEX) launched SET50 Index Options as a tool, which investors and entrepreneurs can use for hedging and speculation. However, options market must be efficient in order to do the best possible job at these important functions. This research therefore utilises daily data from October 29th, 2012 to March 30th, 2016 to test the SET50 index options market efficiency using the arbitrage pricing relationships. The call and put spread conditions and the call and put convexity conditions are meant to test the relative pricing efficiency of call options alone or put options alone. The box spread conditions, on the other hand, enforce pricing efficiency across call and put options.

The overall findings from the call and put spread relationships, the call and put convexity relationships, and box spread relationship point in the same direction. The market frictions imposed by the bid-ask spread or/and other trading costs such as trading and clearing fees collected by TFEX, brokerage commission, and opportunity cost of initial margin deposit appear to have a significant effect on arbitrageurs' abilities to take advantage of violations of no-arbitrage pricing relationships. Arbitrage opportunities in every case are almost eliminated when considering the bid-ask spread. The SET50 index options market is therefore efficient. However, the results do not provide support for the argument that the SET50 index options market efficiency improved over time.

The efficiency of the SET50 index options market should boost investors' confidence in the SET50 index options market. However, there has been nothing to guarantee that the historical prices used in this study to detect arbitrage opportunities were the real prices at which the strategies could have been executed to gain arbitrage profits. Therefore, future research should consider the intraday bid-ask prices in real time to examine the efficiency of the SET50 index options market. Moreover, this paper does not investigate the determinants of the arbitrage opportunities. However, it is worthwhile to briefly explore if the violations reported here are related to factors previously cited in the literature such as time to expiration, open interest, option moneyness, etc.

Estimation of the Optimal Hedge Ratio with USD Futures

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This research utilises daily data from June 5th, 2012 to February 25th, 2015 to estimate the optimal hedge ratio with USD futures using the following approaches: (1) Minimum Variance Hedge Ratio estimated through OLS, VAR, and VECM models (2) Optimum Mean-Variance Hedge Ratio and (3) Sharpe Hedge Ratio. The hedging effectiveness of each approach is also investigated.

The results indicate that the estimation of the minimum variance hedge ratio using OLS model is 0.8964. It provides the highest hedging effectiveness compared to other approaches.

The findings of this study should be especially of interest for investors, exporters, and importers in Thailand who face the US dollar fluctuation to make optimal hedging decisions by using the estimation of the minimum variance hedge ratio from the OLS model. Therefore, hedgers will be able to control the risk of their US dollar fluctuation more effectively at a lower cost.

The Study of the Liquidity of SET50 Index Options

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This research utilises daily data from February 2nd, 2009 to January 31st, 2014 to study determinants of the liquidity of SET50 Index Options using multiple linear regression model and two types of liquidity measures: Transaction Based Liquidity and Order Based Liquidity.

Although SET50 Index Options is the second product on Thailand Futures Exchange (TFEX), it has faced the liquidity problem. Therefore, to boost liquidity of SET50 Index Options, TFEX modified the contract specifications of SET50 Index Options on October 29th, 2012. However, the results of multiple linear regressions for Transaction Based Liquidity, which is better to model than Order Based Liquidity, indicate that SET50 Index Options contract specification adjustment has a negative impact on option market liquidity in terms of both trading volume and trading value. For the models with Order Based Liquidity, the negative effect of SET50 Index Options contract specification adjustment on option market liquidity occurs only in case of Put Options with weighted average bid-ask spreads as a liquidity measure. The reasons for this negative impact may come from a decrease in investment choices as a reduction in the number of strike prices and a loss of long-term investors as a removal of the two farthest quarterly months. The impact of growth of price per book value ratio on option market liquidity when measured by trading value and weighted average percentage bid-ask spreads is positive in case of Call Options and negative in case of Put Options. Moreover, most of the results from the models for Transaction Based Liquidity reveal that total value, short-term measure of uncertainty, and price volatility of SET50 Index exhibit significantly positive

impacts, while an increase in dividend yield significantly decreases option liquidity. However, the regressions for Order Based Liquidity behave exactly the opposite way due to behavior of agents with asymmetric information. Market makers tend to increase bid-ask spreads when trading with informed traders, although the trading volume may be substantial.

