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The sustainability implications of "product take-back clause" in supplier/retailer interface

- Case study: Swedish bread industry

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The sustainability implications of "product take-back clause" in supplier /retailer interface - case study: Swedish bread industy

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Abstract

Food waste consumes resources, has a negative effect on the environment and leads to monetary losses for the supply chain participants. One of the ways to address food waste is to reconsider the supply chain´s linear process and implement the reverse supply chain. Many researchers consider reverse supply chain to be sustainable and value adding. Yet some studies mention that in supplier-retailer interface in the context of food industries, reverse supply chains with take-back clause might be exposed to retailers' market power abuse and cause overproduction and waste. This study used the qualitative approach to explore implications of power relations in retailer-supplier interface on take-back practice by looking at the case of Swedish bread suppliers. All major bread suppliers that have take-back agreement along with retailer chains, representing all retailer corporate ownership groups in Sweden have been interviewed. Using the theory of market power and reverse supply chain sustainability, the study analyzed the implications of power-relations on the take-back practice and explored sustainability concerns and/or fixtures it poses for the supply chain. The study findings do not fully confirm with conclusions of previous research arguing that reverse supply logistics systems serve as additional incentive for powerful retailers to over-order or lead to higher waste due to inability of suppliers to properly dispose of waste. Yet other instances of retailer's market power that have not been touched upon in previous research were found within studied take-back agreement. The specific terms of agreement resulting from power asymmetries were found to still cause over-ordering and other negative effects on the overall sustainability of bread supply chains. The sustainability breaches identified in the study are mainly connected with lack of retailer's economic incentive to reduce the amount of unsold bread, which becomes the source of overproduction, and leads to economic, environmental and social costs.

Glossary

Asset recovery - the classification and disposition of returned goods, surplus, obsolete, scrap, waste and excess material products, and other assets, that maximizes returns to the owner, while minimizing costs and liabilities associated with the dispositions.

Avoidable food waste - products that are still fit for human consumption at the time of being discarded or products that would have been edible if they had been eaten in time.

Closed loop supply chain (CLSC) – is the process of embodying both forward supply chain and reverse supply chain during which the products are returned to the point of origin to enter the primary chain or diverted to a secondary market for the purpose recapturing value or proper disposal.

Extended producer responsibility (EPR) - mandates take-back concept that requires producers/suppliers to arrange recycling or reuse of the products that are discarded or unsold.

Lead-time - is the time between the order and delivery.

Marketing returns - is a practice when the products are sent back from a retailer to the supplier due to closeout, seasonal return or surplus and overruns.

Market Power – is when a firm with a substantial market power through influencing prices and other promotion activities may significantly alter partners' or rivals' sales and/or hurt their incomes

Reverse supply chain (RSC) - is a process of moving products up along the supply chain for reasons such as consumer return, marketing return, asset returns, and etc.

Take-back agreement/clause/practice – obliges producer to take care of the products that reached or are near the expiry date or are simply unsold and leftover for environmentally safe treatment.

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Introduction

Stockholm International Water Institute (SIWI) in year 2012 reported that around 1 billion people were suffering from hunger and malnourishment. This number is steadily growing, although food production has been rising per capita (Jägerskog & Jønch Clausen, 2012; World Economic Forum, 2009). Global population is forecasted to increase by another 2 billion of people by 2050, meaning more famine-stricken and greater resource scarcity (Sundström et al., 2014; Jägerskog & Jønch Clausen, 2012). Paradoxically, the level of food waste is positively correlated with the level of harvest yields and food production. Increased food waste results in more food produced, hence utilization of more resources (Buzby & Hyman, 2012; Jägerskog & Jønch Clausen, 2012; Ingram, 2011). This implies that boosting the production is not the only and smartest course in achieving food security.

Developed countries as compared to developing countries have abundance of food but they are also the biggest contributors to the food waste (Buzby & Hyman, 2012). While in developing countries the majority food loss and waste occurs on the post-harvesting stage (before food processing, packaging and markets) due to the poor storage, transport infrastructure, etc., in the developed world it is industries, retailers and consumers who are responsible for the largest share of wasted food (Buzby & Hyman, 2012; Jägerskog, 2012). Food wasting is thus not only economic, social and environmental, but also an ethical problem (Mena, 2011). Developed part of the world has an ethical obligation to cut its waste in later stages of supply chains, so the world wide demand for food does not inflate and the food can be allocated to less developed countries (Priefer et al., 2013).

Current situation with escalating population, changing diets in developing countries (e.g. more diversified diets), environmental degradation, global warming and finiteness of resources puts bigger pressure on food producing companies and their supply chains (Schrettle et al., 2014). They are faced with challenges of efficiency and effectiveness, especially in development of adapted supply chain structures that help to address the problem of food waste generation and management (Ingram, 2011).

One example of adapting the supply chain is creation of reverse supply chain (RSC), which involves taking back the products approaching the end of their life cycle or shelf life and arrange for their recycling or reuse (Atasu et al., 2009; Scarlett, 1999). Yet, this practice has proved to have contradicting implications in terms of its sustainability in particular contexts (Priefer et al., 2013; Buzby & Hyman, 2012; VCMC, 2012; DEFRA, 2007). Thus, there is a need to enrich the empirical knowledge by exploring the implications of this particular activity to shed the light on the sustainability concerns and/or fixtures it poses for a supply chain.

1.1 Problem background

Food waste consumes resources, money, and time; it also negatively influences the environment (Eriksson, 2013; Bakas & Herczeg, 2010). It not only causes environmental problems, but it also leads to monetary losses for the supply chain participants and for the whole economy of a country. In fact, the further in the supply chain the bigger amount of waste is accumulated and the greater amount of money is squandered (Priefer et al., 2013). All this requires paying closer attention to the ways in which food wastage can be avoided at every stage of the supply chains.

Generally, there are two main ways of addressing food waste: first is to tune product flow to avoid over-production hence food waste, and second – if the food waste has occurred anyway – to handle it in a beneficial manner (Strid et al., 2013). Most biogenic waste (food waste) is usually discarded to landfills, which produces hazardous greenhouse gases - methane and carbon dioxide (Ji et al., 2014; Mena et al., 2011; Monier et al., 2010). In the light of these environmental concerns food-producing companies are compelled to revisit their supply chain strategies and current food waste management practices to address the negative effects of land-filling (Jensen et al., 2013; Strid et al., 2013; VCMC, 2012).

In the past sending the returned products to landfills mainly solved the problem of unsold/expired products, but the subsequently introduced regulations and tax raises on waste have changed this tendency (Rogers & Tibben-Lembke, 2001). The principal target of these environmental regulations was diminishing landfill space, preventing pollution, and shifting the responsibility from consumers to manufacturers (Rainey, 2006). Thus, they ushered the increasing importance of product's end-of-life disposal (Rogers et al., 2010). Together with regulations and global environmental concerns, firms have been exposed to lots of other external and internal pressures. Consumer demand for more environmentally responsible practices, struggle to achieve economic value, company's strategic and ethical endeavors, market power of other supply chain actors, etc. are among the drivers that have encouraged firms to consider sustainability issues in their supply chains (Schrettle et al., 2014; Jensen et al., 2013; Hasani et al., 2012; Rainey, 2006). These pressures are usually closely interrelated and often have conflicting nature, which poses dilemmas about introducing certain supply chain practices and assuring their sustainability (Presley et al., 2007).

Broadly defined, sustainability builds on three major constituents – environment, society and economic performance, which are closely interrelated and together form a triple bottom line (Elkington, 1994). This notion suggests that a firm embarking on a sustainability track is ideally able to operate in a way that positively impacts society and environment, and simultaneously achieve long-term economic benefits (Carter & Rogers, 2008; Hart & Milstein, 2003). One of the ways to bring sustainability to supply chain is to reconsider the chain´s linear process and implement the cradle-to-cradle rather than cradle-to-grave philosophy. This philosophy presupposes forming a reverse supply chain that can be not only sustainable but also value-creating (Jensen et al., 2013; Lehr et al., 2013; Halldorsson et al., 2009). The concept is also known as extended producer responsibility (EPR), which aims to internalize the externalities of the supply chain through designing the reversed supply chain (Ji et al., 2014; Lifset, 1993).

The concept of reversed supply chain has been initiated to address various environmental, social and even economical issues by mandating take-back practice that requires producers/suppliers to arrange recycling or reuse of the products that are discarded or unsold

(Atasu et al., 2009; Scarlett, 1999). A company is free to choose how to design its reverse supply chain, which might determine its performance. Initially, the four major motivations for "extending" supplier responsibility were aimed at facilitating and improving recycling and recovery, influencing decisions on product design, creating new capabilities and achieving financial benefits (Lifset, 1993). Later the concept was developed to differentiate between different ways of achieving financial and environmental benefits through recreating value of returned products, i.e. using reverse supply chain designs as a source for improving the overall supply chain sustainability (Ji et al., 2014).

Some suppliers of perishable products are especially concerned about creating more agile supply chains, i.e. more flexible, responsive and faster supply chains, that help to utilize emerging market opportunities, minimize waste, facilitate sustainable management of unsold/expired products, minimize the economical and environmental costs and enhance the overall sustainable performance of the supply chain (Kaipia et al., 2013; Hasani et al., 2012; VCMC, 2012; Gustavsson & Stage, 2011). The introduction of reverse logistics is described as one of the ways to help managing food surpluses that are becoming waste in more sustainable ways (Jensen et al., 2013; VCMC, 2012). At the disposal phase, reverse supply chain structure in this case needs to involve the combination of comprehensive take-back networks and environmental strategies for reusing, remanufacturing and recycling the returned products (Hasani et al., 2012).

However, some researchers mention that reverse supply chains do not always bring sustainability to the whole supply chain, particularly, in the context of food industries and the retailer-supplier interface, when take-back agreement is used as contractual penalty of retailers enjoying dominant market power (Monier et al., 2010; Parfitt et al., 2010; DEFRA, 2007). The producing company is in this case forced to perform the reverse logistics and might struggle with finding proper disposal channels (Rogers et al., 2010; DEFRA, 2007). Hence, returned products, instead of being properly reused and recycled, might end up in landfills (Stock & Mulki, 2009; Rogers & Tibben-Lembke, 2001).

Moreover, studies from the food waste management sector such "Report of the Food Industry Sustainability Strategy Champions ' Group on Waste" (DEFRA, 2007) and "Cut Waste , GROW PROFIT ™" (2012) also argue that existing take-back provisions in contracts between retailers and suppliers might be translated into power abuse on the part of retailers. Product availability and variety is an important factor for retailers, so they are constantly trying to keep shelves well stocked, which often results in over-ordering (Strid et al., 2013; VCMC, 2012). Consequently take-back agreement can be considered as an additional incentive for the retailers to neglect proper demand forecasting, and stock the shelves with unnecessarily large product quantities, as they are often not responsible for managing the waste. That is why a good few studies focused on food waste see this agreement as the source of inadequate ordering and consequent over-production, hence financial losses for the producing companies and negative environmental consequences (Priefer et al., 2013; Buzby & Hyman, 2012; VCMC, 2012; Monier et al., 2010; Parfitt et al., 2010; DEFRA, 2007). All this raises concerns about the sustainability implications of take-back networks in particular contexts.

