Governance mechanism in the dairy supply chain in Mongolia

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ABSTRACT

The Agri-food supply chains of former central planned countries during the transition collapsed, so that caused the breakdown of relationship of local farmers with input suppliers and output markets. However, as a good experience in restructuring the agri-food chains in Central and Eastern European Countries (CEECs), typically from foreign-owned agribusiness companies have initiated a private institutional innovation. According to this institutional innovation the processors offer the supplier assistance programs including credit provision, extension services and inputs to the farmers delivering to them in return for guaranteed and quality supplies. Mongolian dairy processing industry also felt but from the late of 2000s has increased rapidly apart from in following increased domestic investments, the preferential credit of the government. As like the experience of CEECs, all dairies interviewed not only take supply from farms by the contractual arrangement, but this also has been a change in governance mechanism that responding to an increased capacity of production the form of governance is shifting from spot market to the contractual arrangements with the supplier assistance programs. But the provisions of inputs and credit programs are infrequently offered to the farmers. Instead, few farmers could have received the preferential loans of the government, but the most of local farmers still have prevailed credit rationing as well as faced to the challenge be laid off from the chain.

Keywords: Dairy supply chain, vertical coordination, governance mechanism, and transition economy.

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I. Introduction

The Agri-food supply chains of former central planned countries during the transition collapsed, so that resulted in the breakdown of relationship of local farmers with input suppliers and output markets while the processing companies faced to the shortage of quality supply. These outcomes were worsened by the simultaneously public institutional changes (WorldBank, 2005). In particular, because of the absent or lack of appropriate public institutions necessary to support market-based transactions such as for enforcing property right and contractual agreements, consequently the hold-up problems were widespread. It means that one of the contractual parties hostages another one either has made investment on the relationship-specific assets or could not switch to another purchaser for the sales by breaching the contractual agreements and ex-post renegotiating the contractual terms for the rent extraction. For example, in the agri-food chain, processors held up farmers by delaying payments for delivered product (Klein, Crawford, & Alchian, 1978; Gow & Swinnen, 1998).

In a case of restructuring in agri-food chains in CEECs, however, typically from large agribusiness companies such as processors and retailers prior to create or improve the appropriate public institutions, in following foreign investment the private institutional initiatives have been emerged to overcome the obstacles, and the agri-food supply chain was starting to rise with the various forms of private vertical coordination. This initiative governance transforms a unilateral supply relation between farmers and processor into a bilateral one whereby not only the farmers supply raw materials to them, but the processor provides goods and services to the farmers including monetary credit, physical inputs, prompt payments, and technical advice in return for guaranteed and quality supplies. These goods and services are known as the supplier assistance programs (Cow, Streeter, & Swinnen, 2000; Dries & Swinnen, 2004, 2010; Dries, Gorton, Urutyan, & White, 2014; Gow & Swinnen, 1998; Reardon & Swinnen, 2004; Van Berkum, 2004; White & Gorton, 2004).

The first objective of this paper is to draw how private vertical coordination has been emerged in the restructured agri-food supply chains in CEECs since the late of 1990s and so the impacts both on processors and farmers from the existing theoretical and empirical studies. The second objective of this paper is to analyze and understand the governance mechanisms on the restructuring dairy supply chain in Mongolia since the late of 2000s, then comparing with the observed form of vertical coordination in CEECs. In the paper, Mongolian dairy sector will be selected for several reasons. First, even though Mongolia is rich in livestock, it produced a total of approximately 70 million tons of milk by dairy industry in 2014, which represents only 10% in all of production. Second, from the late of 2000s, Mongolian dairy industry was starting to rise in following a number of large nonagricultural domestic companies regarded dairy sector as a possible area for investment. At the beginning of the increased production, the need of raw milk delivering was fulfilled by an importing dry milk, however, the supply of domestic farmers has eventually increased to become a supply base. Third, since the start of the transition and up to 2013, this is the first time that a preferential credit with subsiding interest has been launched by the government of Mongolia to develop both dairy industry and intensive farming. As a result of this, the domestic capacity of dairy processing has already increased dramatically than previous. Fourth, currently, in Mongolia, the most of existing farmers have experienced as semi-intensive farming or more likely a herder of livestock, therefore,
there is the need of substantial investment to improve both dairy quality and output at the farm level.