Therefore, to solve liquidity problem of SET50 Index Options, TFEX should modify the contract specifications of SET50 Index Options to increase a series of strike prices and include the farthest quarterly months in accordance with the contract months of Mini SET50 Index Futures. Furthermore, investors should take special care of their investment when there are an increase in dividend yield or decreases in total value, short-term measure of uncertainty, and price volatility of SET50 since they are important factors influencing declines in trading volume and trading value.

Logistics Performance and the Development in ASEAN Food Trade

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For ASEAN countries, the agricultural and food production has been a major economic activity in most ASEAN economies, both for the domestic market and for the international trade. The proficient distribution of food is crucial for maintaining the level of availability of food products to world customers. In this research, we investigate the ASEAN food trade in the past, focusing on both the intra-ASEAN trade and extra-ASEAN trade. Using Logistics Performance Index (LPI) as a measure for a country's logistics effectiveness, we employ an augmented gravity equation in analyzing the role of logistics on the development in ASEAN food trade using Pooled OLS method. We find that the overall logistics performance of the trade partner countries, as well as individual areas, namely Customs, Infrastructure and International Shipments, can contribute positively and significantly to the ASEAN food trade. The effects vary across ASEAN major food traders. Our results support ASEAN initiatives to improve trade agreements and logistics development within ASEAN and with other trade partners.

KEYWORDS: ASEAN Food, Logistics, Food Trade

Willingness to Pay for GAP and GMP Certified Beef with Q Mark Labeling

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Changes in the international trading system and the realization of consumers' welfare protection force countries to impose safety standards on their agricultural and food production. However, following food safety standards generates higher costs for producers. Knowing the price consumers are willing to pay for certifiably safe beef is important for producers in production adjustment decision. Therefore, this study is to analyze consumers' buying behavior for beef and examine factors influencing the probability changes in willingness to pay as well as investigate consumers' willingness to pay a premium price for GAP and GMP certified beef with Q mark labeling.

This study uses secondary data about the general situation of Thai beef production and the formulation of agricultural and food safety standards for qualitative analysis. On the other hand, quantitative analysis uses data from interviews with 620 samples in Bangkok Metropolitan area. Sampling method used here is purposive which chooses only respondents who have an experience in buying beef. This study employs both single and double bounded dichotomous choice contingent valuation method.

Statistical tools, such as percentage, frequency, t-test, F-test, and multiple comparisons with Scheffe technique, are employed to analyze questionnaire data. The estimation of willingness to pay a premium price for certified and safe beef uses Maximum Likelihood Estimation (MLE) method. The analysis of factors determining the changes in the probability of willingness to

pay a premium price for certified beef employs a probit model with marginal effect.

The findings on consumers' beef buying behaviors show that respondents consider freshness and labeling indicating of being safety inspected and certified by government agencies as top factors. On the contrary, brands and knowing of producers are considered by consumers as less important. The estimation of consumers' willingness to pay a premium price for certified beef finds that out of 620 samples, 469 respondents agree to pay a premium price for GAP and GMP certified beef with Q mark labeling. Among 151 respondents who possess unwillingness to pay a premium price, 111 persons have true zero bids or their unwillingness to pay really equals zero, whereas other 40 persons have protest zero bids.

This study employs lognormal cumulative distribution function to analyze factors affecting consumers' willingness to pay. There are 15 explanatory variables included in the model. Nonetheless, only 6 variables are statistically significant in explaining willingness to pay a premium for certified beef. They are bid price (BID), trust in government's information on beef safety (TRUST), concerns over health risks from beef consumption (RISK), labeling indicating of beef being safety inspected and certified by government agencies (LABEL), education level (EDU), and the trade-off between beef safety and its price (TRADEOFF). However, a positive coefficient of the BID variable suggests a starting bid bias of this model. Thus, this study employs coefficients from the single-bounded model for the estimation of willingness to pay a premium price.

As for the analysis on the factors determining willingness to pay a premium price for safe and certified beef and the changes in the probability of having willingness to pay, this study employs single bounded dichotomous choice with probit model. And this also estimates marginal effects. It shows that there are 3 explanatory variables that can significantly explain willingness to pay a premium price and the changes in the probability of willingness to pay, i.e. bid

price (BID), trust in government's information on beef safety (TRUST), and labeling indicating of beef being safety inspected and certified by government agencies (LABEL). The mean willingness to pay is calculated and equal to 44.18 baht/kilogram. But when weighting with a group of respondents who have true zero bids, the weighted mean willingness to pay is 35.72 baht/kilogram or equals to about 12 percent increase from the average market price of conventional beef.