1.2 Problem

Studies have shown that perishable food such as fresh bakery, fruits and vegetables contribute the most to the avoidable food waste (Kaipia et al., 2013; Gustavsson & Stage, 2011). On contrast to fresh fruits and vegetables, the logistics of bread in Sweden includes reverse supply chain with take-back practice. The biggest bread-producers supplying bakery products to retail stores in Sweden have a take-back agreement. According to this agreement bread suppliers take back all the bread that is approaching its best-before date and then dispose of it.

Bread – belongs to the group of perishable products with a short shelf life. Both customer order lead-time and supply chain lead-time allowance are very short for this type of product. Moreover, supply chain for such products is often characterized by demand uncertainty, due to fast-changing customer preferences and customer demand for product variability (Kaipia et al., 2013).

Shelf life, stock management, demand responsiveness and unsustainable management practices are considered to be the most frequent problems that lead to negative externalities in food supply chains (Kaipia et al., 2013). Highly variable demand and short shelf life of bread makes it harder to avoid the waste occurrence. Despite certain measures taken by producers in order to minimize waste, a particular amount of waste is unavoidable (Jensen et al., 2013). The supply chain actors' main task in this case is to design sustainable supply chains that will serve the nature of products, prevent avoidable waste occurrences and ensure appropriate waste management (Kaipia et al., 2013). Managing the waste at the distribution stage rests with either supplier or retailer (Rogers & Tibben-Lembke, 2001).

Discarding the bread that has passed its best before date may be money-draining since it involves activities such as storing, transporting the waste, renting containers and paying fees for discarding waste (Jensen, 2013; Kaipia et al., 2013; Gustavsson & Stage, 2011). Moreover, landfilling and incineration – the two most common ways of managing this type of waste – brings undesirable environmental consequences (Buzby & Hyman, 2012).

Given the above mentioned problems and conflicting research findings about the reverse supply chains it is unclear what implications the reverse logistics networks of bread have on waste generation and management in supplier-retailer interface in Sweden, and how the take-back practice impacts overall sustainability of the supply chain in question. Exploring this particular supply chain practice in a type of food that has biggest waste statistics is an effective way to address the food waste problem (Buzby & Hyman, 2012).

Previous research presents incongruous findings with regards to potential sustainability concerns of the reverse logistics and is insufficient to suggest a proper description of take-back practices of perishable food products in the supplier-retailer interface. Until recently most of the studies have largely focused on the food production element. The research exploring the stage of distribution and disposal, especially in supplier-retailer interaction, is very limited (Eriksson, 2013; Buzby & Hyman, 2012; Eriksson et al., 2012; Ingram, 2011; Lagerberg Fogelberg et al., 2011; Mena et al., 2011; DEFRA, 2007). Yet, supplier-retailer interface opens many opportunities to substantially minimize food waste. Studies have shown that the retailer-supplier interface has a high potential in reducing or eliminating food waste due to the big quantities of waste and costs of handling it in this stage (Jensen et al., 2013; Kaipia et al., 2013; Gustavsson & Stage, 2011). How the food is managed at this interface is particularly important for the overall sustainability of the supply chain, as it has already

passed all the value adding stages, have used the valuable resources, and have caused a certain environmental impact. So, examining one of the practices in this interface might provide relevant insights to the problem of food waste in general.

The majority of existing research on supply chains emphasizes the importance of maximizing efficiency in the forward supply chain. Less attention has been paid to joint ability of forward and reverse supply chains to recapture and maximize value and reduce waste (Jensen et al.,2013; Defee et al., 2009). Moreover, most articles on reverse supply chain are dedicated to studying the reverse flow from consumers to suppliers, but few focus on supplier and retailer take-back logistics (Rogers & Tibben-Lembke, 2001). Also, the research on supply chain sustainability, and reverse supply chains in particular, until now have mostly focused on technological and automobile industries (Lehr et al., 2013; Demirbas, 2011; Atasu & Sarvary, 2009; Locklear, 2000; Lifset, 1993). Hardly any research studied similar process in the context of perishable food products and bread in particular (Eriksson, 2012; Fogelberg et al., 2011; Gustavsson & Stage, 2011).

A particular practice might significantly affect all the other elements in the supply chain and may encourage better understanding of other root causes of food waste, as well as promote sustainable food waste management (Ingram, 2011). Buzby and Hyman (2012) highlighted that even a modest yet feasible initiative/fixture can ameliorate environmental, social and economical burdens. Reverse logistics with take-back clause is an example of a practice that can significantly affect all other elements of the supply chain, so studying this practice within particular context may shed light on the sustainability concerns and/or fixtures in a given supply chain (Priefer et al., 2013; Buzby & Hyman, 2012; VCMC, 2012; Monier et al., 2010; Parfitt et al., 2010; DEFRA, 2007).

1.3 Aim

The aim of this study is to explore the tack-back practice between Swedish bread suppliers and retailers. And more specifically, how this particular agreement and possible power asymmetries between suppliers and retailers may impact the overall sustainability of the supply chain. The goal is to answer the following questions:

1. How is take-back practice carried out in the Swedish bread industry?
2. What are the power-relations behind the take-back agreement between bread suppliers and retailers in Sweden?
3. What implications does this take-back agreement and power-relations have in terms of bread supply chain's sustainability?

1.4. Delimitations

The study is limited to exploring the take-back clause in supplier-retailer interrelation. Even though the study acknowledges the importance of other stages in supply chain and its other actors, they are not included in this study, since they are not taking active part in the studied process, i.e. take-back practice.

The project is also geographically limited to Sweden, as the tack-back practice is well established in the country. Apart from that, there is a better possibility to contact the

companies and access the necessary empirical data since the researcher is based in Sweden and is familiar with the culture and language.

There are also some delimitations connected to the research approach. Current research uses the qualitative approach, where data from interviews is self-reported and thus is limited in terms of independent verification and can contain potential sources of bias. To address this problem, the study used appropriate sample of participants that is big and varied enough to compensate for the possible lack of congruence. Moreover, secondary data sources were used to verify to the most possible extent that the data obtained during the interviews is bias-free.

The paper explores the implications of take-back clause only in Swedish bread industry and involves studying the take-back clause between three major bread suppliers and nine representatives of major retailer chains in Sweden. The choice of companies and their representatives has been dependent on the willingness of the latter to participate in the study and by the timeframe of the project. The study focus dictated the choice of bread suppliers that have take-back agreement with retailers. Other bread suppliers represent an insignificant market share, do not have the take-back agreement and thus are believed to have limited ability to contribute with relevant insights to the study of take-back agreement. Moreover, only nine retailers from all chains have participated in the study, which also brought some limitations. The way the choice of participants have contributed to compensating for the limitations will be discussed in greater detail in Methodology section.

Another source of limitation in this study is the access to statistical data on waste levels. The sensitivity of the subject made it hard to get hold of waste statistics and existing contracts in order to compare waste generation among participants and track any sign of market power exercise, as neither bread suppliers nor retailers were willing to disclose waste-related data or contractual terms. Yet, the general statistics on waste rates and sales is still used and believed to be sufficient to help drawing certain conclusions about the studied topic.

2 Literature review and theoretical perspective

This chapter includes a literature review that provides a wider picture on the problem of food waste as an externality of unsustainable supply chain practices, the development of reverse supply chains and the possible implications of retailer power abuse in the context of reverse supply chains. It is followed by the description of theories used to analyze the findings and answer research questions.

2.1 Literature review

Literature review provides a general overview of a body of research, helps to determine where there are problems or contradictions in the existing research and place the research on a certain topic within a larger context (Knopf, 2006). Literature review is presented here to provide a wider portrayal of unsustainable supply chain practices that cause food waste, problems associated with waste management, as well as to clarify the concepts of take-back and reverse supply chain (RSC), i.e. closed loop supply chain (CLSC). It also helps to determine the contradictions of the existing research on the reverse logistics by providing some insights into how retailer market power can impact the sustainability of such supply chain design.

2.1.1 Food waste – an externality of unsustainable supply chains

Food waste is one of the externalities of unsustainable supply chain practices (Buzby & Hyman, 2012; Ingram, 2011). There are various definitions that can be found in the research on food waste. Bloom (2010 cited in Buzby & Hyman, 2012 p. 561), for instance, defines food waste as a subset of food loss which "...occurs when an edible item goes unconsumed as a result of human action or inaction and is often the result of a decision made from-farm-to-fork by businesses, governments, and individual consumers". Priefer et al. (2013, p. 2), in turn, suggest that “food that was originally intended for human consumption, but is removed from the supply chain, is considered as food waste, even if it is brought to a non-food use”. Yet, this study is concerned with exploring if the bread suppliers can manage the returns to divert them from landfills and if the take-back clause leads to increase of unsold bread that can be avoided, so another definition of Priefer et al. (2013) i.e. the definition of avoidable food waste, would best serve the purposes of the study. The authors define avoidable food waste as “[…] products that are still fit for human consumption at the time of being discarded or products that would have been edible if they had been eaten in time” (Ibid.).

Very often the occurrences of food waste are caused by supply chain inefficiencies. The tendency of supply chain actors to act in isolation, ignoring cooperation with other actors, poor communication, high fluctuations along value chain result in over-ordering and over-production, which leads to growing amount of avoidable food waste (Kaipia et al., 2013; VCMC, 2012). The global food loss and waste in supply chains is estimated to be one third of all food produced, and wasted food amounts to 1.3 billions tons per year (Priefer, et al., 2013). This number is forecasted to increase by 40% by 2020 if no measures or actions are taken (Ibid.).

One of the causes of food waste in developed countries is the tendency to satisfy the consumers’ whimsies and adjust the production accordingly. Customers become more and more picky and prefer to choose from a wide variety of products and from fully stocked

displays. So, even though the stores would not want to order more than they can sell from the supplier/manufacturer, they are more afraid of losing customers due to half-empty shelves. (VCMC, 2012; Priefer et al., 2013; Strid et al., 2013). Thus, a retailer is most often left with a certain amount of outdated food, which has to be disposed of. This food usually ends up in landfills, which has serious environmental effects, such as methane production by rotting organic matter and toxic gases that can negatively affect the air quality in a surrounding area (Skye, nd.).

Sweden is one of the countries that has implemented methods of managing food waste and has cut the landfilling significantly. Less than 2% of total municipal solid waste in the country goes to landfills, the rest is treated through incineration, material recycling, composting and digestion (Priefer et al., 2013). Yet, the amount of avoidable food waste is still very high. According to Swedish Environmental Protection Agency (2010) wholesale/retail sector in Sweden generates more than 110 250 tons of avoidable food waste a year (Fogelberg et al. 2011). It has also been calculated that if retailers and wholesalers could reduce their amount of food waste by 20%, they would have saved 121 millions of SEK (Fogelberg et al., 2011; Monier et al., 2010). All this points to the fact that in Sweden, as in any other country, there is an urge for a thorough analysis of food supply chains and development of food system adaptations in order to address food waste problem (Ingram, 2011).

2.1.2 Development of take-back practice

Given the urgency of the waste management within supply chains (SC), many countries have chosen to address the problem by imposing legislative obligations, which extend the suppliers responsibility for the product throughout the whole life cycle (Ji et al., 2014; Atasu, & Sarvary, 2009; Scarlett, 1999). These requirements have forced businesses to unveil the amount of waste they have been generating and to think of waste management methods (Rainey, 2006). In an attempt to decrease waste and improve waste management EU-member states and other countries like Japan and USA have introduced take-back regulations that require producer to handle the products at the end of their lifecycles in a sustainable manner (Ji et al., 2014; Atasu, & Sarvary, 2009; Scarlett, 1999).

