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Global Value Chains and Middlemen. A Comparative Case-Study of Norwegian Agricultural Export

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ABSTRACT

International trade in agriculture open markets abroad for producers and suppliers. However, the capacity to serve these markets are not evenly distributed. For many exporters it is a challenge to access foreign markets and connect to global value chains (GVC). Agricultural markets are often characterised by asset specificity and oligopsonic market structures. These are features that tend to imply hierarchic governance structures and asymmetric dependencies. Thus, for the exporters, how to engage with partners in order to access foreign markets becomes critical. In this paper we explore how three export initiatives from Norwegian agriculture coordinate and connect to global value chains. We discuss the mode of governance, as well as the role of middlemen. We further discuss the characteristics of the coordination and the strategic implications for the exporting partners. The three cases are export of Whey protein concentrate (WPC 80) from Tine SA, export of the genetic material (The breed Norwegian Red) from Geno SA, and cured meat of lamb legs (fenalår) from the company Fenalår from Norway SA.

Keywords: Agricultural exports, WPC 80, Fenalår, Norwegian red, Global value chain, Governance, Intermediaries in international trade

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Introduction

Globalisation and international trade in agriculture open for accessing new markets abroad for producers and suppliers. However, the capacity to serve and handle these markets are not evenly distributed. Producers and suppliers from smaller economies and countries with comparative disadvantages in agriculture seems to struggle to succeed in foreign markets. The challenges are multifaceted. In general, there are entry barriers related to language, distance, information and knowledge. Therefore, various forms of intermediaries sometimes seem necessary to establish the links between producers and customers abroad and between the exporters and importers (Ahn, Khandelwal et al. 2011, Antràs and Costinot 2011, Bernard, Grazzi et al. 2015). However, agricultural markets are often characterised by asset specificity and oligopsonic market structures (Rogers and Sexton 1994, Vukina and Leegomonchai 2006, Constance 2008). These features tend to imply hierarchic governance structures and asymmetric information and dependencies (Williamson 1996, Gereffi, Humphrey and Sturgeon 2005), and adds risks to the costs of using intermediaries in international trade. The core of global value chain (GVC) governance is issues of control over, and access to, transactions (Humphrey et al. 2005). For small exporters and producers, this implies that it is a challenge to access the foreign markets and organizationally connect to global value chains (GVC) without losing control of their business. They may find themselves between a rock and a hard place.

Taking exporting activities from relatively small producers as the point of departure, the questions we ask in this paper is therefore, first, how can we describe the governance of global value chains for agricultural exports, and second, what are the role of intermediaries in the governance of global value chains structures. Theoretically, this paper contributes to the field by combining the already rich literature on GVC governance following e.g. the influential article by Gereffi et al. (2005), with issues from a growing body of literature on the use of intermediaries in international trade. Applying this approach to three cases of agricultural exports from Norwegian agriculture, we were able to perform a methodologically sound plausibility probe of a new approach to the role of middlemen in international agricultural trade.

Norway do not have comparative advantages in agriculture. It has little and scattered agricultural land, unfavourable climate, and high labour costs (Forbord and Vik 2017). Thus, it is not surprising that we do not see a lot of export from Norwegian agriculture (Eldby and Tufte 2007). Yet, there have been a series of attempts to create exports from Norwegian agriculture, but many have failed (Kjus and Kvam 2010). The challenging situation for Norwegian agricultural trade makes it both empirically and theoretically interesting to explore the approach to cases of Norwegian export. Thus, in this paper, we study how three export initiatives from Norwegian agriculture coordinate and connect to global value chains. We describe and discuss characteristics of the coordination, the use of intermediaries, and the strategic implications for the exporting partners. The three cases are, first, export of whey protein concentrate (WPC 80) and permeate powder (PP), from the Norwegian farm owned cooperative and dairy company Tine SA. WPC 80 and PP constitutes rare but successful export commodities from Norway (see also Vik and Kvam 2017). Second, export of genetic material for the cattle breed Norwegian Red, by GENO SA, also a farm owned cooperative, and the breeding organization of Norwegian Red, the main dairy breed in the country. The third case is export of cured meat of lamb legs (Fenalår) to the French delicacy market, through the company “Fenalår from Norway” that is established by nine meat processing companies.

We continue the paper with a presentation of our theoretical framework and the literature underpinning it. Thereafter we present the data and the methods used on the three cases. Then, we present and analyse the three cases in some more detail, before we discuss the findings and conclude.

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Literature and theoretical approach

International agricultural trade means that domestic producers and processors connect with a series of other actors domestically and abroad. As Feenstra put it, "the rising integration of world markets (has) brought with it a disintegration of the production process in which manufacturing or service activities done abroad are combined with those performed at home" (Feenstra 1998: 31). The domestic actors need to build new partnerships abroad to access international markets and are thereby becoming parts of global value chains (GVC). In the literature, the nature of the governance in GVCs has been described as some kind of continuum ranging from hierarchies to markets, with various network variants in-between (see e.g. Williamson 1975, Williamson 1996). Following the influential article by Gereffi et al. (2005), where a framework for analysing the governance of global value chains where developed, a series of studies of GVC governance has been undertaken. (Gibbon, Bair et al. 2008, Gibbon and Ponte 2008, Gebreeyesus and Sonobe 2012, Gereffi 2014, Ponte and Sturgeon 2014, Pananond 2016, Bair 2017, Mayer and Phillips 2017, Mayer, Phillips et al. 2017, Mosley 2017, Posthuma and Rossi 2017). The framework of Gereffi et al. (2005), builds on various variables that influence on dependencies and power relations in GVCs: complexity of transactions, codifiability and control of information, the capacity of the suppliers, and asset specificity. The logic is to a large degree related to insights from the industrial organization literature on transaction cost economics, that uses e.g. the concept of asset specificity to hypothesise on how organisations and management will unfold (Williamson 1989). In the ideal market, there are no lasting relationships, and the hazards of transactions are not too problematic. With high asset specificity however, as we often see in food markets, investments are irreversible in the short run. Suppliers of specific assets become dependent on the buyers, who have the power to hold-up the suppliers, and therefore, asymmetric dependencies and uneven power relations arise between actors. In general, consequences of high asset specificity may be higher degree of hierarchical forms of governance, and less flat and heterarchical organisational forms (Vik 2006).