The paper is organized as follows. First, in order to discuss the governance issue in detail and to address core questions in a coherent manner, the theoretical concept of governance mechanism improving the credible commitment of contractual relationship is implied by New Institutional Economics will be described. Next, the paper will be considered a rise in the agri-food supply chains in CEECs, and its governance mechanism as well as the impacts both on processors and farmers. Then, it will provide and analyze an overview of the dramatic increase in dairy industry in Mongolia and its governance on relationship along the restructuring of dairy chain. The end of this section also discussed the differing situation in the restructuring of dairy supply chain in Mongolia that has profound implications both for farmers and policy makers.

II. Conceptual framework

2.1. Types of governance mechanism

According to the New Institutional Economics, in a gradually evolving institutional environment, there should be a potential governance mechanism for decreasing ex post transaction costs due to enforcing the incomplete contact. This issue is explained as introducing the concepts both of the hold-up problem and a fundamental transformation. Specifically, the hold-up problem is called that one of the parties investing on the relationship-specific assets, which it can be redeployed to alternative users with loss of productive value is vulnerable to accept the disadvantageous term later. In such transaction, the party with higher relationship-specific asset has incentive to do the fundamental transformation or lock himself in to monopoly with the opposite party after the singing contract by choosing the governance mechanism being consistent with the characteristics of the transaction involved. Therefore, in the given institutional environment, the parties avoiding to fall in the substantial ex post transaction costs have always tried to find the possible governance arrangements (Williamson, 1985).

One polar of governance mechanism is vertical integration (or firm) and the other is spot markets. In between we have a wide array of potential contracting institutions that mediate transaction through the market but involve the use of a variety of specialized contractual provisions that arise as a consequence of efforts by transacting parties to economize the total cost of trading relationship. These exploring alternative

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2 The hold-up problem occur when one of the parties incentives to initiate ex post renegotiation of the contractual terms in an attempt to extract a greater proportion of the quasi-rents accruing to the relationship-specific investment. Deininger (1993) provides following example of quasi-rent extraction: “Suppose a farmer has the opportunity to establish a fruit orchard by investing an amount equivalent (over the expected life of the orchard) to an annual rental value of $300,000 but that, once established, the (annualized) resale value of the orchard is only $100,000.” That is, the value of the orchard in its next best alternative use or to an alternative user, once the relationship-specific investment is sunk, is only $100,000. “Assuming annual variable costs of $100,000, he could enter a contract (e.g., with a processor) to deliver his total annual production for a price of $500,000 and expect to make a [return] of $100,000 each year, [after variable costs and depreciation of the capital expenditures]. Once the investment is made, however, the processor would have an incentive to offer only $200,001, imposing a net loss of $199,999 on the farmer which would still make him strictly better off than if he were to sell the orchard.”
governance arrangements including groups of firms organized as networks, alliances, franchising, reciprocal investments or reciprocal trading arrangements and regulation is called entirely a hybrid form of organization or governance mechanism in the New Institutional Economics. Moreover, according to this approach, the attributes of transaction including asset specificity, frequency and uncertainty are an importantly central role in the evaluation of the relative costs of governance through market-based bilateral contracts versus governance through internal organization (Williamson, 1985).

In the given institutional environment, when uncertainty and complexity are important for transaction, the trading contract involved will tend to be incomplete. That is, as the level of the relationship-specific asset deepens spot markets lead to higher ex post transaction cost than otherwise because highly idiosyncratic transactions are ones where human and physical assets required for production are extensively specialized, so there are problems with market procurement arise as adaptability and contractual expense are considered. In this context, the appropriate governance mechanism would be vertical integration and the transaction is organized within firm. But in the circumstance with a significance of asset specificity is not to crucial for transaction, the market governance organizing the exchange on more standardized product has lower costs of transaction because of, not only since any one of the parties breaches the contractual terms later, this results in lower haggling costs or turn elsewhere at little transitional expense and so nobody incurs in the risk of the hold-up problems, but by supplying to more purchasers through market demand, also could be benefited from the scale of economics in the form of decreasing production costs. Therefore, the market governance is a main governance structure for nonspecific transaction of both occasional and recurrent contracting (Williamson, 1985).