From this study's findings, the government should play an active role in building consumers' confidence in certifiably safe beef and encourage producers to adjust their production processes according to safety standards.

The Protection Measurement of Non-Tariff Measures: A Case of ASEAN Countries

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Under the trade liberalization in the ASEAN region, especially ASEAN Free Trade Area (AFTA) , which has been in effect since 1993, reduced or abolished tariffs help stimulate trade in agricultural products among member countries. The expansion of agricultural imports from ASEAN members pressurizes each country's government to implement various Non-Tariffs Measures (NTMs) in order to control those imports. NTM which has been widely implemented is Maximum Residue Limits (MRLs). The MRLs are a measure determined by importing countries' authorities as a maximum quantity of chemicals that would be allowed to be left in imported agricultural products. Each importing country is allowed to self-determine its own MRLs-level. Currently, there are no international organizations supervising the implementation of MRLs. As a consequence, importing countries tend to impose too strict MRLs without scientific proof. This makes it very difficult for exporters to adjust themselves according to various MRLs of different importers. Therefore, these MRLs have become a new form of protectionism.

Thailand, as an exporter of agricultural goods, has to bear adverse effects of the various MRLs of importing countries, especially ASEAN countries, which have increasingly become its major trading partners. Therefore, this study analyzes the strength of protectionism from the implementation of MRLs of ASEAN countries and compares the protection level of MRLs on agricultural products between ASEAN countries as well as compares the protection level of

MRLs between different agricultural product groups. This is to realize the differences between the implementation of MRLs for the purpose of consumer health protection and hidden protectionism.

This study analyzes the strength of protectionism from the implementation of MRLs of ASEAN countries by calculating protectionism score based on an earlier work of Li and Beghin (2012). This protectionism score shows the protection level based on the differences between MRLs of each importer and MRLs that have scientific proof and are recognized by CODEX. The score equal to 1 means importers apply scientific MRLs as their own, thus, there is no hidden protectionism. The score more than 1 means importers apply stricter MRLs than scientific-based MRLs, indicating of protectionism.

This study covers 8 ASEAN countries, i.e. Brunei, Cambodia, Indonesia, Malaysia, the Philippines, Singapore, Thailand, and Vietnam. It also covers agricultural products 7 groups, according to harmonized system. They are HS 02 meat products, HS 04 milk and egg products, HS 07 vegetable, HS 08 fruit, HS 09 coffee, tea, and spice, HS 10 cereal, and HS 12 oil seed. Protectionism scores for 217 agricultural products are calculated. Among them, there are 5 scores for meat products, 2 scores for milk and egg products, 97 scores for vegetable, 68 scores for fruit, 20 scores for coffee, tea, and spice, 13 scores for cereal, and 12 scores for oil seed. This study's findings show that there is little evidence of hidden protectionism in the implementation of MRLs on agricultural imports among ASEAN countries.

As for the comparative study on the protection level of MRLs on agricultural products between ASEAN countries, there is no evidence of agricultural protectionism in the case of the Philippines, Cambodia, and Indonesia. In the case of Brunei, Malaysia, Singapore, and Thailand, their scores can be found more than 1. As for the comparative study on the protection level of MRLs between different agricultural product groups, it is found that

meat products tend to be subjected to protectionism from MRLs more than other product groups.

The study on the determinants of MRLs is analyzed using the logit model and marginal effects. There are 14 explanatory variables included in the initially estimated model with country-specific fixed effects. Yet, the model with the best estimated specification includes six variables holding a statistically significant relationship with the probability of ASEAN countries implementing stricter MRLs than the international standard levels. They are public health expenditure as a percentage of GDP, trade weighted average applied import tariffs, imports value, the value of food production by commodity, food imports as a percentage of total imports, and employment in the agricultural sector as a percentage of total employment. The explanatory power of these six variables underlines the validity of the political economy approach in explaining trade policy related issues. When considering each ASEAN country separately, there are no significant variables explaining the determination of MRLs in Brunei and Vietnam. While Malaysia is quite clear about this policy, it restricts trade and protects domestic producers. On the other hand, Thailand and Singapore have focused on the welfare of the people.

From this study's findings, the government should implement policy that could help the private sector expand its market. Moreover, as meat products and cereal tend to face with more protectionism than the others, the government should implement pro-active policy measures to enhance their competitiveness in the ASEAN market for producers and exporters in these 2 sectors.