Gereffi et al. (2005) describes five types of global value chain governance, ranging from the "market" on the one side, to the vertically integrated hierarchies on the other, with three in the middle: modular value chains, relational value chains, and captive value chains. Gereffi et al. (2005) uses complexity of transactions, codifiability of transactions, capabilities among suppliers, and degree of explicit coordination from a lead partner to determine which model is more likely (table 1).

Table 1. A typology of GVC-governance (after Gereffi et al. 2005)

Transaction complexity	Codifiable transactions	Supplier capabilities	Governance types
low	high	high	**Market**
high	high	high	**Modular**
high	low	high	**Relational**
high	high	low	**Captive**
high	low	low	**Hierarchical**

Transactions in an ideal market are typically done one at a time and at arm's length. No lasting relationships are necessary. Since both supply and demand are easily accessible, there are no risks related to transactions, opportunistic behaviour or lack of information. One can hypothesise that competition replace contracts as coordination mechanisms. According to Gereffi et al. (2005) the transactions are marked by low transactional complexity, codifiable transactions, and high capacity in the supply base.

In the second type, the modular chains:

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> "(…) suppliers make products to a customer's specification (…). However, when providing 'turn-key services' suppliers take full responsibility for competencies surrounding process technology, use of generic machinery that limits transaction specific investments (…). It is possible to codify complex information that can be exchanged with little coordination" (Gereffi et al 2005: 83).

In this type of relationship, the cost of switching to new partners remains relatively low. Partners in the GVC may continue business with other partners, without fundamental risks or losses.

The next type Gereffi et al (2005) describes as relational value chains. These are value chains where the transactional complexity is high, the possibility to codify transactions are small, and supplier capability is low.

> "(W)e see complex interactions between buyers and sellers, which often creates mutual dependence and high levels of asset specificity. This may be managed through reputation or family and ethnic ties" (Gereffi et al 2005: 83).

Therefore, this is a type of governance where there are strong ties and dependencies. This situation makes switching more difficult due to relationships and asset specificity.

The third "network" type in the typology is what Gereffi et al. call captive value chains. In such chains, transaction complexity is high, there are difficulties in codifying transaction, and the competencies among the suppliers are relatively low.

> "In these networks, small suppliers are transactionally dependent on much larger buyers. Suppliers face significant switching costs and are, therefore, 'captive'. Such networks are frequently characterized by a high degree of monitoring and control by lead firms." (Gereffi, et al. 2005: 84).

Due to the oligopsonic characteristics of many agricultural markets, both in the primary sector (Rogers and Sexton 1994), and in industry and the end markets (Constance and Heffernan 1991, Dixon 1999, Olsen 2015), the captive value chains seem to be a usual configuration in agricultural value chains.

The fifth type is a fully vertically integrated firm, and this is the expected organisational form when transactions complexity are high, codifiability is low, and the supply base competencies are low. In these cases, the combination of incentives points towards tight integration and control – a vertically integrated firm.

In the GVC theories, intermediaries play significant, but implicit roles. International trade theory, on the other hand, has largely treated the value chain implicit. It has been usual to assume that a manufacturer or producer ship their products directly to customers abroad, while we know that this is not an accurate description of reality (Abel-Koch 2013). Producers use, to varying degrees, intermediaries. However, in recent years the econometric international trade literature, the role of networks (Chaney 2014), intermediaries, traders and middlemen has been given an increasing role (e.g. Antràs and Costinot 2011). Spulber (1996) defines an intermediary as "…an economic agent that purchases from suppliers for resale to buyers or that helps buyers and sellers meet and transact" (Spulber 1996: 135). Clearly though, intermediaries and middlemen do play an important role in facilitating international trade (Spulber 1996; Ahn, Khandelwal et al. 2011), and thereby constitutes essential elements in global value chains.

Which firms uses intermediaries in international trade? Abel-Koch (2013) finds that smaller firms, new exporters, and exporters of low quality goods tend to use intermediaries more often than other exporting firms. For such exporters building a distribution network of their own involves high fixed costs. Much of the same type of logic is found in Bernard, Grazzi and Tomasi 2015), who finds that intermediaries are more likely when there are destination-specific fixed costs, less differentiated products, and low "contract intensity".

The described trade economy literature does not explicitly address *which types* of intermediaries, middlemen or traders we may expect in GVCs, or what their specific *role* would be. Neither do the GVC governance model of Gereffi et al. (2005). Combining the two approaches may provide a fruitful ground for suggesting some hypothesis on the role and type of intermediaries to expect in various form of GVC governance types.

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Schematically, we may state that, first, the pure market model implies that there are no incentives for middlemen at all. With low transactional complexity, high competencies with suppliers, and easily codifiable transaction – and a market like governance type - adding the costs of an intermediate into the working of the GVC make little sense. The ideal market are not in need of intermediaries Also in the other opposite of the spectre, we do not expect to see middlemen – but for different reasons. In the vertically integrated hierarchy, where there are high complexity of transactions, difficulties of codifying transactions, and low supplier capacity, the incentives to take control of the entire value chains are large enough to expect that there will be no middlemen involved. The producer and the salesperson belong to the same organisation. For the three GVC types in the middle, we may expect to find intermediaries – although with different roles.

