

Value Chains and Regional Middle Income Traps: The case of the upstream sugar industry in Northeastern Thailand

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Abstract : In this paper insights from studies on the middle income trap and value chains analyses are combined to investigate one particular industry in one particular region: the sugarcane industry in Northeastern Thailand. Focusing on this region enables an in-depth focus on geographical differentiation of the middle income trap. The empirical outcomes demonstrate that policymakers involved with sugar should look at the particular challenges in Northeastern Thailand: 1. The role of brokers which is unaddressed in the current regulatory environment; 2. A lack of information of the regulatory environment among growers; 3. Distrust between growers and millers; 4. Alack of implementation of R&D efforts; 5 .A lack of support from associations; 6. The labor shortage problem, and 7. No incentives for growers, brokers and millers to improve quality and embark on upgrading. Since agricultural value chains in Southeast Asia often start in relatively poor rural areas it is imperative that policymakers balance the interests of upstream, midstream and downstream actors. Unfortunately, this is rather difficult as midstream actors (millers) and wholesalers are powerful and therefore, are in the best position to defend their interests. Our insights could function as comparative material for similar studies within other Southeast Asian upstream value chains.

Key Words : Thailand, Sugar, Value Chains, the Middle Income Trap, Regional Development

요약 : 본 연구는 중진국 함정과 가치 사슬 분석을 결합하여 태국 동북부 지역의 사탕수수 산업에 대한 연구를 진행하였다. 태국의 동북부 지방을 주목하는 것은 중진국 함정의 지리적인 차이에 대한 깊은 이해를 줄 수 있다. 연구의 실증적인 결과들은 설탕 산업과 관련된 정책 입안자들이 동북부 지방의 여러 문제점들에 주목해야 한다는 점을 보여주고 있다. 그 문제점들은 첫째, 현재의 규제 환경이 중개상의 역할을 충분히 고려하고 있지 않다. 둘째, 사탕 수수 재배 농민들은 현행 제도에 대한 정보를 충분히 알지 못한다. 셋째, 재배 농민들과 공장 설탕 공장 간의 불신이 존재한다. 넷째, 연구 개발 활동이 활발하지 않다. 다섯째, 농민 협회의 지원이 불충분하다. 여섯째, 노동력이 부족하다. 일곱째, 농

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민, 중개상, 그리고 설탕 공장이 스스로를 개선할 유인이 부족하다. 동남아시아의 농업 가치 사슬은 주로 빈곤한 농촌 지역에서 시작하는 경우가 많기에 정책 입안자들은 가치 사슬 내의 행위자들간의 균형을 맞추어야만 한다. 그러나 가치 사슬의 중간에 위치한 행위자(설탕 공장)과 도매상들의 강한 영향력 때문에 균형을 유지하는 것이 어렵다. 본 연구를 통해 밝혀진 점들은 소규모 자작농들이 행위자로 참여하는 동남 아시아의 여러 상위 가치 사슬과의 비교 자료로써 쓰일 수 있을 것이다.

주요어 : 태국, 설탕, 가치 사슬, 중진국 함정, 지역 발전

1. Introduction

The middle income trap has become a common concept to discuss the problems of countries that fail to catch up with developed industrialized countries. Ohno (2009) described this trap as the inability of Thailand and Malaysia to break “through the invisible glass ceiling in manufacturing between the second and the third stage”. The second stage refers to a stage in which firms absorb technology under foreign guidance [foreign direct investment]; the third stage of firms being able to produce high quality goods. Although manufacturing has been a popular sector for investigation of the middle income trap it is increasingly seen as a general socioeconomic phenomenon. According to Jitsuchon (2012) Thailand fell into the middle income trap in the mid-1990s due to an overall institutional weakness triggering a shortage of labor, insufficient skills training, a mediocre educational system, low levels of research and development (R&D), depletion of natural resources, macroeconomic instability, insufficient tax revenues, monopolistic power among state-owned enterprises and a weak small and medium sized enterprises (SME) sector.

In this paper we use the insights from a national perspective (Ohno 2009, Jitsuchon 2012) to investigate one particular industry in one particular

region: the sugarcane industry in Northeastern Thailand. We do this by scrutinizing the upstream value chain of the sugar industry: the way sugar farmers are linked to brokers and sugar mills and their opinion on their position in the value chain, value chain structure and governance. In so doing, we address calls to study the middle income trap at industry level (Doner 2009) and to “personalize” the middle income trap (Rigg et al. 2014). In addition, focusing on Northeastern Thailand also enables us to reveal geographical differentiation of the middle income trap. Based on research up until the mid-2000s Doner (2009: 179) concluded that actors in the Thai sugar value chain had been able to achieve “moderate upgrading”; better than “deterioration” in the Philippines, but worse than “comprehensive upgrading” in Brazil. Yet, what is the current situation in Northeastern Thailand, the poorest region of the country but since 2011 the most important in terms of sugarcane production (Figure 1)? The research questions are as follows:

1. What is the configuration of the upstream sugar value chain in Northeastern Thailand?
2. What is the governance structure of this chain?
3. Which aspects of the value chain keep the sugar industry in a middle income trap?
4. What are the implications of the results for upgrading and regional economic development Southeast Asia?