Therefore, it can be inferred that the move towards more sustainable value chains in Europe was partially stimulated by EU directive (Lehr et al., 2013). This directive in essence, impels producer to design for recyclability, or more specifically, as put by Scarlett (1999, p.4), "...[to] arrange for take back, recycle, or reuse (either directly, or indirectly by contracting with a third party) some of their products after they are discarded by consumers". One example of such legislative structure, or “take-back” obligation is WEEE (Waste Electric and Electronic Equipment) (Lehr et al., 2013; Rogers et al., 2010). Yet, all of the take-back obligations do not necessarily focus on after-consumption stage. Some of them oblige the producer to take care of the products that approach the expiry date, or are simply unsold and leftover, for environmentally safe treatment (Atasu et al. 2009).

Unsurprisingly, at its inception the obligation to arrange for take-back and recycling was seen by companies as nothing but an additional costly activity (Hanifan & Hoyle, 2011; Stock & Mulki, 2009). However, after a while some managers started to realize its potential benefits such as cost efficiency and added value (Rainey, 2006). Now more and more studies confirm that new form of SCs, that include taking care of products at the disposal stage, can create value through minimization of various risks, including environmental, social and cost-related risks (Ji et al., 2014; Jensen et al., 2013; Lehr et al., 2013; Hanifan & Hoyle, 2011; Halldórsson et al., 2009; Carter & Rogers, 2008; Scarlett, 1999). It is also argued that

business strategies that pursue economic fortune can benefit from implementing waste-reducing practices as one of the major elements of sustainable food SCs. This can be achieved by minimizing disposal costs, brushing up logistics and managerial activities. Moreover, the efforts to reduce food waste along the SCs can facilitate building positive associations with the brand (VCMC, 2012).

Gradually, extending producer responsibility for their products, i.e. implementation of take-back practices, has become an element of a more sustainable SC structures. One of the major focus in research on sustainable supply chain management (SSCM) is exploring the reverse and closed-loop supply chain designs (Jensen et al., 2013; Lehr et al., 2013; Hanifan & Hoyle, 2011; Halldórsson et al., 2009; Scarlett, 1999). The reverse supply chain (RSC) with its indispensable part – the take-back agreement – is a part of a broader concept: the closed-loop supply chain (CLSC) (Jensen et al., 2013; Halldórsson et al., 2009; Guide, 2003).

CLSC is the process embodying both forward and reverse SCs during which the products are returned to the point of origin to enter the primary chain or diverted to a secondary market for the purpose of recapturing value or proper disposal (Ibid.). It includes returns management, product acquisition, issues of remanufacturing and secondary markets, channel design and asset recovery. Asset recovery is argued to minimize costs and maximize profits of the company performing reverse logistics.

Reverse logistics or RSC is a process of moving products up along the SC for reasons such as consumer return, marketing return, asset returns, and etc. (Defee et al., 2009). As Rogers and Tibben – Lembke (1999, p. 130) define it, RSC is "…the process of planning, implementing and controlling the efficient, cost effective flow of raw materials, in-process inventory, finished goods, and related information from the point of consumption to the point of origin for the purpose of recapturing or creating value or proper disposal". Depending on the nature of a product, re-seller policies and contextual differences, the product in the CLSC might not necessarily get back to the point of origin. It can alternatively be used as an input for the other SC(s). So, subject to different contexts, the RSCs activities vary in complexity and design (Jensen et al., 2013; Guide et al., 2003). At manufacture level waste has a potential to be transformed into other productive inputs, while at the distribution level food surpluses can be managed through various form of productive recycling, such as donation, anaerobic digestion, composting, redistribution extra food to animal feed or by producing energy from biomass (VCMC, 2012).

To the contrast of organizations with traditional SC, closed-loop oriented organizations are not only concerned with issues of traditional SC, but also emphasize the strategic importance of RSC and its value (Defee et al., 2009). Asset recovery, diverting the products from landfills and value re-creation potential makes CLSC activities potentially profitable and overly beneficial for the supplier (Rogers et al., 2010).

2.1.3 RSC and retailer's market power

Powerful retailers imposing take-back clause as a contractual penalty

Taking the argument from the previous section further, it can be argued that the sustainability of the RSCs and product take-back systems depends on whether the strategies for product returns and corresponding SC designs are efficient enough (Rogers et al., 2010). Some literature maintains that take-back systems in supplier-retailer interface may be exposed to

retailers' market power abuse and have certain implications on each of the sustainability pillars through, for example, causing overproduction and waste (Buzby & Hyman, 2012; DEFRA, 2007).

Grocery retailers are increasingly playing a greater influencing and negotiating role, as they serve as an important and often the only link between consumers and producers (Tansey &Worsley, 1995). The structure of European food retailing market in particular raises big concerns, as their huge market shares and dominant position trigger the change in food market structures (Anders, 2008; Foffana & Jafrey, 2008). Large supermarkets are conquering the market share in the total retail sales, leaving smaller retailers overboard. These large retailers are turning into a powerful consolidated group of actors that play a significant role in changing the supply chain practices (Foffana & Jafrey, 2008).

Some studies mention that reverse logistics might be imposed to the company by powerful retailers (Parfitt et al., 2010; DEFRA, 2007). The supplier is bound to take back the stock that has reached a specific amount of residual shelf life (or had already passed it) and dispose of it (Ibid.). The common form of take-back and reverse logistics in the supplier-retailer interface is marketing returns (take-back clause). This is a practice when the products are sent back from a retailer to the supplier due to closeout, seasonal return or surplus and overruns (Rogers et al., 2010). Usually big retailers, which possess the majority of market share and are attractive to suppliers, exercise their bargaining power through imposing hardly negotiable rules (Radaev, 2013; Peitz & Shin, 2012). Take-back agreement might be one of such rules. Sending the unwanted product back to the supplier is the most desirable option for the retailer, as it can help save on the disposal costs. Moreover, such agreement typically specifies that manufacturer should provide a full return of money for the unsold products to the retailer (Rogers et al., 2010; DEFRA, 2007).

Consequently, a manufacturing company performing the reverse logistics operations (the take-back) is forced to deal with additional processes, such as transportation of the obsolete products back, remanufacturing (if required), finding proper disposal options or the appropriate secondary markets. And this is not always an easy nor an inexpensive task (Rogers et al., 2010; DEFRA, 2007). In some cases the disposal of the product should be carried out in a very short time, so that the remained value of the product, that can still be recovered, is put at use and is able to bring the company some profit. But many companies do not dedicate sufficient time for immediate reprocessing. Particularly when returned products are regarded as a costly failure, firms are likely to ignore them (Rogers & Tibben-Lembke, 2001). Hence, value constantly declines the more time a product is left unprocessed (Ibid.). The quantity of returned products might be quite large, and just a portion of their value can be recovered, if any at all (Stock & Mulki, 2009). Otherwise, the company will have to deal with processing returns with little recoverable value, which entails additional costs rather than profits (Rogers et al., 2010).

The reverse logistics for the supplier might be further complicated by the nature of the product, especially if the company wants to sell the returned products to the secondary markets. The pricing of the taken-back products are much more complex, depending on the characteristics of the product, its remaining value and quantities that are aimed to be sold to the secondary markets (Rogers & Tibben- Lembke, 2001). The manufacturer is the party who carries the full burden of responsibility and has to work out the most profitable ways of disposal. The way a company disposes of returned products can make a competitive difference, if it enables to reduce costs and raise revenues (Ibid) If such ways are not found,

the investments made (production, marketing, logistics) risk to fall behind the costs (Rogers & Tibben- Lembke, 2001; Rogers et al., 2010).

Take-back clause as source of overproduction in the context of retailer market power

Product availability and variety is an important factor for the retailer, and it represents a trade-off between potential increase of unsold products and decrease in customers' satisfaction (Strid et al., 2013, VCMC, 2012). In general, the stores do not want to order more than they can sell, but are simultaneously afraid of losing customers due to half-empty shelves. Usually retailers in such scenarios opt for securing customer satisfaction, which often results in over-ordering (a. a.). Thus, take-back arrangements may serve as additional incentive for the retailers to order an unnecessarily big supply of goods with little consideration for the actual demand, as they are not responsible for managing the waste. For that reason take-back agreement is seen by studies focused on food waste as the source of inadequate ordering, consequent over-production and waste accumulation (Buzby & Hyman, 2012; Parfitt et al., 2010; Monier et al., 2010; DEFRA, 2007). In this case, the manufacturer/supplier who has invested in production, packaging, marketing and distribution receives no revenue on it, and only adds to the already snowballed costs (Rogers et al., 2010; Rogers & Tibben- Lembke, 2001).

Considering the effects of over-ordering, it is of a paramount importance to mention that overproduction not only leads to economic costs for the producing company, but also involves utilizing the resources, and impacting the environment by certain production processes (Eriksson, 2013; Bakas & Herczeg, 2010). All the environmental costs are also unjustified if the produce would finally be left unconsumed and become waste (Priefer, 2013). In supplier-retailer interface, in the context of retailers' market power, the efficiency of take-back systems is not guaranteed (Parfitt et al., 2010; DEFRA, 2007). Finding secondary markets or other proper disposal channels for the products, especially those with short shelf life, might be troublesome (Priefer et al., 2013; Buzby & Hyman, 2012; VCMC, 2012; Monier et al., 2010; Parfitt et al., 2010; DEFRA, 2007). Sometimes, the taken-back products are impossible to dispose of at all because of the legal or other restrictions. For instance, in Denmark, the legislation forbids to sell food products that have reached the "*fresh until*" date, although these products are still not obsolete and are suitable for consumption (Jensen et al., 2013). Some firms might be afraid of damaging their brand images when selling their products on secondary markets. Thus, a significant amount of goods that can otherwise be consumed without any risk for health or disposed of beneficially through other channels may end up in the landfills (DEFRA, 2007).

Finding other channels for disposal, that do not presuppose at least some monetary compensation for the returned stock might not be even considered by the company, or can also be problematic to find (Stock & Mulki, 2009; Rogers & Tibben-Lembke, 2001). Arranging for proper recycling might involve further investments and changing many of the firm's processes, which might be overwhelming for it. For that reason companies might decide to save themselves from those troubles, and returned products will eventually be turned to landfills (Stock & Mulki, 2009; Rogers & Tibben-Lembke, 2001).

It might be inferred that so-called "*salvage supply chain*", i.e. RSC with take-back practices can bring benefits to the company and environment only if the latter has sufficient knowledge about the disposal ways and secondary markets. Implementing a reverse logistics may turn into environmental costs if the capabilities of the firm are inadequately weighed (Jack et al.,

2010). Returned products may yield some value but it is critical that companies are able to dispose of and handle them adequately without the costs for itself and for environment (Rogers & Tibben-Lembke, 2001, Stock & Mulki, 2009).

Bread, like most of the food, is very likely to end up being the biodegradable waste that is usually not fit for incineration – it has low heating values and thus is most often deposited to landfills (Priefer et al., 2013). This has serious environmental effects, as not all of the landfills have special equipment for collecting and utilizing methane emitted by biodegradable waste (*Ibid*.). Following these, it might be assumed that the lossmaking costs of managing waste or unjustified costs for overproduction, as well as inability to manage the waste appropriately will inevitably leave the society at disadvantage.