First, as stated above, when the market and the products are characterised by transactions that are easy to codify, the suppliers have high capabilities, and there are high transaction complexity, the model predict a modular governance model. The complexity of transactions do however suggest that an intermediary is necessary. Yet, the codifiability of the transaction suggest that the intermediate have a relative neutral and passive role – an intermediary in the true sense of the word. The role is to *connect* sellers and buyers. Second, if the situation is similar to the one described for the modular GVC, except that the transactions are less codifiable, the intermediary need to take a larger role to reduce risk related to the transactions. The intermediary must do more to *facilitate* the transactions. Third, when we have a captive GVC governance type situation, the transaction complexity is high, but the possibilities for codifying the transactions are also high. This alone implies a modest role for the intermediator. However, combined with low supplier capacities we may expect that the intermediaries to have a *controlling* role on behalf of the partner controlling the GVC. This may be both because the lead partner have the possibility to do so due to power asymmetries, and because it is necessary in order to support the suppliers. In addition, the captive nature of the GVC suggest that the lead partner may hold an advantageous strategic position?, and possibly extract larger surplus from this, and that the intermediaries take a role in cementing this situation. The theoretical expectations are summed up in table 2.

Table 2.A typology of middlemen roles and GVC-governance

Governance types	**Transaction complexity**	**Codifiable transactions**	**Supplier capabilities**	**Role of middlemen**
Market	low	high	high	**-**
Modular	high	high	high	**connecting**
Relational	high	low	high	**facilitating**
Captive	high	high	low	**controlling**
Hierarchical	high	low	low	**-**

The original model of Gereffi et al (2005:90) did have a dynamic element. GVCs may evolve due to changes in circumstances and strategies among the partners. Actors tend to struggle for improvement of their strategic situation. Changing the transaction complexity, the codifiability of transactions, and the capabilities will open possibilities for reconfigurations of GVC governance. We may also suggest that the choice of type of intermediaries may be used strategically both to alter and to cement modes of governance.

Below we will present the empirical cases from Norwegian export, and discus the feature of the GVC governance, the role of intermediaries, and the dynamics of the models based on these case studies.

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Methods and data

Method:

In terms of method, this paper is a comparative case study (Moses and Knutsen 2007) where we follow products from three exporting firms in Norway. Defining a case is notoriously difficult (e.g. Eckstein 1975). In our study, the three export initiatives and the GVCs through which they take place constitutes the cases. What we do is to follow the products and those who manage it from production and distribution to it reaches the middlemen or customers abroad. This is in accordance with a perspectives that the social and material complexities of global markets requires studies of both actors and devices involved with production, and logistics of the commodities (Callon 1998, Callon, Millo et al. 2007, McFall 2009). We assume that through such studies we will be able to generate insights on the governance of a global food chain. All our three cases are cases of export from Norwegian agriculture, where the three exporting firms are farmer owned. The choice of these cases means that we keep several general variables constant; The products all stem from a protected and subsidies sector – Norwegian agriculture, through basically the same agricultural policies, and they come from a sector with relatively poor record of exports – which probably has influenced business culture, expertise on markets, and export procedures, etc. On the other hand, factors such as the products, type of transactions, and end markets are highly different. This give us the possibility to reflect upon the significance of these differences.

Our analyses is set up to explore the plausibility of new combinations of a set of theoretical proposition derived from the literature. Clearly, a comparative case study with three cases cannot alone neither verify nor falsify the theoretical expectations. However, it may serve as a plausibility probe (Eckstein 1975, Moses and Knutsen 2007). Furthermore, it gives us the room for exploring the logic of the propositions in its context.

Data and cases

We build on data from interviews (Kvale 1997, Galletta and Cross 2013) and material on the actors published in open company web sites. Our first case is export of WPC 80 and PP from Tine SA. In the case study we interviewed people closely connected to the production and export of whey products, totally eight people. In Tine, we interviewed six people on four different locations. (1) the commercial director of "Tine Ingredients division" in Oslo; (2), the export manager and an (3) export coordinator from Tine's export division in Oslo; (4) one production chain manager at Tine's Prognoses Department (Tine OPV) located at the production facility in Trondheim; (5) the manager at Tine Verdal, a production facility that is one of two production sites for whey powder processing in Norway, (6), a process leader at the production facility. This interview was followed up by a tour to see how the production process in the factory took place. We also visited Arla Foods Ingredients (AFI) main office in Vieby, Denmark. There we conducted two interviews: the Category director for WPC80 and a sales manager responsible for sales of permeate powder. All interviews were personal, tape recorded and transcribed. Main interviews with the director's at Arla and the director at Tine lasted about two hours. The other interviews lasted from 1 to 1.5 hours. In addition, we collected data from brochures, annual reports, homepages, etc.