However, the governance mechanism being consistent with occasional transactions of mixed and highly specific kinds is the hybrid form of governance and for example, the reciprocal investment or reciprocal trading arrangement creates a credible commitment on contract enforcement by transforming a unilateral supply relation where A sells X to B in into a bilateral one, whereby A agrees to buy Y from B as a condition for making the sale of X. Specifically, the reciprocity involves the sale of specialized product to B conditioned on the procurement of specialized product from B. The argument here is that reciprocity can serve to equalize the exposure of the parties by leaving the supplier to specialized assets at greatly reduced alternative value. Absent a hostage, the sale by A of specialized product to B may never materialize. The buyer’s commitment to the exchange is more assuredly signaled by his willingness to accept reciprocal exposure of specialized assets and therefore, defection hazard are thereby mitigated (Williamson, 1985).

III. The Emergence of private vertical coordination in agri-food chains in CEECs

3.1. Vertical coordination and the supplier assistance programs

During the transition of the 1990s, the agri-food supply chains controlled by the states in CEECs fallen and its effect caused a disruption in the relationship of farmers with processors as well as provisions of physical inputs and credit. Furthermore, in the absent or lack of proper public institutions would substitute to the former state administration for supporting market exchange the farmers who had a merely single
purchaser faced to the problems to enforce contracts in the form of the hold-up problems such as long payment delays, non-payments for delivered products (WorldBank, 2005; Gow & Swinnen, 1998).

As a result of these and other exchange disruptions, processing companies lacked the reliable supplies of quality deliveries while farmers faced serious constraints in accessing essential inputs (for example, feed, fertilizer, seeds, capital) and in selling their products. However, should here be remarked that during the 1990s the authorities of CEECs had tried to improve market infrastructure or governance including wholesale markets and market information system, which was geared commodity spot markets, but the restructuring of the agri-food supply chains have been driven eventually by foreign-owned processing companies as introducing a private institutional innovation (White & Gorton, 2004; Swinnen, 2006).

This institutional innovation is expanded a unilateral supply relation between processor and farmers into a bilateral one by the processor also provides goods and services to the farmers have contracted to deliver their products, which are known as the supplier assistance programs in return for guaranteed and quality supplies (Dries, Gorton, Urutyan, & White, 2014; Gow & Swinnen, 1998; Van Berkum, 2004; Dries, 2004; Dries & Swinnen, 2004, 2010; Cow, Streeter, & Swinnen, 2000; Swinnen, 2006; White & Gorton, 2004; Maertens & Swinnen, 2006; WorldBank, 2005). Generally considering, monetary credit, prompt payments, extension services, quality controls, physical inputs are the most commonly offered forms of the measures. Investment loans and loan guarantees for bank from processors to farmers, harvesting, and veterinary support, however, are infrequently offered the measures.

For the farmers faced major financial constraints due to a variety of market imperfections throughout CEECs, these programs generate important improvements in the credit situation of the farmers, as they contribute directly to improved access to finance, and indirectly as they improve contracting farmers’ access to loans from banks or external financial institutions through loan guarantees, enhanced farm profitability and improved future cash flows. Moreover, this innovation improves the credible commitment of contacting where public institutions are ineffective on enforcing contracts by serving to equalize the exposure of the parties. That is, if the processor with provisions of credit delays the payments for delivered product, the farmers receiving the program hold up by breaching agreements on loan payments, nonetheless against to this contractual hazard, the processor in particular, also holds-up the farmers with the lack of collateral by providing the credit and investment assistance programs.

According to Dries (2004)’s comparative study of the dairy chains in Bulgaria, Poland, and Slovakia, all the interviewed Polish dairies provide the measure in accessing inputs such as feed or seeds and fertilizers for on-farm feed production. Furthermore, five out of six companies assist farmers in investing through credit programs as well as a same number of companies provide bank loan guarantees for bank loans to farmers. Similarly, in Slovakia, all companies assist farmers through investment credit programs. Such investment credit can only be used for the dairy specific investments like buying dairy cows or a cooling tank. There also were bank loan guarantees that three out of six interviewed companies provide their suppliers in accessing inputs and bank loan guarantees for bank. Finally, the most Bulgarian dairies offer the assistance to their suppliers through credit programs for the dairy specific investments, access to inputs and bank loan guarantees for bank loans to farmers again (Dries, 2004).
Table 1 shows how the share of dairies that offer the supplier assistance programs in these countries has changed over time. Dairy companies in Poland seem to have been faster in implementing the programs than the others. For Bulgaria, gradually more dairy companies started to offer assistance. In Slovakia, however, the increase in assistance to local farmers has been stronger in the 1998-2002 period in following the inflow of foreign investments in dairy sector surged (Dries, 2004).