2.2 Theoretical framework

The theoretical framework for the analysis of the study has been developed drawing upon the existing literature on the RSCs in general and on take-back networks in supplier-retailer interface. This has been achieved using the guidance of Leedy and Ormond (2005), the analysis has been conducted through organization and categorization of relevant literature and identification of patterns, which helped to build the theoretical framework based on two major theories: retailers market power and sustainability of RSC.

The literature review has shown that the field of reverse logistics in the context of supplier-retailer interface and perishable products has not yet been examined sufficiently and the knowledge of the potential sustainability implications of such practices is lacking. Thus, the problem is considered to be rather novel and complex. Therefore, the study attempts to explore the tack-back practice between Swedish bread suppliers and retailers by investigating how this particular agreement and possible power asymmetries between suppliers and retailers may impact the overall sustainability of the supply chain. In order to fulfill the research aim, a theoretical framework consisting of two separate theories will be used. The theory of market power will be used to analyze the nature of power relations behind the take-back practice and the means, if any, of market power manifestation.

To further discuss the sustainability implications of the take-back agreement in the Swedish supplier-retailer interface, the concept of sustainable reverse supply chain will be used. The aspect of food waste as the externality of the unsustainable food SC is chosen as a focus, as it is assumed to incorporate in itself and account for all three constituents of sustainability. The economic aspect is reflected in the fact that decreasing the food waste would also mean preventing costs (both financial and environmental) of overproduction and waste management, and thus may significantly help a firm grow and generate profits. Environmental aspect is addressed as well, as managing the waste appropriately and decreasing its amount helps to minimize undesirable environmental consequences. Finally, the above-mentioned aspects, in turn, touch on a social aspect. Measures to reduce and manage waste can have a positive effect on life quality of the community as whole, and supply chain actors in particular, while preventing avoidable food waste is also a question of ethics and morality (Schrettle et al., 2014; Mena et al., 2011).

2.2.1 Market power

The literature review has revealed that sustainability of the RSC in the supplier-retailer interface can be subject to negative influence of certain power-relations. A theory that

provides the necessary conceptual tools to examine what power relations lie behind the take-back practice in bread retailer-supplier interface in Sweden and if these relations impact the sustainability of the SC is the theory of market power, as it incorporates both the description of market power sources and the means of its manifestation.

According to Brandow (1969, p. 2), "*a firm may be said to possess market power if a price, production, marketing, or purchasing decision it might practically make can directly and materially affect the incomes of the firms or persons or can appreciably change the average price, total quantity, or marketing or purchasing practices in a market in which it participates*". In other words, a firm with a substantial market power through influencing prices and other promotion activities may significantly alter partners' or rivals' sales and/or hurt their incomes. Brandow (1969) argues that market power will always exist, as the competition is rarely perfect, so it will only vary in its degree and scale. The degree of power a firm can possess varies greatly, depending on market conditions. One and the same firm can have varying market power in two different markets. Moreover, the power may appear to be short-term and long term, depending on the changing market environment and counter-efforts taken by the other players (Ibid).

Brandow (1969), Li et al. (2006), Fofana and Jaffry (2008) have identified quite a few sources of market power, which are decisive in the degree and scale of market power. Such sources include the size of the firm, its geographical expansion within inter-related local market(s), firm's diversification over products and new products introduction, structure and collaboration of buyers, elasticity of demand for the industry product, access to consumers, etc. The key sources of market power found in most of the relevant literature are summarized below.

Firm size. The larger the firm, its financial resources and market share in the related local markets, the more power it has in affecting and modifying the production, promotion and general market situation for the other actors of the same market. Such "weight" advantage of a firm helps it to better survive competitive battles and confidently adopt price setting without being opposed by weaker firms. Usually these are the firms operating in several interdependent local and regional markets (Brandow, 1969). Retail grocery chains, for example, have a big bargaining power as they are the dominant players for many commodities in many regional markets all over the world, and thus are in a position to exert a strong influence on suppliers (Li, et al., 2006).

Diversification over products. By diversifying, i.e. producing a number of products, a firm decreases its dependence on any one product, thus reducing the risk of loosing the profit if something in the supply chain of this product goes wrong. Rivals in each market usually recognize the importance of diversification, yet particular firms are often able to diversify only to a certain extent, as diversity usually comes at the expanse of efficiency. Many scholars consider that food chain retailers are usually very successful at managing the balance between efficiency and diversification, and that is why may engage in market struggles without affecting the main source of their incomes (Brandow, 1969).

Concentration. In the markets where only a small group of firms collectively own the largest proportion of the industry's market share, the power relations' context is modified. The firms are in this case strongly interdependent and not rarely decide to act as a conglomerate, adopting common pricing, marketing and other practices benefiting the whole group. If these firms are retailers, they might form an olygopsony, i.e. a concentration of only few large

buyers, and collaborate to create a single “front” (a wholesale buying group) to seller. As defined in Investopedia.com (2014), olygopsony is “a market in which there are only a few large buyers for a product or service,[which] allows the buyers to exert a great deal of control over the sellers,[…]dictate the price they pay to sellers and even to influence labor standards in the industry. The members of the olygopsony group would seek out only the best deals and terms of contract, and if such offers are not available – integrate into the supply industry by creating own brands (Brandow, 1969). Such olygopsony conditions are characteristic to European grocery retailers – the large retail chains in particular. Large buying power enables them to restrict the demand for goods at the upstream stage and erode perfectly competitive market conditions, usually by decreasing the suppliers gains or by boycotting some of suppliers at all and switching to new ones that provide a cheaper deal (Fofana & Jaffry, 2008).

Elasticity of demand for the industry's product. Highly inelastic demand for the industry’s product represents a great opportunity to exercise market power for the oligopsony group. The rival firms, forming the oligopsony in a particular industry are encouraged to follow their mutual interest, long-term considerations and most importantly, maintaining prices at high level, if the demand for the industry’s product is not elastic enough (Brandow, 1969). Highly inelastic demand in the industry where the product is also highly perishable creates an even greater imbalance of bargaining power and makes it easier for the oligopsony group to abuse their market power (Li, et al., 2006).

Access to consumers. Promotion is the main means of successful product differentiation and in some industries (e.g. food industry) it strongly depends on the resources and skills used to promote the product at places where the consumers shop. The shift from private label stores (home dairy delivery, local bakeries, butcher shops, etc.) to food retailers leads to the increasing market power of retailers that represent the best, and sometimes the only access channel to consumers 1(Walden, 1990, Brandow, 1969). Consumers incur transaction costs when travelling from one geographical area to the other. So a firm that is represented evenly around a certain market/region will have the advantage in the access to consumers. The spatial distribution and close proximity of grocery stores to living neighborhoods, for instance, gives them a quite significant incentive to exercise market power (Li, et al., 2006).

Analyzing the presence of market power sources described above, one can detect whether and to what extent a particular firm can affect prices, marketing, procurement and other market practices in the industry. Yet, the means through which market power is exercised are numerous and sometimes not readily apparent. Li, et al. (2006, p. 223), for instance, state "*the retailer oligopsony* [market] *power is difficult to investigate empirically, because prices paid by retailers to shippers or manufacturers are typically not revealed*". A grocery chain can show its power by undertaking the production of a private label product or by forcing manufacturers to engage in unfavorable exchange arrangements (Brandow, 1969). Sometimes, the market power is not even manifested in the greater profit objectives of the firm, but rather in bringing changes to supply chain, distribution channels and other actor’s services. The bottom line is that whether through affecting the pricing, promotion, supply chain structure or any other market-wide practices the firm possessing market power can materially affect other market participants (Brandow, 1969).

2.2.2 Sustainable RSC

The market power theory provides a guidance for analyzing the power relations between Swedish bread suppliers and retailers and the means, if any, of market power abuse. However, this theory alone is unable to offer a toolbox for examining the possible impact of the existing power relations and the take-back clause agreement on overall sustainability of the supply chain in question. So, to further analyze the findings on take-back logistics in a more holistic manner, the concept of sustainability's triple bottom line within the RSC will be used as a framework.

Sustainability promoting triple bottom line principle has become one of the fundamental principles of smart management (Rainey, 2006; Mark-Herbet, 2010). Shrivastava (1995, cited in Carter & Rogers 2008 p. 363) defines sustainability as "*the potential for reducing long-term risks associated with resource depletion, fluctuations in energy costs, product liabilities, and pollution and waste management*". Sustainable supply chain management is thus achieved through adaptation of company's business processes and practices with the aim to achieve social, environmental goals while improving long-term economic performance of the company and its supply chains (Carter & Rogers, 2008). Carter& Rogers (2008, p. 368) define sustainable supply chain management (SSCM) as follows: "SSCM [is] *the strategic, transparent integration and achievement of an organization's social, environmental, and economic goals in the systemic coordination of key inter-organizational business processes for improving the long-term economic performance of the individual company and its supply chains*".

Very often the pillars of the sustainability, especially in the context of SC management, are closely interrelated, and are difficult to analyze separately (Mark-Herbert, 2010; Rainey, 2006). So the potential opportunities behind triple bottom line principles are usually analyzed to assess if certain SC practices are able to improve a SC's sustainable value and decrease operational and environmental costs and impact (Ji et al., 2014).

As mentioned earlier, research exploring SSCM among other concepts focuses on the concept of RSC (Jensen et al., 2013; Lehr et al., 2013; Hanifan & Hoyle, 2011). The RSC is concerned with returning the products to recover their value (either fully or partially) (Rogers et al., 2010; Halldórsson et al., 2009; Guide, 2003). Efficient strategies for product returns and corresponding SC designs arguably enhance the firm's competitive advantage and improve the environmental and societal profile of the company (Lehr et al., 2013; Hanifann & Hoyle, 2011; Stock & Mulki, 2009).

RSC designs with take-back clause are described in many studies as one of the constituent components of sustainable supply chain (Halldórsson et al., 2009; Stock & Mulki, 2009; Carter & Rogers, 2008; Scarlett, 1999). Defee et al. (2009) argue that companies that recognize the potential advantages of RSCs implement the new intra-organizational strategy, presupposing integration of reverse and forward flows in the CLSC. Such SC designs have certain sustainable implications as they are designed to reduce waste by recovering the value of the taken-back products (Munksgaard & Arlbjørn, 2013; Stock & Mulki, 2009; Scarlett, 1999).

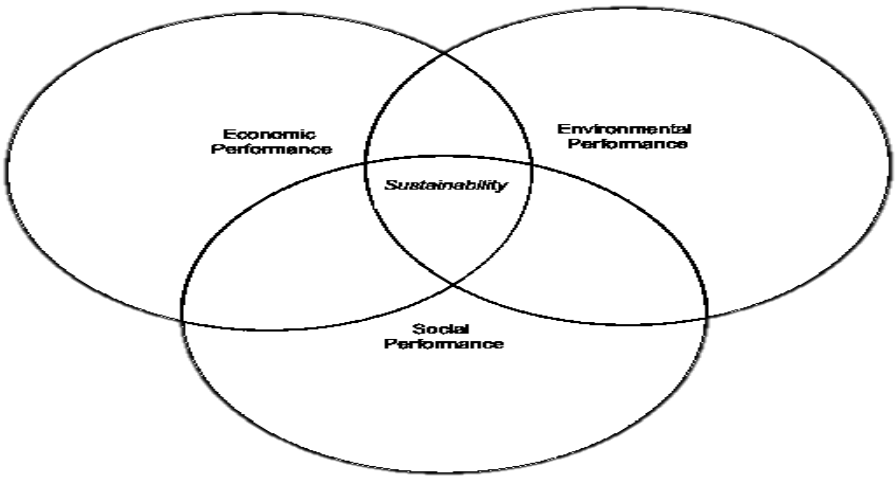

Figure 1: Illustration of the triple bottom line (with inspirations from Mark-Herbert, Rotter & Pakseresht, 2010).