Our second case is export of the speciality product "Fenalår" (cured meat of lamb legs). This export initiative is organised from an organisation named "Fenalår from Norway", which is a joint project consisting of nine producers of fenalår in Norway. Three of them have joined forces to export their products to France, and this is the initiative we have studied in this case. The data gathering process started with an interview with the chair of board, who also serve as manager of the Innovation division of Nortura SA (a large farmer owned meat-producer cooperative). He invited us to join the group of three firms on a marketing and sale trip to France. During this tour, we visited existing and potential customers at delicacy shops and restaurants in Paris and Strasbourg, were we made observations and talked to several actors: We made personal interviews with the

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representatives of the three exporting firms joining the trip (Nortura, SA, Bjorli Fjellmat AS, and Tind Spekevare AS). Additionally we made interview with a representative from the company "Saveurs de Norvege", which served as an intermediary and facilitated the visits to potential customers during the four-day's visit. Saveurs de Norvege is a French company owned and run by two Norwegian women living in France. Their aim is to support Norwegian export of quality food to the French market. After this trip, we made two follow-up interviews with the chair of board and the manager at Tind Spekevare. All interviews were tape recorded and transcribed. In addition, we collected data from brochures, annual reports, homepages, etc.

The third case, represented export of genetic material for the breed Norwegian Red through the cooperative and breeding organisation Geno SA. In the study of Geno, we made personal interviews with the Chief Operating Officer International (COO), leading the International Operations & Business Development team and one of his colleagues. Later, we made a phone interview with the chief veterinarian at Geno responsible for controlling the export product, and that the health certificate for the bulls is according to the order. Additionally we collected data from the homepage of Geno.

Results and case analyses

Tine SA and the export of WPC

Tine SA is one of Norway's largest food companies. It is a full-scale supplier of dairy products with well-known brands in the Norwegian market. Tine is owned by about 11 000 dairy farmers and is organized as a cooperative. They have more than 1,300 product lines and produce at 30 dairies located all over the country (Tine Annual Report, 2014). Most of Tines products are produced for domestic consumption. There are a few exempts from this; Jarlsberg cheese and whey based products. In 2010-2013, two of Tines production facilities underwent major investments to produce WPC 80 and permeate powder (PP). In the export of whey products Tine cooperates with Arla Foods. Arla Foods is an international dairy cooperative, owned by farmers located in many European countries and production in 13 countries. The main office is located in Vieby, Denmark. The division, Arla Food Ingredient (AFI) is responsible for whey-based products in Arla and has 650 employees where about 127 are located at the main office. AFI sell products worldwide, and have factories and sale offices all around the world. AFI became an independent division within the Arla Foods Group in 2011. AFI have their own factories to process products, and a designated R&D-division for product development.

Production and transactions

WPC 80 and PP are products derived from the production of white cheese. To make white cheese, one need to separate the milk, by adding rennet or an acid. When the milk separates due to a coagulation of casein, the next step is to "collect" (some of) the solid parts which become cheese, while most of the liquid is a protein rich leftover called whey. The next step in the production is the ultrafiltration process used to separate protein from the rest of the whey. This is done by "squeezing" whey through large filters able to separate the whey on a molecular level. When this is done the liquid protein are sprayed into tanks raging 7.5 floors high, for drying of the powder by using a spay-drying technology. When the protein is dried, the powder contains minimum 80 percent protein and become the WPC 80.

The new filtration technology made it possible to develop new products, as the WPC 80 and PP, and the markets for them. Thus, whey-based products are developing in a close cooperation between the R&D department and the customers. WPC 80 is a high value product, while permeate has been seen as more of a low-value ingredient, that mainly is used as ingredients in the food industry. Over the last years Arla has invested in factories and technology that make it possible to produce lactose from permeate that give higher value products – e.g. for the pharmacy industry.

Both for WPC 80 and PP, when processing is finished, machines automatically pack the product in labelled 25 or 1000 kilos sacks, before they go to the store. Tine purchase the sacks, but both the design and the decisions on

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type of packing and labelling lies at AFI. There are many specifications and demands to follow in the production process to reach the quality standards defined by AFI. Tine has to analyze each batch and a certificate of analysis (COA) follow the product to the export market. Tine conduct bacteriological and chemical tests to ensure the quality of the product during the production process. Tine take some tests themselves and send some to Eurofins, but has a plan to conduct all tests themselves in the future. Other important quality issues is traceability of all products, and that the products meet kosher and halal requirements. For Arla, kosher and halal requirements is important because they want to avoid setting up different production and distribution chains for different markets. For Tine Verdal this means that they have to change the type of rennet they use to start the initial separation of the milk.

Tine has a system for weigh and labelling for each batch produced. Each batch has its own series number, and each sack and pallet has its own etiquette with the series number and information about quality and production information. Tine receive a new etiquette on each batch when they receive an export order forwarded by Tine's export division. They use different etiquettes for different export country. The etiquettes inform about country of destination and a shipping address.

Tine's prognoses division (Tine OPV) is important for coordination of the production and the value chain. Tine OPV produces 12-months rolling production plans based on expected milk supply at each dairy site specified at weekly production. This plan, which Tine transfer to AFI via SharePoint, show expected production per week. AFI return sale prognoses at product level based on sale and expected sale in the future. These prognoses show an article number for each country, so Tine OPV know to which country the products have to be transported. Tine incorporate the sale prognoses into their production-planning tool, Each production site is informed about how much they have to produce to satisfy demand from AFI. Tine OPV and Arla arrange skype/phone meetings every 14 days to coordinate plans and orders. Additionally, Tine provide the production sites with 4-week rolling plans specified on week volumes to produce. Tine OPV organize and coordinate the production, while Tine export division handle orders from AFI and export documents. The export division handle orders from AFI, billing and customer clearance. Tine's export division receive the orders from AFI by e-mail. These are specific according to type of product, amount, batch and export country. Tine's export division use the etiquettes agreed on with AFI that inform customer about product name, batch, quality, durability. Languages vary. Tine export division register information in a system online with Norwegian Customs. There they feed in data about volume, type of product, value and customs tariff. If the information is accepted, they receive a receipt from the system showing that it is accepted and ready for export. The products need to be followed by a proof that the product is customs declared. This declaration is transferred to the production site, and one copy follows the transporter, and one goes to AFI. The batch-lists are sent to AFI to confirm that the right products and batches are exported. When Tine Verdal or Tine Jæren have loaded the goods on a trailer, they send Tine export division information about the number on the order, date, and a number of the container.