3.2. The Impacts of the supplier assistance programs

a) Impacts on yields and production

An important direct impact is on output and productivity of the processing companies that initiates vertical contracting and the supplier assistance programs. Moreover, the contracted farmers have experienced indirectly beneficial effects on output, productivity, and product quality through better access to inputs, timely payments, and improved productivity with new investments (WorldBank, 2005). In a study of food processors in five CIS countries (Armenia, Georgia, Moldova, Russia and Ukraine), White and Gorton (2004) concluded that the various contract support measures cause separately an average increase in yields of around 10%. The measures with the greatest impact on yields were specialist storage (especially cooling equipment in the dairy sector), veterinary support and physical inputs followed by a set of market measures including prompt payments, guarantees prices and market access (White & Gorton, 2004). Dries (2004) also found that specialist storage in the form of the cooling tank is a particularly important in raising yields and quality in dairy sector in other countries (Dries, 2004).

b) Impact on quality of output

Another important direct impact is a significantly improvement in quality of output delivered by the farmers due to these measures. In a case of the Polish dairy farms, except for the output, milk quality rose rapidly following contract innovations by foreign-owned dairy processors in the mid-1990s, as the share of the market held by highest quality milk increased from less than 30% on average in 1996 to around 80% on average in 2001. More specifically, there are indirect effects as in particular cross-company spillovers occur when firms competing for the same suppliers, and their fixed inputs, are forced to offer the similar contractual arrangements. Therefore,
local dairies quickly learned about the change in company policies implemented by foreign owners and they have started to copy the successful contractual arrangements. As a consequence of the spillover effects, by 1995 the supply of extra class milk was significantly larger among farmers delivering to foreign-owned dairies (58%) than among farmers delivering to domestic dairies (38%). By 2000, however, this gap had almost disappeared: 83% of foreign versus 79% of domestic dairy suppliers (Dries & Swinnen, 2004).

c) Impact on farm investments

The supplier assistance programs also had an important impact on dairy farm investments. According to the study of the Polish dairy sector, more than three quarters (76%) of all farmers in the survey made investments since introducing of the assistance programs. Of those that invested, 58% used loans, almost half of which came from the dairies. Moreover, a number of studies in both Armenian and Polish dairy farmers found that the dairy assistance in the form of accessing inputs, bank loan guarantees and prompt payments plays a significant role in improving the probability of the dairy specific investments. That is, the processor’ input supply programs enhanced indirectly to invest by lowering input costs, or reducing transaction costs in accessing inputs (Dries & Swinnen, 2004, 2010; Dries, Gorton, Urutyan, & White, 2014).

d) Impacts on survival and growth of small suppliers

In the case of the restructuring in the agri-food supply chains in CEECs, however, there is a general trend that responding to an increase in foreign investment, competition and quality requirement, agro-business companies or processors prefer to contract with few wealthier or large-scale farmers and consequently, poorer households or small farmers be excluded from direct benefits. It has three reasons why this might be so. First, transaction costs favor larger farms in supply chains. Second, when some amount of investment is needed in order to contract with or supply to the company, small farms are often more constrained in their financial means for making necessary investments. Third, small farms typically require more assistance from the company per unit of output (WorldBank, 2005; Maertens & Swinnen, 2006). But empirical evidence is mixed, for five CIS countries considered, between 1999 and 2003 there was a relatively more increase in a number of enterprises contracting with larger farmers, other agents (such as intermediaries and traders) and own farms as well as access to assistance programs is restricted to large-scale farms (White & Gorton, 2004). In contrast to this finding, the study of the Polish dairy sector provides that the most small farms have not been laid off, so made investments, upgraded their farm business, and improved quality despite radical restructuring of the dairies and tightened quality demands (Dries & Swinnen, 2004).
IV. The Governance mechanism of vertical coordination in dairy supply chain in Mongolia

4.1. An Overview of dairy production in Mongolia

In 2014, a total number of livestock in Mongolia counted 51.7 million heads by an annual census of livestock and the agriculture sector produced 765.4 million liters of milk over the country, which has met fully domestic consumption (452.6 million liters). But the Mongolian dairy sector has even lower manufacturing with only around 10 percent of the estimated milk production (Figure 1). This indicates that a high proportion of the milk production retains on local households, and the significant quantities are sold directly to consumers, frequently through local markets.