The main characteristics of sustainable RSCs is that all SC actors are expected to enjoy the triple bottom line benefits - better economy, ecology and better social conditions (see figure 1) (Halldórsson et al., 2009). Each of these constituents of the sustainable RSC are discussed below.

1) Economic sustainability of RSC

First sustainability dimension – economic – in the context of the reverse logistics presupposes long-term success and competitiveness of a company, achieved through the efficient use of and direct benefits from recovery actions (Winter & Knemeyer, 2013; Presley et al., 2007). Economic dimension of the sustainable take-back practice is reflected in the ability of the company to use the reverse logistics to help cutting costs of environmentally undesirable disposal and maximizing profits by recovering the value of the returned products. Rogers et al. (2010, p. 139) defines this as "*asset recovery*", i.e. "*the classification and disposition of returned goods, surplus, obsolete, scrap, waste and excess material products, and other assets, that maximizes returns to the owner, while minimizing costs and liabilities associated with the dispositions*". The RSC activities are thus argued to be potentially profitable and overly beneficial for the supplier/manufacturer. It is also believed that these benefits can be spread across the whole SC, involving other actors and making the company even more effective at cutting costs and gaining a competitive position (Winter & Knemeyer, 2013; Defee et al., 2009; Hicks et al., 2004).

Strategies for reverse chain designs are eventually chosen based on the potential of economic value recovery of waste (Ji et al., 2014). According to Rogers et al. (2010, p.137), "*the decision to put additional effort into reclaiming the product depends on the cost of refurbishing versus the cost of throwing it away*". All the sustainability initiatives are considered with respect to economical aspects i.e. there is always a tradeoff between costs and benefits (Ji et al., 2014). The costs of disposing the products to landfills, both financial and environmental, should serve a good encouragement to arrange for asset recovery in RSCs (Rogers et al., 2010). Plus, getting extended use of an asset and avoiding it going to landfills is generally considered to be sustainable (Ji et al., 2014). The way a company disposes of

returned products can make a competitive difference, if it enables to reduce costs and raise revenues (*Ibid.)*. If it does, the reverse chain can be turned from the unpleasant obligation to a source of value, especially, if such practice is one of the firm's distinctive capabilities (Schrettle et al., 2014; Defee et al., 2009; Halldórsson et al., 2009; Lifset, 1993).

2) Environmental sustainability of RSC

The next sustainability facet – environmental – in SC management implies including mechanisms and networks that promote greater environmental responsibility (Winter & Knemeyer, 2013) Reverse logistics, from this perspective, should implement environmentally sound practices such as recycling, remanufacturing and reclamation. Presley et al. (2007, p.4607), maintains, "*the basic principle is that lengthening of a product's or material's life typically has environmental benefits*". In the context of this study the environmental dimension is mainly addressed by discussing the way RSCs and take-back agreements minimize the undesirable environmental consequences of landfilling by reusing and recycling the waste.

Production of a good requires a range of resource inputs including one of the scarcest – water (Jägerskog & Jønch Clausen, 2012). It does not matter whether the produce was consumed, lost or wasted; it has already utilized water, energy, land and emitted greenhouse gases (*Ibid.*). That is why a greater emphasis is put into creating agile supply chains that would facilitate waste reduction at all stages of supply chain, including the disposal of unsold food items.

Most of the unsold obsolete food ends up being the biodegradable waste that is usually not fit for incineration as it has low heating values and thus is most often deposited to landfills. This has serious environmental effects, as not all of the landfills have special equipment for collecting and utilizing methane emitted by biodegradable waste (Priefer et al., 2013). Thus, the implementation of more sustainable waste management techniques, such as recycling, reuse and other methods that prevent food waste from landfilling will contribute to improving environmental sustainability of supply chain. RSC diverts the unsold items from landfills through recycling or redistributing them to secondary markets. By doing so it reduces the product's ecological impact through reducing waste (Rogers, et al., 2010). This way, the take-back networks are able to generate cash and recover the economic and environmental value (to the most possible extent) through recovering the value of products that risk to end up in landfills. These networks are increasingly seen as very important part of companies' business activities (*Ibid*).

3) Social sustainability of RSC

According to Winter and Knemeyer (2013, p. 4607) "*the social dimension* [of sustainability] *is bipolar; it refers both to individuals and organizational levels*". When discussing the social dimension in reverse logistics it is argued that external population should see greater benefits, and not greater problems as a result of reverse logistics activities (Presley et al., 2007).

The social aspect in the frame of current research is chiefly addressed through integration of economic and ecological aspects. Getting extended use of an asset and avoiding it going to landfills is generally considered to be socially responsible, as comprehensive RSC projects help to prevent undesirable environmental consequences, positively impact the company's margins, and thus provide benefits to all actors in the SC (Rogers et al., 2010; Stock & Mulki, 2009). Measures to reduce and manage waste can have a positive effect on life quality of the

community as whole, while preventing avoidable food waste in particular is also a question of ethics and morality (Schrettle et al., 2014; Mena et al., 2011).

It is argued that RSCs, where sound disposal decisions are taken, can positively impact sustainability by facilitating profit generation and can benefit the firm and its customers (Rogers et al., 2010). Food waste cutting activities also cut overall production costs, which will further reduce the price for the consumers, add value to the product, and positively affect all the other actors along the SC. Less wasted food implies smaller costs of handling it, thus, benefitting public administration agencies that could allocate this money for other society needs (VCMC, 2012). It has also been calculated that if retailers and wholesalers could reduce their amount of food waste by 20 %, they would have saved 121 millions of SEK (Fogelberg et al. 2011; Monier et al., 2010). Such savings would positively impact economy, which would mean increased benefits for the society as a whole. Contrastingly, dealing with processing returns in a way that makes the firm incur additional costs rather than profits means that the final consumer of a the firm's product will pay more and the society will enjoy less benefits (Rogers et al., 2010; Stock & Mulki, 2009).

Moreover, a firm successfully implementing a reverse logistics into its strategy might encourage competitors to follow the same trend and make the whole industry more sustainable (Schrettle et al., 2014; Mark-Herbert et al., 2010). It is argued that decreasing the amount of avoidable waste is possible when SC actors act in cooperation, which leads to better communication, better ordering and tuned production (Kaipia et al. 2013; VCMC, 2012). Thus, a successful attempt in decreasing waste in the RSC will mean better relationships between SC actors, which will enhance the social dimension on organizational level.

Some researchers, such as Stock and Mulki (2009) see the take-back agreement between suppliers/manufactures and retailers as a source for enhancing the loyalty between retailer and supplier. Business processes such as procurement, manufacturing, and distribution generate value for a particular customers or market. RSC is one of such processes, which can potentially lead to sustainable improvements, as it facilitates the move of the supplier-retailer relationship from a more transaction-oriented towards more collaboration-oriented and creates good conditions for value-sharing (Jensen et al., 2013). A better value-sharing relationship between SC actors is also socially beneficial and may lead to lower prices for the consumer.

3 Method

This chapter describes the research approach, as well as the methods chosen for empirical data collection and analysis. It also includes the discussion of the study's trustworthiness and validity.

3.1 Research approach

The relative novelty of the problem and the exploratory approach of a desired research contribution suggested the choice of inductive approach with a qualitative method (Nyström 1998, cited in Mark-Herbert, 2002). The main difference between qualitative and quantitative approaches lies in the objectives and emphasis of the research (Ghauri & Gronhaug, 2005). The objective of a quantitative study is to measure and/ or conduct statistical analysis for generalization, while qualitative research does not employ measurement as its main objective and rather focuses on meanings and phenomena in a specific context (Bryman and Bell, 2007, p. 153). This research is purely qualitative in a sense that it does not involve any quantification such as measuring waste, emissions, economic losses etc. The main objective of this study is not to measure the effects of take-back practice, but rather to explore if any such effects exist and how they are affecting supply chain sustainability. For that reason the qualitative approach was chosen to be most appropriate, as the study deals with exploring specific phenomenon of take-back clause through scrutinizing existing relevant literature followed by empirical examination using the data from interviews.

3.2 Literature Review

In order to get a broader insight into the subject, derive necessary theories and analyze chosen cases vast and continual search on academic articles have been undertaken. First of all, key words have been formulated to arrive at relevant articles. Some examples of those are: take-back clause/practice, marketing returns, reverse supply chains, close loop supply chains, retailer – supplier relationship, sustainable supply chains, sustainability, food waste, retailer market power etc. These key words were combined, reformulated and replaced by other possible synonyms along the study period to get access to additional relevant literature. This was done in order to locate the concept of take-back in the literature on SCs in general and, specifically, food SC. Moreover, several thesis papers (Eriksson, 2012; Locklear, 2000) and research reports (Gustavsson, et al., 2013) were selected to get both detailed and broad overview on the topic.

The articles recommended by supervisors were the starting point and a yardstick when conducting search for the relevant literature. Further search for literature was conducted using the Google scholar and Uppsala and Stockholm university libraries, which led to databases such as Business Source Premier, EconLit, Scopus and Emerald. In addition other databases such as ScienceDirect, Elsevier, SpringerLink and Sage Premier have also been inspected to ensure that other relevant articles were not omitted. The screening revealed the relevant articles, which were reviewed and included into the research. Thereafter the reference lists of the selected articles were scanned for additional articles that could be relevant for the topic. The process of searching for relevant articles was continuous and lasted until the completion of the study (January 2015); so that newly published articles could be added.

3.3 Empirical study

The empirical part of the study was built on semi-structured interviews with retailers, bread suppliers, and the documentation they provide, and has been structured as a flexible exploratory case study of the take-back phenomenon in the Swedish bread industry.

3.3.1 Case Study

According to Robson (2011), flexible study designs appropriate for exploratory work, may involve case study, grounded theory studies, or ethnographic studies, and are reflecting the complexities of real life. Applying a case study method enables to explore, describe and explain a phenomenon and helps to understand its patterns in a real-life context (Kaipia et al., 2013). The unit of analysis in this study is a context bound phenomenon – take-back clause in bread suppliers and retailers interface in Sweden.

As put by Yin (2009) "…*case study is a strategy for doing research which involves an empirical investigation of particular contemporary phenomenon within its real life context using multiple source of evidence*" (Yin 2009, cited in Robson 2011 p. 136). It also allows to fulfill different needs including the need to satisfy the researcher´s interest and get a deeper insight into the phenomena that is hidden from the outside observer (Jensen et al., 2013). This study was conducted to explore the phenomenon of reverse logistics and get a deeper insight into its sustainability implications in a specific context, so case study approach suited this purpose best. The difficulties related to case study approach are connected to the need to collect sufficient information to portray particular features of the studied phenomenon and to identify the characteristics that are common for several cases (Ghauri & Gronhaug, 2005). Studying the phenomenon within the context of not one, but all three bread suppliers where it exists, helps to surpass these difficulties.