The documents from Tine's export division and Tine's production sites is necessary for importing the product into a new country. AFI define the routines connected to transportation and documentation, and Tine follow their specifications. Tine export division has yearly meetings with AFI where established routines are discussed and adapted if necessary.

Partnership and Capabilities

Tine and Arla have a partnership agreement that has lasted from 2008. All partnerships have pro and contras. The fact that Tine has renewed the partnership with Arla implies that the advantages was seen as larger than the disadvantages. However, there has been lengthy process of negotiations before the agreement was renewed, that suggests that Tine was not satisfied with all parts of the cooperation. The so-called "price model" for WPC 80 was one of the problematic themes. Another point of dissatisfaction was the informational

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asymmetry between Tine and Arla on market issues. Tine do not have access to information about the end users.

On the upper side, from Tines point of view, it is clear that AFI has invested substantially in the relationship with Tine. Since the agreement was established, they have supported, and continues to support (with knowledge and expertise) the development of the new production facilities in Norway. They have also invested heavily in infrastructure, logistic systems and quality systems to manage and make the whey products float as effortless as possible from Tines production facilities to AFI's customers.

Tine, the type of GVC, and role of intermediaries

Tine and Arla established a partnership in 2008. Before that, Tine used independent traders as middlemen for selling whey powder in the export markets. As an intermediate for Tine, AFI does much more than an independent trader does. They manage and organize the customers, the actual transaction, and they organize substantial parts of the quality control. They also interact in the prognoses and production planning. At the same time, they work as a gatekeeper vis a vis the market.

The GVC governance clearly fits the description of a captive global value chain. The complexity of transactions are high, the codifiability is also high, but the capabilities of Tine – in this particular market and in this relation is relatively low. Arla is the lead partner that control access to the market and the transaction in the relationship. They do much more than helping buyers and sellers meet and transact.

Geno SA and the export of Norwegian Red

Geno SA is a farm-owned cooperative with 9000 Norwegian cattle farmers as owners, established in 1935. Geno is also the breeding organization of Norwegian Red, the main dairy breed in Norway. Norwegian Red has had a balanced breeding goal for the last 40 years. This has resulted in a breed with good production, health and fertility traits, and a product exported around the world. Geno is involved in research programs involving animal breeding, quantitative genetics, molecular genetics, reproduction and biotechnology in close cooperation with Norwegian universities, other research organizations and companies as well as international universities and research institutes. Investment in research has resulted in several biotechnology companies where Geno has full or partial ownership. The Geno group now consist of Geno Global Ltd. and SpermVital Ltd. Geno SA own 52% of Cryogenetics Ltd.

SpermVital AS was founded by Geno and the SINTEF Group in 2003. Together, these two companies have developed an insemination technology for artificial insemination of domestic animals that extends the life of spermatozoa after insemination. This makes timing of insemination less critical concerning ovulation in the female and increases the odds of fertilization success. To achieve this, sperm cells are immobilized in a natural substance before cryopreservation. For the herd owner, this translate to reduce insemination costs and improved herd fertility, both factors that lead to increased profitability. Geno uses genomic selection that is the most advanced genomic technology. With this technology, it is possible to detect individual attributes by looking at the gen. For developing this technology, Geno has invested between 40 – 50 mill NOK in different R&D projects financed by EU, the Norwegian Research Council, and Innovation Norway has supported the development. The Chief Operating Officer (COO) think the decision to invest in genomic selection in 2009/2010 was decisive for the existence of Geno as a breeding organization today. Geno Global Ltd. was established in 2003 to handle all exports of Norwegian Red genetics with SpermVital technology. The company has today three employees in Norway, one in Holland and two in the US. Additionally there are six employees in a Dutch daughter company. The last two years the export from Geno has exceeded sale in Norway. A goal for growth is to double sale internationally the next 3-4 years.

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Transaction – complexity and codifiability

The process of collecting, producing and exporting is relatively complex. The bulls for sperm production are picked out when they are three mounts based on properties of their DNA. The bulls comes from farms all over Norway. Geno transport the bulls to their performance test station. There they stay until they are sexually mature, between 14-16 months. During this period, they go through many tests. 115 of 230 bulls enrolled for testing are selected for semen collection and ultimately progeny testing. They undergo comprehensive health and quality checks. Then they arrive at the Geno artificial insemination centre. Then their life as sperm producers start. Here they produce semen for collection once or twice a week. Each semen collection provides 8-10 billion sperm cells, corresponding to 400-800 insemination doses for inseminating individual cows. Once the bulls have produces 2100 doses of semen, they are moved to the waiting bull facilities to await results of progeny testing. Based on results, bulls with the highest total breeding value becomes the elite bulls and they are moved to the elite bull facilities.

When the semen is collected from the bull, it is analyzed under a microscope before being extended and put into plastic straws. Each straw represents one insemination dose, which contains approximately 12 million sperm cells. The semen in straws is frozen to -196 C and stored in liquid nitrogen where it can remain indefinitely. All handling, transport and delivery of semen is done in liquid nitrogen.

Norwegian red is generally of good quality. Yet, access to new markets are demanding. Documentation is important for sale, and Geno has not enough knowledge about how Norwegian Red function in countries with e.g. a different climate. The economic conditions of agriculture is also highly variable and knowledge of this is important for success in the market.