In order to gain answers to these questions a survey among 32 sugarcane farmers was conducted in Khon Kaen province between February and March 2014. The paper is structured as follows. The next section builds on Ohno's (2009) work and links the middle income trap to the analysis of value chains dynamics and its geographical differentiation. We then give a short overview of the research methodology. The two empirical sections present the results of the fieldwork in Khon Kaen province. Three of Jitsuchon's (2012) factors appear to be highly relevant: labor shortage, investment and R&D and the overall institutional arrangements; in this case the regulatory environment surrounding the sugar industry. In the discussion and conclusion we provide some policy implications for regions dependent on agricultural value chains and suggestions for future research of the middle income trap in Southeast Asia.

2. The middle income trap, value chains and economic geography

How to escape from the middle income trap? This section first summarizes Ohno's (2009) main findings, before proceeding to agricultural value chains at sub-national level. For a country to make significant improvements Ohno stated that policy makers should facilitate

1. An expansion along value chains to encompass higher value added activities
2. The uplifting of entire value chain by raising productivity

Writing on Vietnam potentially falling in the middle income trap he argued that "it is essential that Vietnam formulates as soon as possible a clear

roadmap of industrialization to inform and guide its people, investors and policymakers." However, Vietnam appears to be in an institutional lock-in: a situation whereby institutional complementarities reinforce the status quo. He then suggested three ways as to how a "solidified system" can be broken and new more effective institutional complementarities could emerge: through collective mutation (spontaneous changes in behavior of people, through foreigners (foreign investors, migrants, bilateral donors) and through policy.

In the case of value chain upgrading in Thailand it is instructive to focus on policy. According to Suehiro and Wailardsak (2014) policy makers in Thailand should focus on innovation development and reforming higher education in order to escape from the middle income trap. In the absence of political instability (the most recent coup d'état was in May 2014) and distrust in politicians (Suehiro and Wailardsak 2014) we can probably expect the most from the technocrat team that Ohno described as the "nation's brain for development without which even excellent leaders cannot function". Since civil servants usually think in the middle and long run, they should be able to come up with effective nationwide policies such as higher education reform and innovation development at value chain level. The entire policy making process should create a "confidence in the longevity of favorable policies", as happened in Brazil sugar cane value chain (Doner 2009: 174) in the 1970s and 1980s. However, comprehensive upgrading in Brazil was at the expense of "small independent cane suppliers and workers" (Doner 2009: 175). Therefore, it is important to recognise for policy makers that escaping from the middle income trap also requires a serious consideration of rural smallholders and small and medium enterprises (SMEs).

In the case of Vietnam Ohno (2009) warned for new social problems associated with rapid growth and Suehiro and Wailardsak (2014) argue that addressing the urban-rural remains essential.

The analysis of (a lack of) upgrading in agro-industrial value chains is a useful strategy for a more fine-tuned understanding of the middle income trap. It personalizes the middle income trap (Rigg et al. 2014) and it localizes upstream value chain operations, challenges, and bottlenecks (Fold 2014). In the case of Thailand one could think of rice, fruits and poultry in the Central plains, rubber and fisheries in Southern Thailand and cassava and sugar in North-eastern Thailand. Most of the farmers, growers and fishermen are inserted in Asian, if not global value chains. Furthermore, insights into rural value chains could also be employed in mitigating excessive rural-urban migration leading to urban slums, informal sector employment, congestion and environmental pollution in cities such as Bangkok, Ho Chi Minh City, Jakarta and Manila as well reducing the phenomenon of split families whereby grandparents take care of children in the countryside while the parents work in the city (Suehiro and Wailardsak 2014, Rigg et al. 2014, Sheng 2012: 25-29, Ohno 2009). The rubber industry in Malaysia is a case in point. Although overall Malaysia also finds itself in a middle income trap (Andriessse and Carney 2014), it has been able to add more value to the rubber industry chain, move from upstream to mid and downstream operations and has become an Asian hub for processing and research and development (Doner and Collett 2011). Equally important, employment in the rubber industry is not only generated in the core areas, but also in the northern part of peninsular Malaysia.

Before linking value chain dynamics to middle in-

come trap issues, it is obviously necessary to unravel the nature of specific value chains. In this paper we follow Gereffi's et al. (2005) widely known analytical factors to scrutinize a value chain, in our case the upstream sugarcane value chain: "The complexity of information and knowledge transfer required to sustain a particular transaction, particularly with respect to product and process specifications; the extent to which this information and knowledge can be codified and, therefore, transmitted efficiently and without transaction-specific investment between the parties to the transaction and the capabilities of actual and potential suppliers in relation to the requirements of the transaction." However, in addition to the traditional outcome of value chains being governed by a combination of market forces and corporate hierarchy, for instance the role of lead firms or completely vertically integrated firms, we include the role of the state. In many countries agricultural value chains have been influenced by governmental authorities (Doner 2009; Fold 2014, 2000). As we shall see in subsequent sections, the government of Thailand has had a strong interventionist role in the domestic sugar market. Moreover, changes in international regulatory environment also affect global value chains, prospects for upgrading and ultimately opportunities to break out of the middle income trap. For example, in 2005 the World Trade Organization ruled the European Union sugar beet export subsidies illegal (The Guardian 2005). This resulted in stronger competitive advantages for leading sugarcane producers such as Brazil and Thailand.