3.3.2 Interviews

The semi-structured interviews with bread suppliers' representatives lasted from 30 to 60 minutes and with retailers from 15 to 30 minutes. Bryman and Bell (2007, p. 474) point out that, "…*semi-structured interviews attempt to explore the interviewees' view on a particular phenomenon, identify what they see as more important, as well as allow to make general conclusions*". These characteristics and the fact that semi-structured interviews are adaptable made them the best-suited method for data collection for the purposes of this study.

The interviews were conducted face-to-face, as it allows investigating the issues of interest through observing non-verbal cues and getting a highly illuminating material (Robson, 2011). Those participants who requested the questions to be sent in advance (Interviewees A, B, 8, & 9) received e-mails with approximate topics of the coming interviews. Others were only shortly briefed on the topic of thesis and its main research questions when they were asked about the possibility to conduct an interview.

The interviewees were selected based on their knowledge about take-back clause in particular and reverse SC as whole. At the retail stores the people who are supposed to have the greatest knowledge about take-back practice, i.e. either the person responsible for bread section or the store manger took part in the study. All interviewees from bread suppliers were either companies' executive officers or the region's senior managers. Interviewees for the interview sessions with bread suppliers, were appointed by the companies themselves after the purpose

of the study have been explained to them. All appointed interviewees held senior positions at the companies for a considerably long period to be very well aware of all the processes in the company, including the peculiarities of reverse logistics and take-back practice.

3.3.3 Interview questions

The interview questions were designed based on the literature review and theoretical framework and represented a checklist of areas to be covered. In order to answer the first research question and get a better understanding of reverse supply networks in the Swedish bread industry, all participants were asked a set of questions about the overall design of take-back logistics. These questions were supposed to provide insights on issues related to other research questions as well. The rest of the questions were split into areas covering power-relation issues and sustainability impacts (see Appendices 2 & 3). Questions aimed at discovering sustainability implications were constructed to address the issues related to each of the sustainability pillars (economic, environmental and social) of the bread RSC.

As the interviews were semi-structured, questions were open-ended represented a guidance for the areas to be covered during the interview, rather then the fixed questionnaires. The wording of questions was adjusted during the actual interviews and additional clarifying questions were asked when considered necessary.

3.4 Choice of country, sector and participants

This paper studies the take-back clause practice in bread industry. As the study was concerned with exploration of the possible instances of market power and their consequences, it was necessary to obtain the opinions of both suppliers and retailers on the phenomenon of take-back. Identifying what aspects of the reverse logistics they see as important will help to generalize the conclusions on the overall sustainability of the practice in question. The parties participating in the case study are the major brands and corporate groups in the Swedish retail market as well as three main suppliers of soft/fresh bread (see table 1 & figure 2).

3.4.1 Suppliers

The paper explores the implications of take-back clause only in Swedish bread industry mainly due to geographic convenience and the existence of the phenomena (take-back clause). Studies have shown that perishable food such as fresh bakery, fruits and vegetables contribute the most to the avoidable food waste (Kaipia et al., 2013; Gustavsson & Stage, 2011). On contrast to fresh fruits and vegetables, the logistics of bread in Sweden includes reverse supply chain with take-back practice. Therefore the bread industry has been selected.

The study involves three biggest bread suppliers in Sweden (**Pågen, Fazer & Polarbröd**), as they are the only companies that have reverse logistics and take-back agreements with their partners (see figure 2). Pågen, Fazer and Polarbröd together constitute 85% of Swedish bread market, holding 40-45%, 20- 30% and 14.5% of market share respectively (Interviewee A, 2014; Comapny C´s Sustainability Report, 2012). All the three companies agreed to give interviews, so the data obtained helps to generalize some conclusions within the industry as well as the whole country.

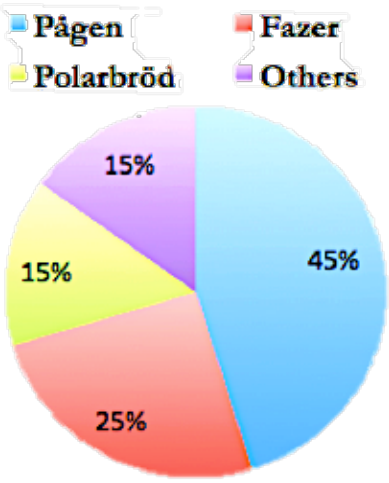

Figure 2: Bread suppliers in Sweden (%=market share) [own creation]

3.4.2 Retailers

Since the aim of the paper is to investigate the reverse logistics in the interrelation between suppliers and retailers, nine stores representing all major retail chains and corporate ownerships in Sweden were contacted. These are Axfood (*Willys, Hemköp and Tempo*), ICA (*ICA Kvantum*), Coop (*Coop Konsum*), Bergendahls (*Matdax and Mattöppet*) and others (*German Lidl and Danish Netto*) (see table 1). This list of retailers was selected based on list of all major brands and corporate ownerships in Swedish retail market presented by Eriksson (2012, p.16, see appendix 1). The intention was to interview a representative of every retail chains presented in the list. In total nine retailers representing each retail chain from all corporate ownerships were selected to participate in the study.

Table 1: Major retail chains and corporate& corporate ownerships in Sweden (adopted from Eriksson, 2012, p.16)

Corporate group that retail chains belong to	Market Share	Major Retail Chains
ICA	50%	ICA Nära; ICA Supermarket; ICA Kvantum; ICA MAXI
Coop	21%	Coop Nära; Coop Forum; Coop Extra; Coop Konsum
Axfood	16%	Willys; Hemköp
Bergendahls	8%	Matdax; Matöppet
Others	5%	Lidl; Netto

The retail stores were initially contacted by phone, email or through short visits. During these contacts initial information on take-back provision has been collected. Stores were asked if they had take-back agreement with any suppliers and if they are willing to tell more about it

in a short interview. It has then become clear that most of the retail stores have take-back agreement with above mentioned bread suppliers (see figure 2). After repetitive random calls to retail stores across Stockholm, nine retailer have agreed to participate in the study. Although the retail stores participating in the study were all located in the city of Stockholm, they varied in size, location and turnover to bring an alternative view on the take-back networks. The sampling was done based on geographical convenience and was purposive, so that it satisfies the specific needs of this research - having a representative from each major retailer chains and making sure the stores vary in size and location. The stores were also selected on basis of their willingness and readiness to participate and share companies´ data. This, however, was a satisfying outcome concerning the sensitivity of the subject, i.e. the unwillingness of store managers to discuss the issue of food waste in their stores.

3.5 Data collection and analysis

One of the potential drawbacks of qualitative studies is the accumulation and collection of irrelevant data when a research question is poorly understood (Ghauri & Gronhaug, 2005). The research question of this study is concerned with power-relations between retailers and bread suppliers and consequent sustainability implications of take-back practice, which might be quite broad. To avoid collection of irrelevant data, delimitations for which aspects will be the focus of the study were made in chapter 2.2 of the theoretical framework. Both the collection and analysis of the data is limited to the discussion of issues put forward in the theoretical framework and in the aim description.

To facilitate the analysis of a quite large set of qualitative data from the interviews, thematic coding approach was used. Robson (2011) defines coding as "… *identifying and recording one or more passages of the text or other data items* [… that] *exemplify the same theoretical or descriptive idea"* (p.474). After carefully reviewing the data, particular codes that represent potential interest were determined based on key themes identified in literature review and theoretical framework. These themes were used as a basis for further analysis and interpretation (Robson, 2011). All the interpretations of obtained data were continually justified on step-by-step basis.

3.6 Trustworthiness and validity

The validity of the study was assured by accuracy and completeness of the data. The interviews were audiotaped which allowed focusing more on the interview process and provided permanent record of the data. Then audio materials were transcribed to assist in subsequent analysis (Robson, 2011). In order to guard the research from bias the interpretations of respondents´ answers were sent back to them for validation. Moreover, all the recorded information and raw materials have been saved to insure that no necessary information is omitted.

All the interviewees were informed about the purpose of the research and participation in the study was voluntary. Ethical issues were negotiated and certain confidentiality nuances like non-disclosure of names and sensitive data were agreed to ensure credibility. For instance, some of the bread suppliers and retailers have preferred to stay anonymous and for avoiding any accidental disclosures it was decided to make all the participants anonymous. Bread supplier names have been replaced with letters whereas retailers' – with numbers.

In order to further enhance validity and rigor of the research, data triangulation was used through backing up the interview data with companies' environmental/sustainability reports. Moreover, the triangulation effect was also strengthened through collecting data from both suppliers and retailers. Besides, by including all bread suppliers that have reverse SC in the research this study strengthened the internal generalizability i.e. generalizability of conclusions within the context of take-back practice in bread industry in Sweden (Jensen et al., 2013).

4 Empirical Findings

This chapter presents the findings from the interviews with bread suppliers and retail stores, as well as some relevant secondary data from bread suppliers' sustainability reports and web pages. It gives an overview of the bread reverse logistics schemes, as well as some peculiarities of take-back terms are articulated in this chapter. The findings are divided into two parts, first representing bread suppliers' perspective followed by retailers' perspective on the subject.

4.1 Bread suppliers' perspective

This section presents the findings about how the reverse logistics is carried out by the Swedish bread suppliers, including the description of ordering routines and disposal channels. Description of certain contractual terms, cooperation issues and flaws of take-back agreement that were raised by bread suppliers' conclude the section.

4.1.1 Swedish bread industry and take-back agreement

The bakery business has very short lead times. It is very important in this business to organize good logistics to make sure the bread arrives to the shelves while it is still fresh. So bread suppliers strive to deliver the bread to the retailers as quickly as possible (Interviewees A, B, & C, 2014). The manager from one of the bread suppliers explains that this is the main reason why almost everywhere in the world bread suppliers deliver their bread themselves (Interviewee A, 2014). In many countries bread suppliers distribute the bread, while the stores order it and take care of leftovers (*Ibid*.). However, in Sweden baking industry looks a little bit different. In most cases bread suppliers are responsible for ordering and delivering as well as taking back the leftovers for disposal (Interviewees A, B, & C, 2014).

Although most of the bread suppliers and store managers interviewed acknowledge that the take-back agreement has been present for more than 30 years, they admit that they are unaware of how exactly it was initially developed, and see it as a taken-for granted logistics pattern (Interviewees B, C & 1-9, 2014). Nevertheless, one of the interviewees asserts that take-back clause was introduced due to high competition among bread suppliers (Interviewee A, 2014). He narrates that a long while ago one of the baking companies proposed to retailers to take care of leftovers in exchange for extra shelf space for its bread so the company could sell more of its bread. Apparently the retailers were more than happy to accept the proposition. Interviewee A believes that since then other actors in bread industry followed the trend and started to take responsibility for returns and for the whole value chain (*Ibid*.).

All the bread suppliers in Sweden, which have take-back agreement together represent roughly 90% of the pre-packed bread market and have similar logistics routines (Interviewees A, B & C, 2014; Company A´s Environmental Report, 2013; Company C´s Sustainability Report, 2012). The drivers collect expiring bread at the time they deliver a fresh batch (Interviewees A, B & C, 2014). The drivers that deliver bread are also the sellers who are regularly servicing certain district with a number of retailers. One driver usually services the same stores and is responsible to forecast and negotiate the assortment and quantities of bread that should be delivered to a specific store. All companies' sellers, have provision-based salaries (*Ibid.)*. The more they sell, and the less returns they have, the higher is their salary. The returns are crediting drivers' bonuses. As stated by interviewee A (2014), "…*the drivers*

are paid for how much they sell, not for the returns, and they have to carry it back, and they don't get paid for that".