Geno International buy genetics from Geno SA. This product they sell to distributors and partners in different countries. Some countries require more documentation than others do. Some countries demand documentation of absence of diseases that does not exist in Norway. Then Geno have to send blood from the bull to The Norwegian Veterinary Institute to check. The Norwegian Authorities check these documentations when demanded. Other countries may have very specific demands for documentation, for example China. Norwegian Food Security Authority (NFSA) focus especially in infection fuse and traceability, i.e. not mix sperm from different animals. The chief veterinary at Geno is approved by NFSA to follow up regulations and controlling deviation in Geno. Geno is also EU-approved, which mean that the breeding station of Geno fulfill demands from EU regulative 88/407. Thus, Geno can export sperm to EU-countries without additional tests. Norway may use EU's Health Certificate (HC) system that make it easy to pass EU-boarders.

When the product is to be exported, a health certificate (HC) for the bull(s) accompanies the sperm. NFSA control the certificate and if it is according to the order, they seal the package, stamp and sign the HC that is added. NFSA control each of Geno's orders for export and visit Geno nearly every day to control products for export.

Partnership and Capabilities

Geno Global has reorganizes its export organization the last years. Before 2016 Geno Global had three daughter companies in England, The Netherland and Italy – the most important markets, and distribution partners (intermediaries) in more than 30 countries worldwide. The established organization was expensive and faced a huge investment to increase sale. For a small actor in the market such as Geno large investment was seen as risky. The export organization changed when Geno signed a distribution agreement in 2016 with the world leading genetic company, PLC, from UK. The mother company is Genus PLC and was originally a cooperative in the UK. Eight countries were included in this agreement, meaning that that PLC is responsible for sale and distribution to the following eight markets for Geno's products: US, Canada, UK, Italy, France, Germany, Australia and New Zealand. This represents some of the most important export markets for Geno. In

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Italy and UK where Geno had daughter companies these we shut down and employees included in PLC's sale division. The daughter company in Holland still exist with six employees.

Geno, the GVC, and role of middlemen

The current intermediary for Geno is the larger company Genus PLC. However, the relationship is not captive. Despite the difference in size and global markets shares it seem to be e relationship between equal actors – 'relatives'. The GVC governance is a result from a situation with complex transactions, transactions that are not easily codifiable, and high supplier capabilities. It is a relational partnership, and the intermediaries role is one of facilitating international sales – not controlling on behalf of the importing partner.

Fenalår from Norway

Fenalår is a traditional Norwegian product – salted and dried meat of lamb legs. The history of Fenalår from Norway (FFN) start back in 2006. Then, Nortura, the farmer-owned meat cooperative, initiated the process to qualify Fenalår for the Norwegian label Protected Geographic Indication. Many of the meat processing companies producing Fenalår were interested in joining the process. This resulted in that nine meat-processing companies established the cooperative Fenalår from Norway SA in 2008. Increased sale both to the Norwegian market and export markets was part of the plan. Fenalår was granted PGI in Norway in 2012, and in late 2017, the product was granted status as PGI in the EU, meaning that it is recognised as a traditional product from Norway.

The export initiatives has focused on the French delicacy market, i.e. in Anessi, close to Genève, Paris and Strasbourg. Due to a very high price level in Norway, it was necessary to focus on markets willing to pay a high price for the product.

The Partnerships

The three companies exporting to France are: *Nortura* , the farmer-owned cooperative for meat producers in Norway. It has about 5000 employees and is a big actor compared with the other two companies joining the export effort. *Tind Spekevare* is smaller meat processor, with about 30 employees that has about 1.5 % of the Norwegian market on cured meat.

The exporters used the company Saveurs de Norvege, as intermediaries in their exporting efforts. Saveurs de Norvege has experience from working with the Norwegian fish processing companies Salma and Lofoten in successful export of fish to the French delicacy market from before. According to the chairperson of FFN, Saveurs de Norvege has an important network of contact persons in the restaurant and catering market, and to retail and other relevant customer for FFN. Saveurs de Norvege has organised and joined several meetings with potential customers. Additionally, Saveurs de Norvege has arranged regularly demos in some delicacy shops. Another actor that has supported FFN in France is Innovation Norway in Paris – a public organisation that work to support Norwegian industries both abroad and at home. Innovation Norway in Paris has arranged happenings where it has been possible to market the products, and for journalists and bloggers to write about the product. These efforts have had some effects on request from potential customers from France, and other South-European countries.

Transactions

The sales manager at Tind spekevare has been the one that has organised the practicalities for export to France. He has worked with organising the logistics, freight, customs, fees, cooling, co-packing with fish etc. When exporting, Nortura and Bjorli send products ordered for export to Tind where Tind pack the products and send all papers in advance to the forwarder to secure everything is ok. All necessary information must follow the packages. When FFN receive orders, they must control that the recipient is an accepted importer. The products are sent to Pagborg in Denmark where further transport is organised to different wholesalers in

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France. The products are distributed together with fish export from Norway. This implies that Tind has to take on extra packaging to avoid the taste and smell of fish.

The quantities exported are relatively small so far. In 2017, the sales were around 1000 kg for all three companies.

The GVC of Fenalår and the role of middlemen

The transaction complexity is relatively high. Fenalår from Norway is a new and unknown product in the French delicacy market. There are no culture for using this product and thus it is challenging to communicate the high value. Therefore, to success in selling the product it is decisive with direct communication with customers (Kvam, Magnus and Stræte, 2104). Talking with the producers and listening to the history of the product strengthen the perception of the value of the product and the willingness to pay. The situation described above also make codification challenging at this early stage of export. Although the exporters are skilled producers, they have very limited resources and competencies when it comes to export- and market knowledge. Based on the features one should expect the GVC to be of a hierarchical (or captive) nature according to the model of Gereffi (2005) Yet, we see that the cooperation with Saveurs de Norvege is more of a modular nature. The role of the intermediator has been restricted mainly to bringing together the producers and the customers.