Besides upgrading it is also important to consider technological downgrading in order to compete on price and volume, rather on quality and product sophistication. In this respect Kaplinsky et al. (2011) introduce the cases of the Gabon timber and Thai

cassava value chains, the latter also being very important for development in Northeastern Thailand. As the importance of markets in the “Global South”, especially China, is increasing (Gereffi 2014; Cattaneo et al. 2010), the economic geography of many value chains have extensively changed. Because China has a competitive advantage in cheap labor, labor intensive activities within the timber and cassava value chain were transferred to China. This finally resulted in more export of ‘unprocessed’ Thai cassava and Gabonese timber to China. Another example is the South African wine chain (Ponte and Ewert 2009). Product upgrading did not result in higher value adding, whereas through downgrading value chain actors were able to reap more benefits from global markets. Thus in some cases automatically trying to achieve upgrading might lead to negative socioeconomic outcomes and a deepening of sectoral middle income traps.

3. Research methodology

Thailand is the second largest exporter of sugar in the world. The dominant number one is Brazil (FAO 2014, NaRanong 2013). Within Thailand the Northeast is the most important sugar growing region of Thailand, both in terms of planted area and production volume (Figure 1). In Thailand there are 27 sugarcane associations; 11 of which are located in the Northeastern part of the country. Two of them are located in Khon Kaen province. 13 sugar mills are operating in the provinces where sugarcane associations exist. The two associations and sugar mills of Khon Kaen province are located in Nong Ruea district, Mitr Phol Sugar, adjacent to Mancha Khiri and Nam Phong district, Khon Kaen Sugar (Figure 2). Both are large firms with foreign direct investments in other Asian countries. An Office of Cane and Sugar Board promotion center is located in Udonthani

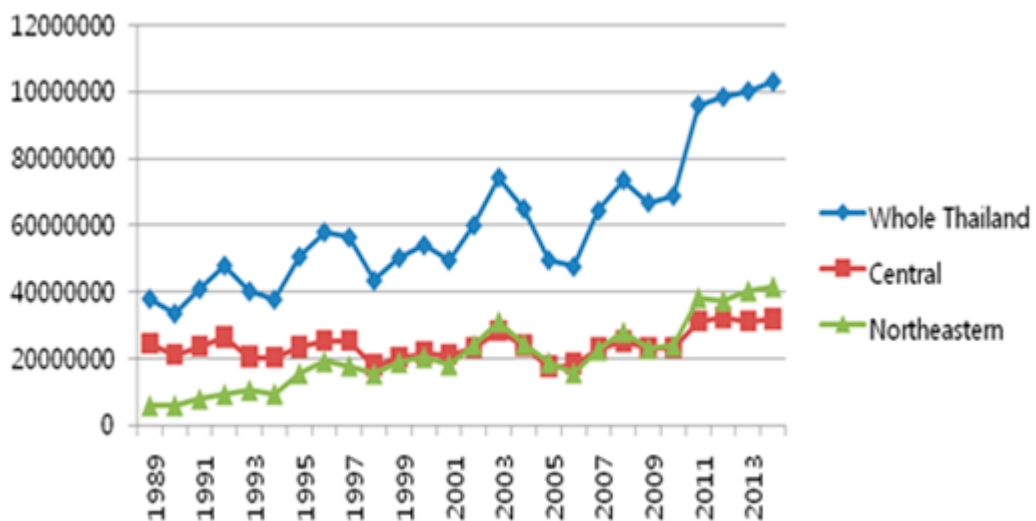


Figure 1. Sugarcane production (tonnes)

Source: Office of Cane and Sugar Board (2013)