Figure 1. Dairy production and Imports, 2009-2014

![Diagram showing dairy production and imports, 2009-2014](image)

Source: The Ministry of Food and Agriculture, 2014

Even though overall milk production in agriculture has increased significantly since the late of 2000, it is a vulnerable to climate change because a harsh winter (a dzud) in 2010 reduced a quarter of the total livestock and resulted in the lower total output of milk in agriculture by 30% than a previous year (Figure 1). However, the Mongolian milk processing industry has increased constantly during that period in the sense that it has been developed by a relatively low relation with climate change and so the number of livestock. As shown in Figure 1, during the 2009-2011 a dramatic increase in milk processing followed the sizable imports of a dry milk, however, since that time and up to 2014 the quantities of importing has stabilized to at specific level. These results indicate that at the beginning of the increased milk production, the need of raw milk delivering was fulfilled by the imports then domestic farmers have eventually increased to become a supply base.

This increase in dairy industry has been driven by apart from the direct impact of domestic investments, which a number of large nonagricultural domestic companies regarded this sector for investment, and recently the Mongolian rapid economic growth also rise the propensity to invest indirectly by an increasing demand of dairy products. Because of, the Mongolian economy was in a recession where economic growth slowed to -1.3% in 2009 due to the global economic downturn has recovered rapidly in following the mining boom. That is, it has been growing rapidly by about 10% on an annual basis over the period of the 2010-2013, for example, growth reached 17.3% in 2011, which is the highest annual growth ever accounted for the last
20 years (NSO, 2014). Moreover, at the start of the 2013, a preferential credit with subsiding interest has been launched by the government of Mongolia to develop both dairy industry and intensive farming. Specifically as following:

In 2013, USD 27.7 million of the Chinggis bond (about MNT 54 billion by the national currency) which the government of Mongolian sold its first international bonds with USD 1.5 billion by 2012 as known “Chinggis bond” has been allocated to support dairy production then placing at the Golomtbank, which is one of Mongolian largest commercial banks. By december 2014, the Golomtbank has approved a total of 39 projects with MNT 33.1 billion loans of those received the projects. Considering the approved projects, 4 projects for dairy processing companies with MNT 12.3 billion, 19 projects related to develop intensive farming with MNT 18.4 billion and 15 projects establishing small dairy plants with MNT 2.2 billion financed by the Golomtbank. Since the start of this program and up to 2014, 920 high productive cows has been imported from France, Germany and Slovakia (The Ministry of Food and Agriculture, 2014).

Particularly, for the most of the Mongolian dairy farms, to become a supply base in dairy processing by supplying throughout year they must have made a significantly investment in a wide range of updates including feed production and harvesting machinery, production technology and other facilities of farm (Amartsengel, 2014). In fact, the most of former farms established after the transition have started out with a partially domestic investment and therefore could not have developed as like the classic farm with high productive and farming facilities such as a cooling tank, consequently the output and productivity of those is both low and vulnerable to seasonal change (Table 2).

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Table 2. The performances of dairy farms with comparison as average and higher performance by 2012

<table>
<thead>
<tr>
<th>№</th>
<th>Indicators</th>
<th>Average performance</th>
<th>Higher performance</th>
<th>Canada</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Dairy time, day</td>
<td>150-200</td>
<td>200-250</td>
<td>300</td>
</tr>
<tr>
<td>2</td>
<td>Output, liters per day</td>
<td>7.5-10</td>
<td>20</td>
<td>30</td>
</tr>
<tr>
<td>3</td>
<td>Annual production, liters</td>
<td>2500</td>
<td>6000</td>
<td>9000</td>
</tr>
</tbody>
</table>

Source: The Ministry of Food and Agriculture, 2014
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However, considering the support of the government for dairy sector with the preferential loans, in particular, the most of former farms have faced to constraint to financing their investments due to a lack of both collateral and an own asset. This is related to not only the requirement of the Chinggis bond financing that it does not exceed one-third of the project funding required to finance, but the commercial bank transporting the loans also requires a collateral for applicants. It can see from the result of the projects that the commercial bank has approved to lend during the 2013-2014 (The Ministry of Food and Agriculture, 2014). This is similar to the finding of Dries and Swinnen (2010) in the study of Polish dairy sector that for dairy farms in sample, large size loans for most important investment had been financed mainly by the preferential bank loans, however, the credit provisions by the dairies are especially important for small to medium size loans. This indicates that the
supplier assistance program has been an important source of access to credit for small and medium farmer on the dairy specific investment via lack of collateral, and covariance risks.