It also belongs to the story that the cooperation with Saveurs de Norvege ended in late 2016 because FFN lacked the resources to continue the business relation with Saveurs de Norvege. Innovation Norway refused to continue funding the export initiative, and consequently, the cooperation with the intermediary stopped. Currently FFN handle the export without intermediaries and act as a hierarchical GVC.

Discussion

Dynamics of GVC-governace and role of middlemen

In the case of WPC 80, and even more PP, we see export of a bulk product. However, due to substantial research, and product and market developments, driven by Arla, the complexity of transactions and market relations increase. The new practices of engineered food, and what Scrinis (2013, 2016) label an era of nutritionism, adds substantially to the complexity. The numerous new uses for food additives such as WPC and PP results in a constantly developing market for the products, This, in turn, imply constantly evolving transactions reducing the codifiability of transactions. Furthermore, we see that Arla do keep a tight control of the access to information on market and market transaction, which makes it difficult for Tine to develop market competence and capacity. For this value chain though – based on the model, it is not much that points to a movement away from the current captive value chain. Tine could get out of the relationship, but that would most likely also mean that they moved to a role of a bulk supplier – less complexity – but also less value-added.

When it comes to the use of intermediaries there has been a development. Tine earlier made use of independent traders as intermediaries. With the Arla- cooperation this changed. Now, AFI serve as the intermediary. The role is also changed. AFI has a much larger role than an independent trader would have. They manage the sales process; provide managing systems used in production and distribution, and work as a control instance and as a filter between production and sales. In this case, though, it seems that Tine has traded independence for access to AFIs market position.

Fenalår from Norway is a new product with high quality and price, in a new market combined. Transactions of food specialities – especially new ones – is relatively complex. The possibility to codify the transactions are also limited due to the product novelty and the low volumes. Furthermore, the capabilities of the suppliers are rather low – when it comes to issues of trade and market. Altogether, theoretically, this should indicate a hierarchical value chain. What we have seen is a modular chain, where the suppliers are in charge of the process, and take full responsibility for competencies surrounding the product, the production process, and the

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export, while they relied heavily on external help to access the buyers in the market. However, after some time they stopped the relationship with their middlemen, and changed towards a hierarchical chain, where they have full control of the process.

The case of Geno is a case where transactions are complex and require specific knowledge from production to use. The possibility to codify the necessary transactions and knowledge is low and the specificity is high. The capacity of the supply base on the other hand is low – when it comes to handling the market – but high in terms of knowledge. According to the GVC theory of Gereffi et al (2005) this should make us expect that the governance of this value chain took the form of a hierarchy or a captive value chain – maybe with the supplier (Geno) as the lead firm. Interestingly though, this used to be the case with Geno. Before the changes in 2016, they had control of the value chain themselves. However, due to the challenges of dealing with the markets everywhere around the world they started to cooperate with a market leading actor, and have thereby gone over to something like a relational value chain

In all cases – independent of the nature of the products – the exporters are, or have been, depend on the services of others to access the market. In the case where the actors knew the market well from the beginning – the case of Geno – they found it too demanding to serve the markets by themselves. In the case of Fenalår the exporters needed support and assistance in order to get the initial connections with the market, but may be able to serve markets with high willingness to pay. Notwithstanding, the relative small volumes, and the unfamiliarity with markets tend to create a disposition for use of intermediaries and entering into asymmetric dependency positions.

The study presented here has combined a model of GVC governance with inputs on the use of intermediaries in international trade. Using this in an explorative comparative case study indicates that this is a fruitful frame for analysing the mode of governance and use of intermediaries in global value chains. Our case studies has also showed that we may build hypothesis on the role of intermediaries in international trade based on the described model.

References

Abel-Koch, J. (2013). "Who uses intermediaries in international trade? Evidence from firm-level survey data." World Economy **36**(8): 1041-1064.

Ahn, J., A. K. Khandelwal and S. J. Wei (2011). "The role of intermediaries in facilitating trade." Journal of International Economics **84**(1): 73-85.

Antràs, P. and A. Costinot (2011). "Intermediated trade." Quarterly Journal of Economics **126**(3): 1319-1374.

Bair, J. (2017). "Contextualising compliance: hybrid governance in global value chains." New Political Economy **22**(2): 169-185.

Bernard, A. B., M. Grazzi and C. Tomasi (2015). "Intermediaries in international trade: Products and destinations." Review of Economics and Statistics **97**(4): 916-920.

Callon, M. (1998). The Laws of the markets. Oxford, Blackwell.

Callon, M., Y. Millo and F. Muniesa (2007). Market devices. Malden, Mass., Blackwell.

Chaney, T. (2014). "The network structure of international trade." American Economic Review **104**(11): 3600-3634.

Constance, D. H. (2008). "The Southern Model of Broiler Production and Its Global Implications." Culture & Agriculture **30**(1-2): 17-31.

Constance, D. H. and W. D. Heffernan (1991). "The Global Poultry Agro/Food Complex." International Journal of Sociology of Agriculture and Food **1**: 126-142.

DOI: http://dx.doi.org/10.18461/pfsd.2018.1816

Dixon, J. (1999). "Reflexive accumulation and global restructuring: Retailers and cultural processes in the Australian poultry industry." Rural Sociology **64**(2): 320-333.