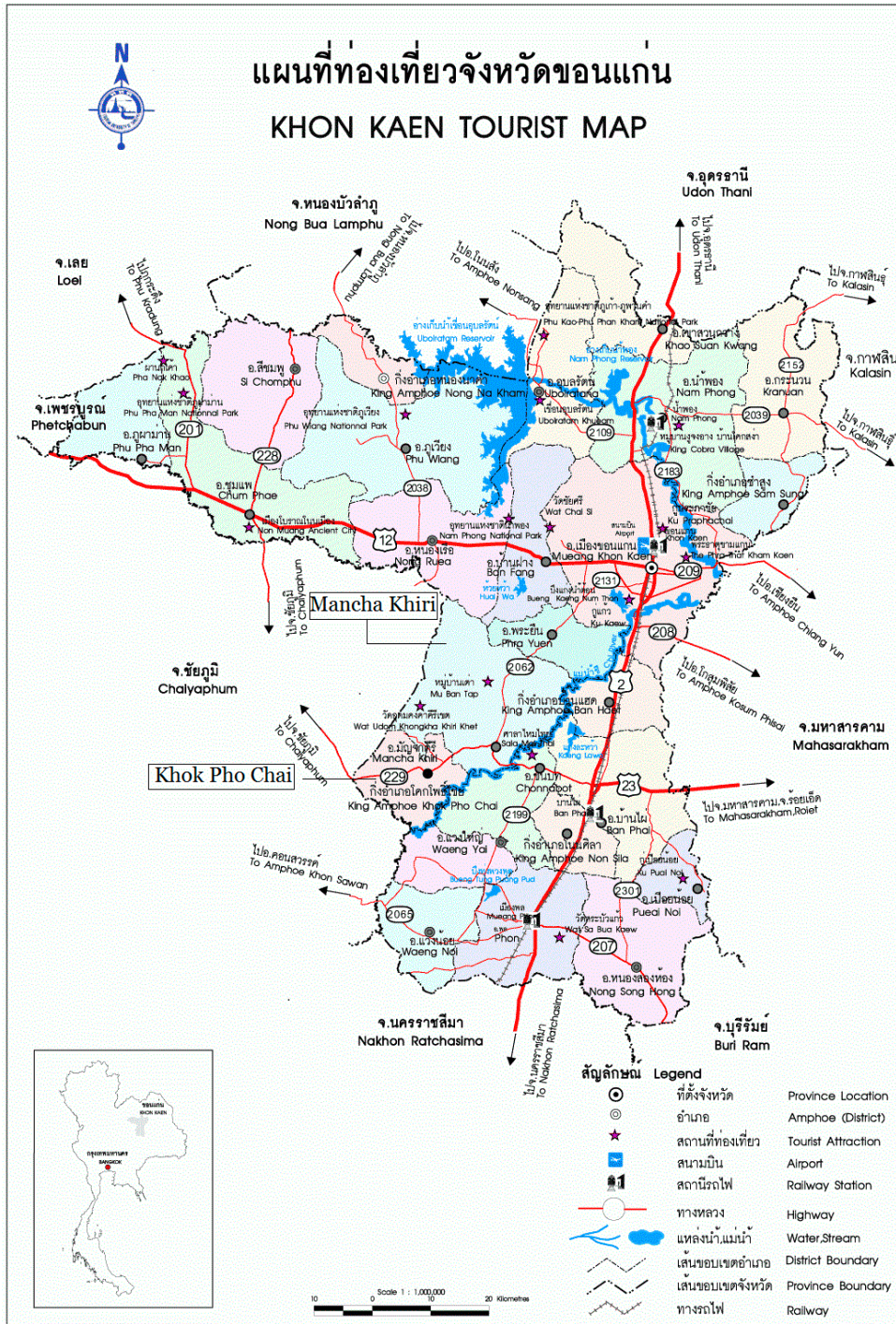


Figure 2. Khok Pho Chai and Mancha Khiri districts

province. The fieldwork was conducted in February and March 2014 in two districts (Amphoe) of Khon Kaen province: Khok Pho Chai, 20 sugarcane growers and ManchaKhiri, 12 cane growers. The two districts are located in the southwestern part of the province and enjoy good road access to Khon Kaen city. The fieldwork consisted of semi-structured interviews with 32 sugarcane farmers and 1 broker, 1 miller branch manager and 1 growers' association manager. We aimed to interview more millers and brokers, but they were very reluctant and declined our invitation. The interviews were conducted with two research assistants/interpreters; one a Thai with good English language skills and one foreigner with excellent Thai language skills.

This proved to be a suitable mix because the native English speaker and native Thai speaker complemented each other and could provide balanced information. Farmers were randomly interviewed at villages and weighing stations in the two districts. The questions asked were concerned with basic information, upstream value chain governance, government policies and labor issues. Additional questions were raised when appropriate in order to obtain more precise and comprehensive insights. The average length of the semi-structured interviews was 30 minutes. Some farmers had strong opinions, while others, especially those without sugar quota and who are not officially registered as growers, could not answer all the questions related to value chain governance. Out of 32 growers 30 are smallholders and the average sugarcane plantation size is 23.56 Rai (3.8 Hectare). All interviewees also grow rice and 16 grow tapioca.

4. The upstream sugar value chain in Northeastern Thailand

Since 1984 the sugar industry in Thailand has been state controlled. The Office of Cane and Sugar Board (OCSB) sets the upstream price that millers have to pay to growers and the downstream retail price of refined sugar. Furthermore, production levels are managed by setting annual production quotas for both millers and growers. Following the 1984 Cane and Sugar Act 70% of the sugar profits is distributed to the growers while 30% goes to the millers.

Before the 1993/1994 sugar season sugarcanes were only priced by weight which discouraged quality improvement. To solve this problem the Commercial Cane Sugar (CCS) was introduced. According to this arrangement, the price of sugarcanes is based on weight (60%) and sugar content (40%). Sugar content is measured at the factory, so the farmers cannot know the result when they sell their canes. Doner (2009: 145) stated that an important feature of the sugarcane agribusiness is the "high level of interdependence of between growers and millers who are forced into close contact due to sugarcane's rapid spoilage rate [reducing the sugar content]. Sugarcane growing and sugar milling are separate economic activities that can achieve economic efficiency only through cooperative behavior. Sugar industry development thus creates collective actions problems more than is the case in most sectors. The empirical analysis below identifies these collective active problems from the perspective of cane growers.

After harvesting, canes are transported to the weighing station. These weighing stations are owned by the mills or by brokers. Cane growers are usu-

ally responsible for transportation. Out of the 32 interviewees, only 3 do not own a truck for transportation. After the canes arrive at the weighing station, canes are weighed and farmers receive money based on weight. Final payment settlement based on weight and sugar content is conducted at a later stage. An important result of the fieldwork is that 18 growers sell their canes to the brokers, 11 sell to the mill directly and 3 sell to both a broker and the mill (see also Figure 3). Associations play a minor role in the investigated districts. Only five respondents are member of an association. The government is included here as it has such an important regulatory and financial role for the farmers. The farmers who sell to the mill have a quota. This quota as well as the initial upstream prices of sugarcane is set before the planting season and the growers and mill write an official contract. The pre-season 2013-2014 price is 900 Thai Baht per ton, but the government raised it to 1060 Thai Baht in June 2014 (Bangkok Post 2014). Grow-

ers are required to produce at least 50 tons of sugar canes to enroll the quota system. The 18 growers who only deal with brokers do not have a quota and not registered as an official sugar cane grower. In these cases the broker has a quota; otherwise he/she is not allowed to sell to a mill.