However, as observed result in CEECs, in the case of without supplier assistance programs for small farms, in the restructuring of dairy supply chain in Mongolia, the preferential loans of Government seems to be only supported to implement an effect, which local farmers be laid off from the chain or dairies preferring to contract with larger farmers, other agents and own farms. Furthermore, this issue has been taken a question about what governance mechanism is arranged to the relationship between dairies and farms along the dairy supply chain as followed: either is there a broadly contractual relationship between dairies and farmers with the supplier assistance programs or is there the governance arrangement that dairies have establish own farms through the preferential loans and contact with few large scale farms which may has invested through the government’s loans. To give answer on these questions, I have made an interview with three domestic companies that has invested recently to increase the capacity of dairy production and establish own dairy farm.

Before moving to the governance arrangements, which the Mongolian dairies use to make supply from farms, should here note that in selecting period, the attracting of foreign investment in Mongolian dairy sector has been a very little unlikely to the rise in agri-food supply chains in CEECs driven by foreign direct investment. Indeed, the period of the 2010-2013 was the peak of foreign direct investment in Mongolia with USD 10.4 billion, however, the most of those allocated in mining sector, but the agricultural investment was only USD 4 million (0.04%) (The Ministry of Food and Agriculture, 2014).

4.2. Governance mechanism in vertical relations between the processing companies and primary dairy farms in Mongolia

In this paper, only interviewees who met certain criteria were selected. The criteria chosen were: [1] a senior manager of dairy industry enterprises, [2] during the 2013-2014 enterprises either have made recent capital investments in the capacity of dairy production or have established own dairy farm to create an additional supply base, [3] enterprises purchase milk from the local farmers for dairy production, [5] enterprise must be a medium and large scale company as considering financial possibility because they may able to more offer the supplier assistance programs. The interview made on July 2015.

a) Company profiles of Dairies interviewed

Milko LLC as subsidiary of Teso Corporation

Teso corporation, founded in 2003 and as of today operates through a total of 12 subsidiaries on road, construction, mining, food production, domestic and foreign trade with over 800 employees. In 2014, Milko company is one of these subsidiaries has established the dry milk factory due to both private investment and the government’s preferential loans. As the capacity of production, the factory processes 100 tonnes of milk per day into 11 tonnes of dry milk, consequently has become the largest factory in dry milk production in Mongolia. Moreover, it also is able to meet the domestic needs of imported dry milk and despite of this fact, as developing history,
early Milko has started out to produce mainly the processed liquid milk and curds since 2010.

**APU company**

APU company is the oldest food factory, founded in 1924, and started to produce mainly alcohol drinking products as considering the company’s history. In 2001, the government decided to privatize the state owning share of APU (51 percent) then Shunkhlai group LLC who is one of the Mongolian largest group companies purchased through the auction, and consequently its status has changed to become a completely private company. For Shunkhlai group, it works currently on a wide range of business including trading oil, food production, logistic, mining, finance, health, real estate, media and infrastructure. Starting out of 2006 APU has implemented to business on food industry by producing the processed liquid milk, furthermore in 2014 established another dairy factory with a high capacity of production due to private investment as well as expanding a range of the products. Then the overall capacity of processing has been become to 45 million liters of milk per year, which covers 60% of total consumption in Ulaanbaatar.

**Suu company**

Suu company, also is the oldest dairy and has diversified on milk products starting out from established in 1958. As like other sectors, they also suffered due to the transition as the output of the factory dropped to the level using only 2 percent of the production capacity by 1996 because the former large scale farms, which delivering to him, divided into many small farms and consequently the most of them disrupted. In 2006, however, a Mongolian leading company, namely Macs group LLC also purchased their main stocks from the state then has worked following business principles. For Macs group, they also has many business branches including retail trade, food production, hotel, road and construction, mining and infrastructure with over 2200 employees. Suu company has higher on both dairy processing capacity in Mongolia with 200 tonnes of milk per day and producing a substantial range of products, therefore supplies about 60% of the domestic market. In this year or 2015, they has established an own milk farm, which imported high productive cows with receiving 25-30 liters per cow and utilizes modern facilities as well as invested to improvement on the production capacity through the preferential loans.