Eckstein, H. (1975). "Case Study and Theory in Political Science". In F. I. Greenstein and N. W. Polsby. Strategies of Inquiry. Reading Mass. , Addison-Wesley 97-122.

Eldby, H. and T. Tufte (2007). Eksport av norske landbruksprodukter: en analyse av muligheter og utfordringer. Oslo, Landbrukets utredningskontor.

Feenstra, R. C. (1998). "Integration of Trade and Disintegration of Production in the Global Economy." Journal of Economic Perspectives **12**(4): 31-50.

Forbord, M. and J. Vik (2017). "Food, farmers, and the future: Investigating prospects of increased food production within a national context." Land Use Policy **67**: 546-557.

Galletta, A. and W. E. Cross, Jr. (2013). Mastering the semi-structured interview and beyond: From research design to analysis and publication.

Gebreeyesus, M. and T. Sonobe (2012). "Global Value Chains and Market Formation Process in Emerging Export Activity: Evidence from Ethiopian Flower Industry." Journal of Development Studies **48**(3): 335-348.

Gereffi, G. (2014). "Global value chains in a post-Washington Consensus world." Review of International Political Economy **21**(1): 9-37.

Gereffi, G., J. Humphrey and T. Sturgeon (2005). "The governance of global value chains." Review of International Political Economy **12**(1): 78-104.

Gibbon, P., J. Bair and S. Ponte (2008). "Governing global value chains: An introduction." Economy and Society **37**(3): 315-338.

Gibbon, P. and S. Ponte (2008). "Global value chains: From governance to governmentality?" Economy and Society **37**(3): 365-392.

Kjus, J. and G. T. Kvam (2010). Notat - dypdykk i prosjekter som ikke lyktes. Internt arbeidsnotat for oppfølging av VSP-mat utarbeidet av NILF og Bygdeforskning. VSP mat etter 2010? Virkemidler til verdiskaping, innovasjon og mangfold på matområdet. Oslo, Landbruks- og matdepartementet,.

Kvale, S. (1997). Interview: en introduktion til det kvalitative forskningsinterview. København, Hans Reitzels Forl.

Kvam, G. T., T. Magnus and E. P. Stræte (2014). "Product strategies for growth in niche food firms." British Food Journal 116(4): 723-732.

Mayer, F. W. and N. Phillips (2017). "Outsourcing governance: states and the politics of a 'global value chain world'." New Political Economy **22**(2): 134-152.

Mayer, F. W., N. Phillips and A. C. Posthuma (2017). "The political economy of governance in a 'global value chain world'." New Political Economy **22**(2): 129-133.

McFall, L. (2009). "Devices and Desires: How Useful Is the 'New' New Economic Sociology for Understanding Market Attachment?" Sociology Compass **3**(2): 267-282.

Moses, J. W. and T. L. Knutsen (2007). Ways of knowing: competing methodologies in social and political research. Basingstoke, Palgrave Macmillan.

Mosley, L. (2017). "Workers' rights in global value chains: possibilities for protection and for peril." New Political Economy **22**(2): 153-168.

Olsen, P. I. (2015). Kjøpermakt i verdikjeden for mat. . Norsk matmakt i endring H. Bjørkhaug, R. Almas and J. Vik. Bergen Fagbokforlaget 87-116.

Pananond, P. (2016). "From servant to master: Power repositioning of emerging-market companies in global value chains." Asian Business and Management **15**(4): 292-316.

DOI: http://dx.doi.org/10.18461/pfsd.2018.1816

Ponte, S. and T. Sturgeon (2014). "Explaining governance in global value chains: A modular theory-building effort." Review of International Political Economy **21**(1): 195-223.

Posthuma, A. and A. Rossi (2017). "Coordinated governance in global value chains: supranational dynamics and the role of the International Labour Organization*." New Political Economy **22**(2): 186-202.

Rogers, R. T. and R. J. Sexton (1994). "Assessing the Importance of Oligopsony Power in Agricultural Markets." American Journal of Agricultural Economics **76**(5): 1143-1150.

Scrinis, G. (2013). Nutritionism. The Science and Politics of Dietary Advice. New York, Colombia University Press.

Scrinis, G. (2016). "Reformulation, fortification and functionalization: Big Food corporations' nutritional engineering and marketing strategies." Journal of Peasant Studies **43**(1): 17-37.

Spulber, D. F. (1996). "Market Microstructure and Intermediation." Journal of Economic Perspectives 10(3): 135-152.

Vik, J. (2006). Knowledge, mobility and configurations of power : an asset specificity perspective on power in the knowledge society. [Trondheim], Norwegian University of Science and Technology, Faculty of Social Sciences and Technology Management, Department of Sociology and Political Science.

Vik, J. and G. T. Kvam (2017). "Governance and growth - A case study of Norwegian whey protein concentrate exports." International Journal on Food System Dynamics 8(4): 336-346.

Vukina, T. and P. Leegomonchai (2006). "Oligopsony Power, Asset Specificity, and Hold-Up: Evidence from the Broiler Industry." American Journal of Agricultural Economics **88**(3): 589-605.

Williamson, O. E. (1975). Markets and hierarchies: analysis and antitrust implications: a study in the economics of internal organization. New York, Free Press.

Williamson, O. E. (1989). Chapter 3 Transaction cost economics. Handbook of Industrial Organization. R. Schmalensee and R. D. Willig, North-Holland (Elsevier). **1:** 135-182.

Williamson, O. E. (1996). The mechanisms of governance. New York, Oxford University Press.

DOI: http://dx.doi.org/10.18461/pfsd.2018.1816