The growers who sell to the brokers weigh their canes and are paid money based only on weight. Because these growers neither are officially registered nor have a quota, they are not protected by the 1984 Cane and Sugar Act and receive no additional money based on sugar content. There are four reasons for opting to be informal growers. First, among the 18 interviewed growers the most important reason is the need for quick cash. The official annual quota system takes too long for them. Second, some growers do not possess enough land to produce the minimum requirement of 50 tons. Third, some brokers offer a slightly higher price compared to the pre-season official price and bet on a higher official post season

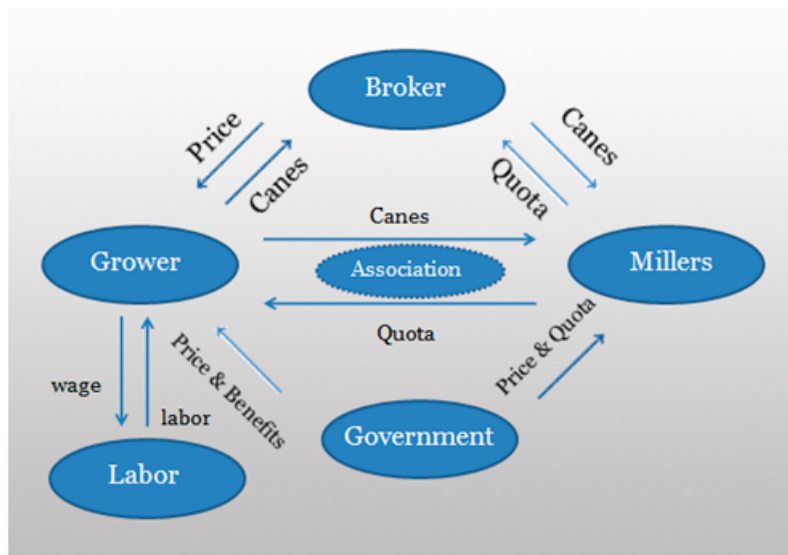


Figure 3. The sugar upstream value chain and the role of the government

price. Fourth, the official weighing stations are far away for a few growers and prefer to sell to brokers who operate nearby weighing stations. These outcomes show that the state controlled system is not perfect within the upstream value chain and that collective action is avoided to a considerable extent. In fact, the sugar regulations accept the existence and operations of brokers who take advantage of the system. The problems of the existence of the brokers will be described in the following sections. Below we follow Gereffi et al (2005) three analytical factors to further unravel the upstream sugar value chain in Khon Kaen province.

1) Complexity of information and knowledge transfer

The complexity of information and knowledge transfer is very low in upstream sugar value chain. The weighing stations of the mills impose two main requirements to the farmers. They want the growers to produce a sufficient amount to meet the quota and sell it when the weighing stations are opened. Weighing stations are opened from September to April. The brokers try to purchase as much as they can from the growers but still need to conform to the time schedule set by the mills. So they also set a time schedule and require to the farmers to sell it only during that time. Besides, there are minor requirements for good quality of canes. If the sugar canes are burned or dirty, growers have to pay 20 baht fine per ton. None of the interviewees answered that it is hard to keep the canes clean or making additional effort. The information needed to meet these requirements is simple and knowledge transfer is also simple. Thus, it can be concluded that the complexity of information and knowledge to maintain the value chain is low.

2) Level of codification

The level of codification is high as the complexity of requirements is low. Most of all, official cane growers write a contract which includes the quota amount and related clauses. In addition, sign boards erected in front of the weighing station also display the time schedule and quality requirements. In the case of the transaction between brokers and cane growers, they usually do not write a contract form. However, also the sign board informs the growers when they can sell the cane and price of the canes. Because the brokers only need to gather the canes to satisfy the quota, there is no requirement to the growers for quality. No tacit knowledge is exchanged between the growers and millers while requirements are codified.

3) Capability of suppliers

It is difficult to identify the capability of suppliers. On the one hand requirements for quality of the sugar canes are not problematic to the growers because they can easily fulfill. On the other hand, the time schedule sometimes is a burden to the growers. First, since the harvesting period is short, many growers hire workers to harvest the sugarcane at the same time. Some growers find it extremely hard to find enough workers. Second, the weighing stations are congested during that time and the longer the waiting time, the lower the sugar content due to the rapid spoilage rate. This is probably another reason for the thriving businesses of brokers. They have a higher capability to quickly sell the canes to the millers.

The discussion of the three factors described above leads to the suggestion of a “markets” rather “corporate hierarchy” type of value chain. Transactions are

easily codified, complexity of information is low and capability of the suppliers is moderate. However, the most important characteristic of “markets” type governance does not exist: price. In the “markets” type, price is the signal of coordinating the value chain integration. In Thailand the price of the canes is set by the OCSB. Therefore, the upstream value chain can be characterized as a state led markets chain. The next section connects the findings to the middle income trap.