**b) Use of potential arrangements on relationship in dairy source**

Table 3 depicts the alternative governance arrangements that three dairies interviewed organize to milk delivering from their suppliers. We can see that all company contract with individual farmers, and in particular small farmers with produced less 100 liters of milk per day because of the Mongolian dairy farm structure is fragmented and dominated by less capitalized farms (Table 3).

For Milko, it only takes supply from the contract partners which are both small farmers and medium scale farmers located in near Ulaanbaatar, the capital city of Mongolia by own three collection centers. But they used to purchase from the local small farmers by spot markets or without any long-term contract when they had only fluid milk production. Specifically, they argue that the former arrangement with purchasing from anyone can deliver by paying a market price was consistent with the capacity of single fluid milk production.
Table 3. Use of potential supply relationship in sourcing

<table>
<thead>
<tr>
<th>Relationship</th>
<th>Milko</th>
<th>APU</th>
<th>Suu</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Spot markets</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>With small farmers</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>With large farmers</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td><strong>Contracts</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>With small farmers</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>With large farmers</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>With farms</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Other agents</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

*Source:* The interview with these companies

However, they has started to contract with the farmers by one year with further extending for securing supply base since established another dry milk factory with high capacity of production and faced consequently an increased need of raw milk supplying. Looking at components in setting contract, it includes a paying market price and delivering milk with quality imposed by Milko, then are laid down in a notary's deed. As like Milko, APU purchases mainly from both small farmers and large farmers are located in the 12 different places by only contacting with one year, which is arranged milk price and quality but in few case, takes supply from intermediate traders.

For Suu company, because it has long experience on dairy processing and dominates in domestic market, many local farmers located in a range from near Ulaanbaatatar to 300 km supplies to him. Looking at the governance arrangement on milk delivering, it not only takes supply from the contract partners which they are both small farmers and medium farmers but also in particular, during summer’ months many local herders supply by spot market or short-term contract. Moreover, in 2015 for improving the milk supply base, they have established the milk production complex and consequently in the Mongolian case, it also has become the first domestic processor with the own farm. This farm not only has currently a total of approximately 200 high productive cows and by the farm leader’s estimation the number of cows also will increase to 1200 in 2017.

Looking over the governance arrangements for three dairies, the semi-farmers with a different location were a dominant role in supply base through spot market, in particular, during the summer period. However, the current situation indicates that generally all companies interviewed more prefer to secure the supply base and resulted in the governance arrangement on relationship with farms was shifting from spot market to hybrid governance or vertical integration. Note here, White and Gorton (2004) found that in some countries of CIS, as the restructuring agri-food supply chain, however, the agro-business companies favor to contract with few, larger farmers and own farms, so consequently, small farmers is excluded from the chain (see more previous section). In other words, the Mongolian current situation indicates that the government should be implement the policy supporting the former farmers for these involvement on the restructuring of the dairy chain.
c) Supplier assistance programs

All the Mongolian dairies in the sample offer any assistance measures to farmers (Table 4). In comparing to the result found in Poland, Slovakia and Bulgaria that the dairies assist the farmers through training or extension services, accessing inputs and credits, the Mongolian dairies provide similarly training services in order to improve milk quality, however, there is a substantial range of other assistance measures among them. Discussing each company, Milko assists the suppliers through providing the milk container with 40-50 litters for free. Moreover, even though they do not offer credit programs and bank loan guarantees to the farmers, Milko pays a market price on delivered milk by cash payments and as a consequence of the contracting, the farmers are able to have regularly the cash flows. Indirectly, it is even a similar measure in form of the provision credit because the farmers can borrow from a commercial bank by using the supplying contract. They also argue that this arrangement is our advantage over the competition for same suppliers. In addition to this argument, should be noted that Friesland (Dutch dairy), investing on a Romanian dairy without changing anything but paying on time, and resulted in taking in 20-30 percent more milk within a time period of three months (Berkum, 2004).

<table>
<thead>
<tr>
<th>Assistances</th>
<th>Milko</th>
<th>APU</th>
<th>Suu</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical inputs</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Credit</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Prompt payments</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Investment loans for dairy</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>specific assets</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Training or extension services</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Veterinary support</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Farm loan guarantees</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

Source: The interview with these companies

Moving to next dairy, APU company assists the farmers through providing feeds and as a consequence of this provision, the preferred farmers able to access the dregs of his beer manufacturing during the winter’s months where is a decrease in supplying feeds in domestic market. Therefore, it is an important measure to the farmers during the period of shortage. In addition, since established new dairy processing factory, they has attended significantly the training and extension for farmers in order to improve delivered milk quality and the knowledge of business administration on managing farm.

