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Contribution of Vertical Integration and Contract Farming to the formation of the modernized swine-to-pork value chain in Vietnam

Dong Dao Dung

ABSTRACT

In Vietnam- the top world’s largest producers and pork lovers- swine and pork products not only play important roles in the agro-food industry but also bring their own social and economic history. The hog-pork system has witnessed the boom of contract farming (CF) agreement, dynamic consolidation in the animal feed industry, and the chasing for the ‘farm-to-table model’ of the largest companies in Vietnam. These show the first signs for the restructure of swine-to-pork value chains (VCs), which are ignored in the previous studies. We sought the gap by analyzing the formation of vertical coordination (VCO), vertical integration (VI), and CF scheme in the hog-pork system of Vietnam, and how these drive the governance reformation of the swine-to-pork VCs toward modernization. This presentation aims at summarizing the contribution of the VI and CF in the restructuring of swine-to-pork VCs in Vietnam toward modernization. The results are highlighted as follows.

The intension of VCO is inevitable that has driven mainly by the lead firms in the animal feed industry, followed by ones in the meat packaging. Contract scheme and conglomeration are the backbones of VI, which creates the Cooperated Hierarchy Model, the Semi-integrated Hierarchy Model, and the Full-Integrated Hierarchy model (3F model) in the pork VCs of Vietnam. These shift the governance in the traditional pork VCs from the Market, the Modular, and the Relation to the Captive and Hierarchy form, then affect the restructure toward modernization.

Fully integrated firms with contract agreement create the “win-win” constellation between contractor and farmer in the fully and semi-integrated models. Farmer decreases the total risk of income through the stable long-run contract, reducing most effected risks like market and disease besides the improvement of their technical and managing skill. The contractor develops an extra feeding stable channel with contract farmers; reducing cost and exploits the advantage of franchising, competitiveness, encourage policies, and the low barriers to entry. Recently, the bilateral contract agreement of the producer-driven integrated firm has been revised toward adding more environmental and land used requirements for the contractee. This chases to mitigate emerged risks of contract maintenance, morality, and legislation. The “win for all” constellation is found in the Cooperated Hierarchy Model which highlights the involvement of the government and international consultancy organization. This cooperation aims to set a traceability pork chain where the quality of pork is controlled, and the risk of hog price reduces. Like the win-win strategy, the farmer and contractor search for stable income and feeding channels respectively. The consultancy can expand its business while the local government achieves the goal of state management.

The modernized swine-to-pork VCs overcome the inherent problems of traditional ones, expand rapidly due to competition among VCO and VI firms. However, spot market governance and

traditional VCs retain roles in poverty reduction, market access, and livelihood concerning animal health, hygiene food serving for local end-users, and niche markets. The reformation of pork VCs governance raises the rationale for promoting policies for CF as a tool for coping with risk, VI to overcome the sequence monopoly. Managerial implications for the resilient swine-to-pork chains in both domestic and export markets are also needed.

**Structural changes in meat consumption patterns in Vietnam:
Evidences from household survey data**

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ABSTRACT

Along with increased disposable income and changes in lifestyle and taste preferences, the consumption demand for meat in Vietnam has been increasing steadily and its patterns have changed significantly in the last decades. This study would provide an empirical insight the structural changes in meat consumption patterns in Vietnam. Based on multiple cross-sectional datasets from the most comprehensive household surveys in Vietnam, “The Vietnam Household Living Standards Survey” in every two years from 2004 to 2016, we deploy the Quadratic Almost Ideal Demand System model and follow a consistent two-step procedure to deal with zero-consumption issue. Estimated demand elasticities are then compared and analyzed over time to investigate the structural changes of meat consumption patterns. The results show that all meat products are normal goods, and their demand will keep rising as Vietnamese economy is expected to growth in next decades. In addition, demand for pork is found as less elastic than poultry and beef with respect to expenditure changes over time. Besides, poultry and beef increasingly take important roles in meat consumption structure of households as expenditure elasticities of poultry and beef tends to increase and higher than unity, implying that they can be considered as luxury goods to Vietnamese consumers. The findings draw critical implications to the development of the livestock sector in Vietnam.

Water-use Efficiency of Alternative Pig Farming Systems in Vietnam

Le Thi Thu Huong

ABSTRACT

Livestock production in tropical countries consumes significant amounts of water for cooling and washing facilities and releases large amounts of wastewater to the environment, resulting in water scarcity and pollution. However, improving water-use efficiency (WUE) at the livestock farm level has received little attention in current research. This study measures the WUE of pig farms in Vietnam, a tropical Southeast Asian country. There, livestock production consists of three farming systems: industrial farms (IFs), semi-industrial farms (SIFs), and traditional farms (TFs). This study compares the WUE of these farming systems, suggests which of the systems is most sustainable, and proposes solutions to improve the WUE of each system. The results of surveying 247 pig farms and applying data envelopment analysis show that the free use of groundwater resources causes a low average WUE of 52%. IFs (closed piggens) have the highest WUE, followed by TFs and SIFs (open piggens). This finding confirms the sustainability of IFs over other types of farming. Furthermore, using Tobit models, we analyze the determinants of the WUE within each farming system. The results show that shortening the fattening phase and decreasing the floor space allowance per pig increase the WUE of TFs and SIFs. In addition, decreasing the depth of the puddles in piggens and the frequency with which these puddles are drained improve the WUE of IFs. These results suggest a need to revise the design of piggens in order to reduce water use related to washing and cooling.