5. Sugar and the middle income trap in Northeastern Thailand

1) Inefficiencies and pressing issues within the upstream sugar value chain

This subsection explains inefficient aspects of the upstream sugar value chain in Northeastern Thailand. Among the interviewed cane growers, there is no case of applying better agricultural practices which can be acquired from the research centers, the millers and brokers or even the cane growers association. One grower replied that he “learned” from the broker, but it is only about the fertilizer sold by the broker being better than other fertilizers. Three other growers said the milling company informed the growers, but not applied this information when they cultivate their canes. This result indicates that cane growers do not have meaningful places where they go for knowledge acquisition. This lack is clarified by the answers of the growers to the question ‘what can you do for better yield and quality?’ Only two growers mentioned utilizing equipment or planting new strands, while most others merely mentioned using

more fertilizer.

Besides the technical knowledge, the growers are not well aware of relevant policy issues. Growers are well aware of the policies which are directly related to them. They know they are supposed to receive additional money for CCS and differentials of first and second price. However, they do not know 70% of the total profit is allocated to them and that the announced price by OCSB is set by the government and representatives of millers and farmers in OCSB. This reflects a more serious underlying problem. The growers do not have any idea of price setting and reluctantly follow the price fixed by the government body. Out of the 32 interviewees 11 said they think the millers are setting the price and complained about low prices. The lack of clear information among growers has led to distrust and evidence that sugar regulations are not well communicated to actors within the upstream value chain.

This distrust is witnessed in the CCS. Before the millers measure the sweetness level, the millers put the canes grown by several farmers into the crushing equipment. After the canes are crushed, the sweet content is measured and the growers are paid. The problem of this procedure is that canes are randomly mixed. The millers cannot distinguish who contributed more to higher sweetness levels. Therefore, the growers are compensated by the average of mixed canes from anonymous growers rather than by their own effort for better quality canes. Even though the growers said they are happy with the CCS, they still feel their products are unfairly measured. Therefore, the growers have no reason to improve the quality of the canes. The absence of sufficient incentives to improve quality obviously is a major stumbling block regarding product upgrading, raising productivity and advancing the sugar value chain in its entirety.

Distrustful relationships can also be found in the recruitment process. It is already mentioned that growers prefer quick cash. This is because the growers have to pay money in advance to the workers to ensure the recruitment. If they do not pay in advance, workers can easily break verbal contract with the growers and work for the grower who offers higher wages. Each grower paid less than the minimum wage (300 baht per day), so perhaps this is the reason why the arrangement is easily violated. The growers who cannot hire workers finally burn their field and harvest quickly or leave the canes. This is not desirable because burnt canes have a lower sugar and moisture level. One possible solution for labor shortage is utilizing equipment such as planters and harvesters instead of hiring workers. However, there was no grower owning a harvester and clear collective effort to purchase the equipment. Consequently, they have to heavily rely on labor and finally make them transacting with the brokers. Again, under these circumstances, the growers have no incentive to produce better quality canes.

Another issue within the value chain is overcapacity. According to the interview with the weighing station manager from Mitr Phol, even the millers collect the canes of quota amount, still it cannot fill the whole capacity of the mill. So, their priority is purchasing as much canes as they can and they do not seek good-quality canes. Overcapacity causes inefficiency at the weighing stations as well. Usually, the growers are eager to sell their canes when they are at the best condition: when the sweetness is highest. Due to this reason, weighing stations are crowded. In the worst case, one farmer said he had waited four days at the station. However, the millers do not need to adjust the schedule carefully, because their high level of crushing capacity allows them to crush sugar

anytime. It signifies another mismatch of interests.

2) The value chain and a regional middle income trap

As described in the previous subsection, it is clear that the upstream sugar value chain is stagnating which indicates there is no meaningful trajectory of upgrading. How, then, are these issues related with the middle income trap? Below we identify three characteristics of the middle income trap which are pointed out by Jitsuchon (2012); investment and R&D, labor shortage and institutional context. Even though the three characteristics have national origins, they clearly manifest themselves in the rural landscapes of the Northeast of the country since the sugar industry is one of the dominant industries there.

First, through investment and R&D activities, there are in principle several ways of succeeding in upgrading. New strands and better agricultural practices can be introduced by R&D activity and equipment which enhance the productivity can be utilized by the growers. However, it is clear that investment and R&D are not brisk. The growers have no method to acquire enough capital for equipment and they are not applying any type of research findings to their cultivation activity.

Second, Thailand is known for its labor shortage and the huge number of labor migrants from neighboring countries, notably Myanmar. In the Thai context, unlike other countries labor shortage is more problematic than labor cost and this shortage is not only concerned with the high-skilled but also low-skilled labor market (Jitsuchon2012). The labor shortage is also visible in the upstream sugar value chain. Even though the workers' task is only cutting

the canes in a right way, the growers cannot find low-skilled workers during the harvesting season. This is because all growers harvest their canes in the same season which means they have to find the workers in same period. If the growers can utilize adequate labor, they do not need to burn their canes and deal with the brokers. Then they can harvest good quality canes and reap additional benefits. However, this clear and moderate upgrading is not expected to be solved easily due to labor shortage.