4.1.2 Ordering routines

There are slight differences in companies' ordering routines. For instance, company C produces the bread assortment that is instantly frozen down after it had been baked, and is then stored in big freezers. This allows needed amount of bread to be taken out off freezer any time before the delivery (Company C´s Sustainability Report, 2012). To make sure that a wide bread assortment is delivered to each store, the company has equipped its trucks with freezers, so that there is always some extra supply in case they need to deliver more. Sellers of company C do not need to plan very carefully in advance and adjust the available assortment in the trucks and decide on the assortment they need to bring right at the store (Interviewee C, 2014). That makes company C's ordering times much shorter compared to the companies A and B, where the driver has to make order to the bakeries for his/her truck two days in advance (Interviewees A & B, 2014).

Bakeries for company A and B get a fixed order and know exactly the amount of bread they need to produce for each driver two days in advance (*Ibid*.). According to Interviewee A, this means that excess production is almost zero because the bakery does not have to forecast, and simply produces bread on fixed orders (Interviewee A, 2014). Yet, as stated in company´s sustainable report for 2013, adjusting the baking according to incoming orders is among the main challenges to reduce food waste at bakeries (Company A´s Environmental Report, 2013). It can be explained by the fact that the driver is compelled to guess what assortment and quantities each store would need in two days. It is not possible for him to order a day before the actual delivery, which would in fact make it easier for him/her to base the order on the actual sales and store's needs of that day (Interviewees A & B, 2014).

However, as interviewee A (2014) states, "*when the ordered articles are received and loaded to the truck, the driver can play with the planned assortment by adjusting the quantity for each individual store – he/she has a sort of a warehouse in his own truck*". Moreover, as the seller is working with the same stores on a regular basis, he/she is supposed to have a good feeling of the bread demand in a certain store (Interviewees A, B & C, 2014). In order to forecast the demand as accurately as possible the driver tries to get hold of any historical data on the sales and discusses the order with a person who is responsible for the bread department at a retail store. He/she tries to find out about campaigns, competitors' strategies and gain any other relevant information that can influence the bread sales. But many stores seldom have anybody present in their bread departments to discuss the bread demand because, in essence, the bread supplier is fully responsible for shelf replenishment. This means that the driver is most often fully responsible for deciding on the order (Interviewees A & B, 2014).

Ideally, by the end of the day the driver should have no bread articles in the truck – so he/she tries to minimize the risks of excessive returns (Interviewees A, B & C, 2014). For company A, for instance, the maximum average returns target is 7% (Interviewee A, 2014). Interviewee A maintains that if this target is met, by the end of the day the shelves will be almost empty, and the next day the sellers will come and fill it up again (Ibid.). This is a way to keep the balance between satisfied consumers (able to find the bread on the shelves) and a minimal returns rate for all three bread suppliers (Interviewees A, B & C, 2014). Still, the representatives of companies A and B admit that it is very hard to know several days in

advance the exact amount and assortment of bread that should be delivered to a specific store (Interviewees A & B, 2014).

To ensure that the driver has the smallest amount of bread returns company A even launched a training program aiming to educate sellers on how to work in a uniform way so that they are able to adjust the amount and range of bread according to demand. Every bread facility has a person who discusses the return issues with truck drivers, educates and governs them on the questions of delivery and take-back. Specific action plans are developed for those sellers who have larger returns (A's Environmental Report, 2013). In addition, to help address the possible forecasting faults the planning of each district a driver serves is planned in a way to include a big store. Interviewee A explains, "*our seller first drives to the big store and then continues to smaller ones, and if he/she has bread left in his truck, he/she goes back to the big one and fills the shelves there, because it can swallow quite a lot. And vice versa, when the driver arrives at big store and sees that it needs more bread than he has planned he/she tries to save for smaller stores*" (Interviewee A, 2014).

4.1.3 Reverse logistics and disposal channels in Swedish bread industry

All companies have a certain number of bakeries that are connected to depots, each serving a particular region. A certain number of trucks are linked to a depot where they pick up fresh bread and drop the returned bread (see figure 3). The returned bread is then stored in containers until farmers come and collect it for feeding their pigs. A farmer usually buys the bread from companies' nearest depots (see figure 3). They are interested to buy bread from bread suppliers and usually sign yearly contracts with them. The farmers even invest in special machines that separate the plastic packaging from the bread. All the bread suppliers agree that they usually have no problem disposing of the returned bread (Interviewees A, B & C, 2014).

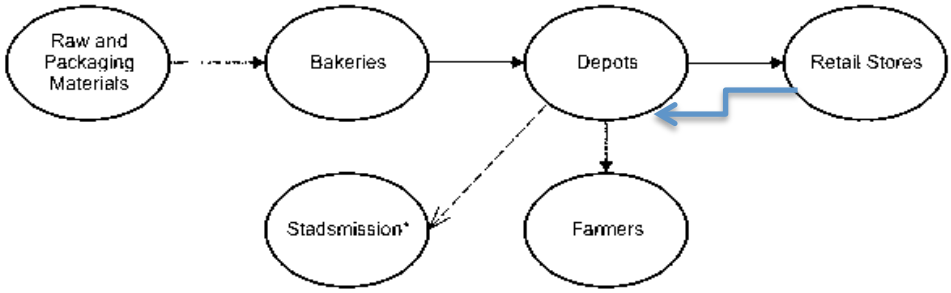

Figure 3: A closed loop supply chain for Swedish bread suppliers (blue line represents RSC) [own creation]
* *A small portion of company A's returned bread goes to Stadsmission*

The bread is sold for about 1 SEK per kg, which is quite a good deal for farmers (Interviewees A & B, 2014). It still has some days until the expiry date, some of bread might be even fresh, as it might be returned due to damaged packaging. So farmers most often can still make a good use of all the bread they buy (Interviewee B, 2014). But according to interviewees A and B (2014), this deal is not equally good for bread suppliers (Interviewees A

& B, 2014). As put by the interviewee from company B "*we don't cover our production costs by selling the bread to farmers; the production cost of 1 kg of bread is about 14 -15 SEK and we sell the returned bread for only 1 SEK per kg*". It does not even cover their costs for taking the bread back (time for collecting unsold bread i.e. extra time of the seller) (Interviewees A & B, 2014). Nevertheless, the companies have the deal to avoid throwing away the bread (*Ibid*.). Company B representative (2014) comments, "*instead of throwing it we can get at least something*". Thus, using bread waste as feed is seen as a better alternative to incineration (Interviewees A, B & C, 2014). Yet, A´s representative (2014) states that "… *selling it to pig farmers is still waste because it is an expensive way of feeding pigs*". For instance, according to Interviewee B, the value of bread that company B annually sends to pig farmers exceeds 100 millions SEK (Interviewee B, 2014).

Bread suppliers usually deliver two-three times a week to most stores, but the frequency depends on the turnover, size of that store and the negotiating skills of its owner (Interviewees A, B & C, 2014). One of the big stores, for instance, gets 12 deliveries a week from company A (Interviewee A, 2014). When it comes to returns company B lets the bread lay for three days and then it is taken back. In other words, the driver counts three days from the baking day and then removes the bread from the shelves usually on Mondays and Thursdays (Interviewee B, 2014). Companies A & C (2014), on the other hand, take back the bread two-three days before the expiry date. Some stores (usually the big ones) might even require the company to take-back the bread three-four days before the expiry date (Interviewees A & B, 2014). Usually in this case company A donates the returned bread to Stadsmission (a NGO for people in need) rather than selling it to farmers, as there are still quite a few days before the bread expires (see figure 3). The NGO then freezes the bread and de-freezes the needed quantity anytime it is necessary (Interviewee A, 2014). But only few retailers demand the bread to be taken back so soon, so it constitutes only a small part of all returned bread, and hence only a small portion goes to NGOs (Interviewees A & B, 2014).

4.1.4 Negotiation of contractual terms for ordering

In comparison to the local bakeries that negotiate directly with retail stores, companies A, B and C negotiate the terms of contract with headquarters of retail chains (Interviewees A, B and C, 2014). However companies also have to negotiate with stores about promotions, campaigns, shelf-space, etc. It means that they have to talk on both levels, which adds to the workload (*Ibid*.). According to interview B (2014), the returns rate may depend on the party bread company negotiates with. Company B has more returns from stores, where the contracts are negotiated with headquarters rather than from individually governed stores. This is because stores governed from headquarters have less power to decide, while in individual stores it is possible to do business directly with the storeowners, which is easier, as special details about ordering and the take-back can be re-negotiated (Interview B, 2014) The agreed terms depend partly on the size of the store and partly on the owner of the store (*Ibid*.). Yet, generally the contracts that companies have with their customers (retail chains) do not vary. According to this contract, companies A, B and C place the orders and take care of everything else, including the leftovers (Interviewees A, B and C, 2014).

However companies A and C, have few exceptions (Interviewees A & C, 2014). Company C takes back the bread only when it is agreed that the company is entirely responsible for both the quantity and assortment of ordered bread. As put by the interviewee from company C (2014) "*if the retailer says, I want this and that, then it has to take its own responsibility for the leftovers*". Company A has a little different policy for smaller and/or distant stores (Interviewee A, 2014). For instance, if a store cannot make an order for a minimum of 1500

SEK, or is very distant, i.e. located outside of company A's normal take-back logistics, the cost of taking back the bread might be too expensive. In this case the company does not perform the take-back logistics or does not work with the store at all. Even if company A decides not to give a particular small store the full service (i.e. to get the orders and deliver the bread without taking it back), it may anyhow get the bread delivered to it if the store is located within their usual logistics. In this case it is the store's responsibility to make orders and take care of the leftovers (*Ibid*.).

4.1.5 Bread returns rates

All bread suppliers' representative point out that the amount of returns depends on the size of the store, its turnover and location (Interviewees A, B & C, 2014). Bigger stores usually have around 5-6% in returns, while in smaller stores between 13-14% is left unsold (Interviewees A & B, 2014). Interviewee B (2014) suggests that the rate of returns is also high in the north of Sweden because it is difficult to deliver the bread there. All companies are also unanimous in the opinion that the returns rate is much higher if the stores themselves are responsible for ordering routines, rather when it is done by the companies' sellers (Interviewees A, B & C, 2014). They explain that a store has to take care of thousands of products, so it is hard for the staff to estimate exactly how much articles to order, while bread suppliers work with the same store regularly and have better feeling of the demand (Interviewees A, B, C & 7, 2014).

One reason for that is that the stores that order themselves have to order in full carts. Interviewee A (2014) states: "*they are most often unable to order the exact amount of articles they need, as they cannot order half cart, and usually order either too little or too much*". Companies' drivers, on the other hand, are able to pick the exact amount of articles they need from the cart and allocate the rest of the cart to other stores they drive to. It makes it much easier to get the demanded amount of articles for each store (*Ibid*.). Another reason might be connected to the level of sellers experience. Company B's representative and one of the store managers believe that greater returns arise when the inexperienced seller, i.e. a freshman, is managing the orders (Interviewee B & 2, 2014). Interviewees A and C (2014) revealed that that bread companies tried to run tests, allowing the retailers to make orders and take care of the leftovers. All these tests demonstrated that such arrangement leads to decreased sales, increased bread returns and a lot of extra costs for retailers (Interviewees A & C, 2014).