**Research on Characteristics of Domestic Land Grab and its Consequences
for the Transformation of Land Use and Control of Ethnic Minorities:
A Case Study of Rubber Plantations in Vietnam**

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ABSTRACT

This research aims to investigate the land grab processes dominated by a domestic state-owned enterprise (SOE) investor, namely Dien Bien Rubber Company (DBRC), a subsidiary company of Vietnam Rubber Group (VRG), and its consequences for the transformation of land use and control within ethnic minority populations through a case study of rubber plantations in Dien Bien, Vietnam. In doing so, the paper seeks to address how the Vietnamese socialist State – often considered a ‘strong state’ because it has pursued egalitarian land distribution policies over the past three decades – proceeds with domestic land grabbing in a context where the local people follow customary land use practices. The field research revealed the following. First, the Vietnamese government, while maintaining land distribution policies for its rural farming population, has increasingly sought to bring these policies more in line with the global trend of large-scale land acquisition at the expense of the traditional interests and livelihoods of the local population. By seeking to justify their essentially non-egalitarian land grab processes through the policy of post-land grab ‘egalitarian land re-distributions’ in areas with disembedded customary control, the domestic state actors deployed a cunning duplicity in their persistent adherence to agrarian egalitarianism. Second, with the supports from the local and central governments, a state-owned enterprise named Vietnam Rubber Group, carved out its land grab processes with more freedom, leverage, and power than similar firms investing abroad through land concessions. Last, the post-land grab redistribution of land rights materializes state formation through re-territorialization of and re-legalization within the frontier zone.

Effect of alternative foods on predator thrips *Scolothrips takahashii*

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ABSTRACT

Scolothrips takahashii (Priesner) is a beneficial natural enemy and is a promising biocontrol agent against pest spider mites on strawberry. However, due to its narrow prey range, the mass rearing of *S. takahashii* is not cost-effective, and its control efficacy in the field can be lowered when prey is rather scarce. To solve these issues, we investigated the usefulness of alternative foods on enhancing *S. takahashii* female's survival and reproduction. For this purpose, the feeding preference and effect of alternative foods on *S. takahashii* were observed. Besides, the effect of plant nectars on the survival of *S. takahashii* was also tested. Unlike other commercialized predators, *Scolothrips takahashii* did not feed on pollen while it preferred some sugar sources such as honey, fructose, and sucrose. They lived longest on mite egg, a natural food, while lived shortest when only water or pollen was provided; provision of sugar sources enhanced their life expectancy though it was lower than mite eggs. Plant nectars also increased the survival of *S. takahashii* in prey scarce conditions. It is suggested that providing flowering plants or sugar solutions in agroecosystems can increase the control effectiveness of *S. takahashii* against pest mites. Thus, when this predator is to be used in greenhouse conditions, farmers can enhance the control efficacy by adding flowering plants in the greenhouse. In the field, making flower stripes may also improve biological control with this predator.

Keywords: *Scolothrips takahashii*, alternative foods, biological control

Molecular cloning and characterization of two types of CD83 in ginbuna crucian carp (*Carassius auratus langsdorf*)

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1. Introduction

CD83 is a member of the immunoglobulin superfamily. It is well-known as a molecular marker of mature dendritic cell (DC), is considered to be a fundamental bridge between innate and adaptive immunities. In fish, although DC-like cells and CD83 homologs have been reported in some teleost species, identification of DC and its definitive markers need further molecular and functional analyses. The clonal ginbuna crucian carp (Gb), is a useful model for studying T cell-mediated adaptive immune response in fish. In the present study, two diverged Gb CD83 homologs were identified and their expression response was analyzed in monocytes during in vitro culture.

2. Materials and Methods

GbCD83-1 and GbCD83-2 from ginbuna crucian carp were subcloned to pGEM_T vector and sequenced. Gene expression analysis were performed on various tissues, adherent and non-adherent cells.

3. Results

GbCD83-1 and GbCD83-2 are identified at 186 and 206 amino acids, respectively. Additionally, the alignment of CD83 genes among teleost fish and mammals results in the identical structure features among mammalian CD83 and Gb CD83-1, GbCD83-2. It includes two conserved cysteine residues and a conserved N-linked glycosylation in the IgV domain. Furthermore, the phylogenetic tree illustrates that two types of CD83 are classified into two distinct groups (Fig.1). For the tissue distribution, both two types of GbCD83 are mainly expressed in spleen, head kidney, trunk kidney and thymus. Whilst GbCD83-1 is increased during cultivation of Ad, the GbCD83-2 expression level profoundly decreased (Fig.2). Although monocyte is dominant in fresh Ad, cultured Ad could not be detected monocyte marker (CSFRI). Besides, the expressions of APCs markers (CD80, MHC II/dab) are stable during the cultivation. Finally, in morphology, the nucleus size of 4-day cultured Ad is larger than that in fresh cells, and cells started floating after the cultivation.

4. Discussion

The length of CD83 is quite variable ranging from 194 amino acids in nurse shark, 222 in sea bream, 218 in rainbow trout, 186 (GbCD83-1) and 206 (GbCD83-2) in Gb to 204 in humans. CD83 isotypes has been identified in almost cyprinids, including Gb, common carp, while there is only one type of CD83 in other teleost fishes and mammals. Furthermore, there is no description about monocyte-derived DC in teleost. This study suggests that Gb monocytes potentially differentiate into DC in vitro.

5. Conclusion

Gb CD83 isotypes conserve to mammalian CD83 genes features. From all results mentioned above, the study suggests a hypothesis that GbCD83-2 is mainly expressed on monocytes, meanwhile GbCD83-1 is considered to derive from DCs in ginbuna crucian carp.



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