The third link between the upstream sugar value chain and the middle income trap is the institutional context. In Thailand, institutional weakness is trapping the country in the middle, and there is no effective incentive system promoting efficiency and upgrading. How does the institutional weakness hamper the upstream sugar value chain? The most important institution in terms of the relation between growers and millers is the 1984 Cane and Sugar Act. The governmental agency OCSB was established and has mediated the growers and millers. However, stable relationships between growers and millers did not result in a *trust-based mutually dependent* relationship. Due to the fixed price and almost fixed quota, growers and millers do not have reasons to establish high levels of coordination. Growers have no incentive to produce good quality canes but merely follow the fixed price or sell their canes to the brokers who do not care about quality either. Millers do not impose specific requirements because they can crush more canes than their quota amount. Their goal is purchasing enough quantity. Again quality improvements are ignored. The quantity-based incentive is hampering efforts for improving quality. If this situation does not change, the low productivity compared to leading sugar countries might become a major threat for the Thai sugar in-

dustry and for the many smallholders in Northeastern Thailand.

6. Discussion and conclusion

The future of the global sugar market is uncertain due to artificial sweets, the demand for ethanol (Chidamring and Kawtummachai 2008, Higgins et al. 2007; Silaertruksa et al. 2012). Moreover, continuing trade liberalization is expanding to the agricultural sector. However, it is questionable whether the Thai sugar industry is ready to face the transformation of the global market. The present institutional arrangements are merely attempting to relieve the tension between the growers and the millers by distributing the profits at the expense of domestic consumers' utility. Recently, the Thai government has attempted to reform the industry (NaRanong 2013). Especially, reform is aimed at establishing a new pricing system and preventing sugar shortages. It is a hopeful signal because the government acknowledges the necessity of reform. If the Thai government's desire is to promote the industry, it has to regulate the industry more effectively. Good examples are the Brazilian sugar industry or Ghanaian cocoa industry in which much upgrading has taken place (Fold 2014). Brazilian sugar and Ghanaian cacao nowadays are globally competitive and Brazilian and Ghanaian corporate actors are involved in improving their industries in other emerging economies. On the other hand, following neo-liberal prescriptions a policy of complete deregulation is also one of the options. What would happen in case the Thai government opts for abandoning their role in sugar industry and hand over the sugar to the 'invisible hand'? In the event of a com-

plete deregulation it is still most likely that Thai sugar will continue to enjoy comparative advantages in the world sugar market (Doner and Ramsay 2004) due to the favorable natural environment and domestic consumers will benefit from a price decrease. However, it is not sure how long these advantages will last. This is because of the first doubt about the middle income trap; can exploiting natural resources trigger a trajectory from the second stage to the third stage of economic development? (Gill and Kharas 2007: 18-19) Natural resources will diminish at some point and labor cost will increase in Thailand. More importantly, it is unclear how sugarcane growers will fare in a deregulated industry. The upstream value chain could become more transparent since many growers have a limited understanding of the current complex regulatory environment of which brokers take advantage (CCS and OSCB as mentioned in the previous subsection). Yet, lower prices might threaten their socio-economic security. Thus, we conclude that the role of the Thai government is important to cope with an uncertain future and a complete deregulation is not advisable.

What are the implications of our results for upgrading and regional economic development Southeast Asia? Insights obtained from the 32 sugarcane growers reveal that besides personalizing the middle income trap (Rigg et al. 2014), an explicit focus on one industry in a particular region can be illuminating. In this respect it is important to link value chains to settlement trajectories and regional development (Fold 2014). Escaping the middle income trap by upgrading is not likely to happen with a preoccupation on macroeconomic and national institutional arrangements. Instead, various regional middle income traps are likely to have different root causes. The empirical outcomes demonstrate that

policymakers involved with sugar should look at the particular challenges in Northeastern Thailand:

1. The role of brokers which is unaddressed in the current regulatory environment;
2. A lack of information of the CCS and OSCB among growers;
3. Distrust between growers and millers;
4. A lack of implementation of R&D efforts;
5. A lack of support from industry associations;
6. The labor shortage problem, and
7. No incentives for growers, brokers and millers to improve quality and embark on upgrading.

Since agricultural value chains in Southeast Asia often start in relatively poor rural areas it is imperative that policymakers balance the interests of upstream, midstream and downstream actors. Unfortunately, this is rather difficult as midstream actors (millers) and wholesalers are powerful and therefore, are in the best position to defend their interests. From a regional perspective the UNDP proposes (2014: 88) the following with respect to the development of outer provinces: "The gradual completion of the "corridor" routes across Southeast Asia has begun to stimulate economies in the border zones. However, it is necessary to have targeted regional planning to maximize the benefits from these routes in developing economies in border cities and adjacent areas. Most importantly, local people should be informed about opportunities and threats and be invited to participate in policy making on major projects in their areas."

Given the continuing vested interested implementing inclusive policies seem to be a daunting task. Perhaps a stronger role of civil society and bottom-up activism is the only viable alternative (Phongpaichit and Benyaapikul 2013), provided Thailand is returning to a democratic system in the

medium run. In the case of inaction upgrading will not be successful. Downgrading and a continued on quantity rather than quality, R&D and innovation might be the way forward (Kaplinsky et al. 2011, Gereffi 2014). Our insights could function as comparative material for similar studies within other Southeast Asian upstream value chains in which many smallholders are involved such as rice, rubber, cassava, coffee, tea, tobacco, fruits and others. In one country multiple regional middle income traps could exist, based on the specific value chains that are important for the regions. Therefore, regional development in Southeast Asia is the outcome of the interplay of national, regional, sectoral and personal arrangements and often contradictory forces. For Thailand, Malaysia and potentially other countries like Vietnam (Ohno 2009) to break out of the middle income trap requires a thorough understanding of this interplay. Future research could focus on policies addressing mistrust (for instance by improving social capital through associations), the implementation of R&D efforts, and the role of the middlemen. They often occupy a central position within value chains and act as transmitters and gate keepers and transmitters of upgrading efforts from downstream and mid-stream actors; in particular in the peripheral regions with relatively poor accessibility.