For Suu company, which has a more experience on dairy production as well as a more relationship with farms, nearly their activity has been worked by the business principle after becoming private company in 2006. As like other two companies, they assist the contracting farmers through commonly training or extension services in order to improve milk quality and base, but in few case, credit programs is offered to specific farmers, who has experienced a sustainable supplier during the winter’s months. Despite of these facts, they often used to transfer the payments with some delaying for delivered product, consequently the farmers faced to drains on cash flow. But since last year either this issue has changed or their price has increased because
the APU company’s operation in dairy production expanded and they takes supply from the former farmers, who delivering to Suu company by paying the higher price with cash payment. And from this year the feeds provision has been introduced to the farmers as a cooperation with a flour producer. Even then the suggested price of feeds does not low than the market price, the farmers could made themselves the payment schedule after receiving feeds.

In summary, as compared with the experience of the restructuring in the agri-food chains of CEECs, the assistance measures including prompt payments, credit provision, investment loans and bank loan guarantees have an importantly impact on output and productivity of the farms could not be seen regularly among three dairies interviewed. However, instead of these measures, few farmers could have received the preferential loans of government and consequently most of local farmers prevailed credit rationing and face to financial constraints on investment. Recently, the farmers located in near Ulaanbaatar city has established the union of dairy farmers, however, up to now there have not been any activities initiated by this organization for stabilizing the price fluctuations on delivering to dairies and improving on productivity of farms as well as participating on the restructuring chain. In some countries of CEECs, the union of farmers has a substantial range of activities from holding share on the processors to credit provisions and particularly contracts with processors for supply and bargaining the price on behalf of farmers. Of course, the number of companies in dairy industry including APU and Teso increased so has resulted in more competition for suppliers as well as the companies have started to offer frequently any provisions including access to inputs.

V. Conclusions

- In CEECs, the agri-food supply chain not only has been developing with new form of vertical coordination are no longer state-controlled, but are introduced usually by foreign-owned processing companies as emerging to overcome the obstacle of the transition. This institutional innovation is introduced monetary credit, prompt payments, extension services, and physical inputs in return for guaranteed and quality supplies. This program as part of contractual relation in the restructuring of agri-food chain in CEECs have an important direct impact that the output and productivity of the processing companies introducing institutional innovations has increased as well as supplying farmers have experienced indirectly beneficial effects on output, productivity, and product quality. However, in CEECs, there has been the emerged problem that the small farmers be excluded from the chain in some countries.

- Even though Mongolia is rich in livestock, it only processed an around 10% of total milk production in agriculture in 2014 and this seems to indicate the results apart from a traditional livestock entrepreneur, but during the transition of the 1990s the Mongolian dairy processing also felt due to disruption in dairy supply chain controlled by the state. However, since the late of 2000s, the dairy industry has increased rapidly in following domestic investment attracted. Moreover, at the starting period of the increased production, the need of raw milk supplying was supplied by an importing dry milk, however, the domestic farms have been eventually developing to become the supply base. In addition to private investment, from 2013 and up to now, the preferential credit with subsiding
interest has been launched by the government of Mongolia to develop both processing industry and intensive farming.

- Looking the governance mechanisms in the restructuring of dairy supply chain in Mongolia, all companies in the sample take supply from individual farms by the contractual arrangement and further this has been the change in governance mechanism that responding to increased competition and the capacity of production in domestic dairy sector the form of governance on vertical coordination was shifting from spot market to the contractual arrangements or hybrid governance. In addition to contracting, the domestic dairies offer the supplier assistance programs for the farmers as like in the restructuring of agri-food chain in CEECs. Yet, the assistance measures including prompt payments, investment loans and bank loan guarantees have importantly the impacts on output and productivity of the farms has been never offered measures and all dairies interviewed indicate that we have a plan to offer these assistance programs, but it has currently been at the studying level. Instead, few farmers could have received the preferential loans of government and consequently only their production increased, but most of local farmers still have been credit rationing. In fact, there is a challenge to the former farmers that how to remain on the restructuring of the chain.

REFERENCES

Dries, L., Gorton, M., Urutyan, V., & White, J. (2014). Supply chain relationships, supplier support programs and stimulating investment: evidence from the