References

- Andriesse, E., and Carney, M., 2014, "Malaysia: personal capitalism". In M. Wit and G. Redding (ed.), *The Oxford handbook of Asian business systems*, Oxford: Oxford University Press, pp.144-168.
- Bangkok Post, 2014, Ministry aids sugar sector. Bangkok Post June 6.
- Cattaneo, O., Gereffi, G., and Staritz, C., 2010, "Global value chains in a postcrisis world: resilience, consolidation, and shifting end markets," In Cattaneo, O., Gereffi, G., Staritz, C (eds.) *Global Value Chains in a Postcrisis World: A Development Perspective*, Washington: World Bank, pp.1-20.
- Chiadamrong, N., and Kawtummachai, R., 2008, "A methodology to support decision-making on sugar distribution for export channel: A case study of Thai sugar industry," *Computers and Electronics in Agriculture*, 64, pp.248-261.
- Doner, R., 2009, *The Politics of Uneven Development: Thailand's Economic Growth Comparative Perspective*, New York: Cambridge University Press.
- Doner, R. and Collett, A., 2011, "Institutions, politics drove rubber development in Malaysia and Thailand," *Rubber Asia Silver Jubilee Special*, pp.177-183.
- Doner R.F. and Ramsay A., 2004, "Growing into trouble: Institutions and politics in the Thai sugar industry," *Journal of East Asian Studies*, 4, pp.97-138.
- FAO, 2014, FAOSTAT <http://faostat3.fao.org/faostat-gateway/go/to/home/E>
- Fold, N., 2000, "Globalisation, state regulation and industrial upgrading of the oil seed industries in Malaysia and Brazil," *Singapore Journal of Tropical Geography* 21 (3), pp.263-278.
- Fold, N., 2014, "Value chain dynamics, settlement trajectories and regional development," *Regional Studies*, 48(5), pp.778-790.
- Gereffi G., 2014, "Global value chains in a post-Washington consensus world," *Review of International Political Economy*, 21 (1), pp.9-37.
- Gereffi, G., Humphrey J., and Sturgeon T., 2005, "The governance of global value chains," *Review of International Political Economy*, 12(1), pp.78-104.
- Gill, I. and Kharas, H., 2007, *East Asian Renaissance: Ideas for Economic Growth*, Washington DC: World Bank.
- Higgins A., Thorburn P., Archer A., and Jakku E., 2007, "Opportunities for value chain research in sugar

- industries," *Agricultural Systems*, 94, pp.611-621.
- Jitsuchon, S., 2012, "Thailand in a middle-income Trap," *TDRI Quarterly Review*, 27(2), pp.13-20.
- Kaplinsky R., Terheggen A., and Tijaja J., 2011, "China as a final market: The Gabon timber and Thai cassava value chains," *World Development*, 39(7), pp.1177-1190.
- NaRanong, V., 2013, "Proposed reforms in the structure of Thailand's sugar and cane industry," *TDRI Quarterly Review*, 28(1), pp.6-12.
- Office of Cane and Sugar Board (2013) <http://en.ocsb.go.th/>
- Ohno, K., 2009, "Avoiding the middle-income trap: Renovating industrial policy formulation in Vietnam," *ASEAN Economic Bulletin*, 26(1), pp.25-43.
- Phongpaichit, P. and Benyaapikul, P., 2013, Political economy dimension of a middle income trap: Challenges and opportunities for policy reform. <http://www.econ.chula.ac.th/public/publication/books/pdf/Political%20Economy%20Dimension%20of%20a%20Middle%20Income%20Trap%20Thailand.pdf>
- Ponte S. and Ewert J., 2009, "Which way is 'up' in upgrading? Trajectories of change in the value chain for South African wine," *World Development*, 37(10), pp.1637-1650.
- Rigg J., Promphaking B., and Le Mare A., 2014, "Personalizing the middle-income trap: An inter-generational migrant view from rural Thailand," *World Development*, 59, pp.184-198.
- Sheng, Y., 2012, "The challenges of promoting productive, inclusive and sustainable urbanization" (chapter 1). In Y. Sheng and M. Thuzar (ed.), *Urbanization in Southeast Asia: Issues and impacts*. Singapore: Institute of Southeast Asian Studies, pp.10-77.
- Silalertruksa T., Gheewala S., Hunecke K., and Fritsche U., 2012, "Biofuels and employment effects: Implications for socio-economic development in Thailand," *Biomass and Bioenergy*, 46, pp.409-418.
- Suchiro, A. and Wailerdsak, N., 2014, "Thailand: Post-developmental capitalism, In M. Wit and G. Redding (ed.), *The Oxford handbook of Asian business systems*, Oxford: Oxford University Press, pp.260-282.
- The Guardian, 2005, "European sugar subsidies ruled illegal," The Guardian 29 April.
- UNDP, 2014, "Advancing Human Development Through the ASEAN Community. Thailand Human Development Report 2014," Bangkok: UNDP.
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