According to the representative of company C, the amount of waste depends both on the store manager and the company's seller. It all depends on how interested the store manager is in his job, and his ability to get a good idea of how much bread and what kinds the store needs (Interviewees A & C, 2014). Some store managers can lack understanding of how much bread they need, and they just want to fill the shelves with unnecessary big amount of bread, because the store does not take any economic risks (Interviewee C, 2014). But it also depends on how good company's sellers /drivers are at their jobs (Interviewees A, B & C, 2014).

4.1.6 Retailers and over-ordering

Two of the bread suppliers mention that they are annoyed by the fact that retailers have no costs in managing returns and that they always require filling up the shelves, so that consumers have no problems finding any sort of bread (Interviewees A & B, 2014). According to company A's representative (2014), the retailers "…*don´t care about leftovers because it is not the retailers who is managing them*". Interviewee A (2014) continues by saying, "…*there is a constant battle between us* [Company A] *and retailers' headquarters –*

they always complain that the shelves are not full enough". This all makes it hard for the company to reach its target of 7% of bread returns (*Ibid*.).

Bread suppliers include the cost of returns into the final price of their products. For the moment companies A, B and C include 7%, 6% and 4,3% respectively of waste (returns) in their production calculations respectively (Interviewees A & B, 2014; Company C´s Sustainability report, 2012). Yet two of them agree that the returns rate is usually a bit higher then this (around 9%) (Interviewees A & B, 2014). Interviewees A and B add that in the case the returns exceed its normal rate, company tries to inform the stores about it and tries to influence the situation through a continuous dialogue (Interviewee B, 2014; Company A´s Environmental Report, 2014). Company B's representative (2014) explains that, as the company is managing the orders itself, it has a certain power to prevent over-ordering. Company C's representative shares this view and highlights that in case a retailer continuously puts pressure on their driver and demands to order more, company's managers step in and negotiate (Interviewee C, 2014). If retailer insists on ordering more than the driver calculates, it is offered to manage the returns itself (*Ibid*.).

4.1.7 Reflections on existing take-back logistics

Change the current take-back agreement

As mentioned earlier, bread suppliers govern the whole process (ordering, delivering, taking care of unsold bread) (Interviewees A, B & C, 2014). Two of the interviewees also mention that companies were trying to change the system and both company A and B (2014) admit that they did not succeed because retailers are against taking any extra responsibilities. As the company C's representative (2014) puts it, "…*we take care of all other things, so one can say that we are basically renting their shelves*". Both Interviewees A and C highlight (2014) that such system is extremely good for the stores, because they only get profit, and have no risks and no costs. Company B's representative in his turn states, "*we* [bread suppliers] *can hypothetically deliver as much as we want, but we only get paid for what has been sold*" (Interviewee B, 2014). Bread suppliers invoice the retailers; take the returns and the retailer only pays the net. The retailers get full refund for everything that has not been sold (Interviewees A, B & C, 2014).

Even company B's representative admitted that his company tried to change the existing arrangement, he does not see the full termination of take-back agreement as a better alternative for contracting (Interviewee B, 2014). Company B's representative assures that if stores started to order themselves and take care of the returns, company B would have to change the well-established logistics system. It would need to negotiate with all the store chains about the new contract, workout new pricelists and substitute the working routines of sellers who would become simple drivers, whose only function would be to drop the bread at the store (*Ibid*.). The latter would be much cheaper for the company: without additional duties the drivers' salaries would become significantly smaller. Company B's representative presumes that such changes would take a lot of time and efforts. Yet, he admits that the ideal agreement for the company would be when the retailer takes care of returns (*Ibid*.). Company C, on the other hand, does not want to change the existing contract, as it is afraid that the retailers would order too little, and the company might suffer from shrinking sales (Interviewee C, 2014).

Interview A admits that the fact that they take care of the returned bread does not add value to the company (Interviewee A, 2014). All the three bread suppliers have the goal to minimize waste at their agenda (Interviewee B, 2014; Company A´s Environmental Report, 2013; Company C´s Sustainability Report, 2012). However, high variability of bread demand (even if there are very few campaigns) and retailers' persistent demand to fill up shelves makes it tricky to reach the company's target to minimize the waste, i.e. to lower the returns rate (Interviewee A, 2014; A´ Environmental Report, 2013). As put by Interviewee A (2014), in a fresh bread industry, one cannot have zero waste per se. Zero waste would mean empty shelves and dissatisfied consumers who cannot find the type of bread they are looking for. The representatives of company A and company C emphasize that non of companies wants their shelve space to be empty, because that would also mean that they sell less than it is demanded and do not maximize their profit Too much bread on the shelves, on the other hand, would mean costs for overproduction and managing excess waste. So the most important task is to keep a balance between these two things, which is rather difficult (Interviewees A & C, 2014).

Company A's representative (2014) believes that retailers' lack of incentive to minimize the returns is what makes the current model of reverse logistics imperfect. Interviewees B and C (2014), on the other hand, suppose that for the moment the working process is functioning

pretty well and the business is quite profitable with current returns rate. They add that if the companies will keep it within this range, there will be no need to change anything at all.

Possible measures to reduce the returns rates

Interviewee A claims that a joint decision on how much to order and joint responsibility for returns is the key to keep balance between retailers desire to keep shelves filled and suppliers´ ambition to decrease bread returns (Interviewee A, 2014). He supposes that the best way to reduce the waste is to allow the driver and the bread responsible person to discuss the next order. Both company C and company A agree on the fact that there should be more discussion and cooperation between the store and companies' sellers (Interviewees A & C, 2014). According to company C's representative, "… *there won't be any troubles with retailers if we* [suppliers] *don't deliver too little. And to deliver enough bread is for our own benefit, because we want to sell more*" (Interviewee C, 2014).

Another approach to reduce the waste, according to Interviewee A, is to share the costs for the leftovers at least to a certain extent. Today there is no pressure on retailers to minimize the returns (Interviewees A & B, 2014). Companies A and B (2014) agree that when the retailers order their own bread they have no returns because they do not want to pay for waste. In that scenario they are much more cautious. Retailer representatives confirm this fact. For instance, when dealing with "*own*" bread (baked at A & B but sold under the store´s label), store 7 is responsible both for orders and disposal itself. The store manager assures that he tries his best to order in accordance with the demand and that the amount of unsold bread of store's own brand is insignificant – about 1% of the whole order (Interviewee 7, 2014). Interviewee A (2014) also adds that with take-back contract retailers never put discounts in the bread department, because they do not have any benefit in that. He supposes that if retailers had to take care of some leftovers, they would set up the campaigns and sell more bread, and it would be another incentive for minimizing the waste (*Ibid*.)

So taking a shared responsibility for waste is the next level of the cooperation with retailers that the company A strives to achieve. The interviewee A (2014) explains how it could look in reality: "*we would be ready to take the returns only up to 7%, but what is above would be the retailer's responsibility*". He believes that sharing some risk would serve a good incentive for retailers to work towards waste minimization as well (*Ibid*.). According to interviewee A (2014), their managers are constantly discussing the terms of the contract with retailers, as they consider that it is impossible to decrease the returns if there is no joint incentive for that. It is unfortunate for the company A that it has not succeeded in persuading the retailers to build such cooperation and have retailers more involved (*Ibid*.).

4.2 Retailers' perspective

The stores participating in the study belong to different retailer chains, and are situated in different geographical regions. All stores that have been interviewed have take-back agreement with at least one of the three bread suppliers (see table 2). As mentioned earlier, bread suppliers have different agreements with retailers depending on retailers' chain, location, turnover, etc. All stores that have the take back agreement pay the supplier only for what have been sold and get refund for returned bread (Interviewees 1-9, 2014). In case suppliers only deliver the bread, the stores take care of the bread leftovers themselves (*Ibid.*). All stores that handle leftovers themselves, send the unsold bread to trash containers at the back of the store (Interviewees 2 & 4, 2014). The insignificant amounts of other bread brands

that can sometimes be present in the stores assortment are also sent to trash containers. All bread waste then is sorted as either "*packaged waste*" or "*organic waste*" (Interviewees 1-9, 2014). Organic waste goes to organic recycling, while the packaged waste is most probably burned (Interviewee 6, 2014). Given that the take-back agreement is present, the bread is taken-back at the time when fresh bread is delivered. The bread is usually taken back two-three days before the expiry date (Interviewees 1-9, 2014). Yet, as findings proved, this, as well as other terms of take-back agreements, may differ from store to store. These differences and peculiar elements of take-back practice in different stores are summarized in a table below (see table 2).

Table 2: Type of retail stores and their take-back contracts

Retail Store	Store Size	Location	Amount of bread returned	Satisfied with the amount of bread on shelves	Negotiated time for take back	Type of contract with Bread Suppliers		
						A	B	C
1	big	populated area	varies, but mostly small	yes	2-3 days after delivery (strict rule set by the store)	full service	full service	full service
2	small	populated area	varies greatly	yes	2-3 days before expiry date	only delivery	full service	only delivery
3	medium	populated area	varies greatly	not always	2-3 days before expiry date	full service	full service	full service
4	small	relatively isolated	varies, but mostly small	yes	2-3 days before expiry date	not present	full service	only delivery
5	medium	populated area	varies, but mostly small	yes	2-3 days before expiry date	full service	full service	full service
6	medium	populated area	varies, but mostly small	not always	2-3 days before expiry date	full service	full service	full service
7	big	populated area	varies, but mostly small	not always	2-3 days before expiry date	full service	full service	full service
8	small	relatively isolated	varies greatly	not always	2-3 days before expiry date	full service	full service	full service
9	big	relatively isolated	varies, but mosty small	yes	2-3 days before expiry date	full service	full service	full service

4.2.1 Stores without take-back agreement

Interviewee 4 (2014) supposes that whether a store gets a take-back agreement or not depends on the chain, and how big the store is. He presumes that his store could not get the deal with company A because the store has quite small turnover. He suggests that, *"If you are a bigger store, you get a better deal. Some chains in our corporate group may get a better agreement and have both delivery and take-back services because they have a better turnover"*.

Interviewee 4 (2014) clarifies that company A offered Store 4 two options. One option presupposed that company A would only deliver the bread if the store is able to make a minimum-quantity order, and if the store would additionally take care of the waste. The store manager confesses that such agreement would mean extra costs for the store – cleaning the shelves, moving the bread that expires, discarding it, etc. The other option allowed to order below the minimum order, but in that case the store would pay for the delivery as well, and still take care of the waste. As interviewee 4 puts it, "*we would try to minimize the costs by not paying for the delivery and getting the bigger order, but will then have to deal with the bigger quantity of the leftovers, and managing the leftovers contributes to extra costs"* (*Ibid*.).

Other stores that do not get the take-back contract find the ways to minimize the discarding costs. Interview 2 (2014), for instance, unveils that the store gets 5% discount from company A for taking care of leftovers. The store´s personnel attaches discount tags on expiring bread from the company A in order to minimize the waste. For instance, the bread with initial

(when-fresh) price of 20 SEK would drop to 10 SEK and the bread would be put into special basket by the entry door. The manager complains that selling expiring bread for 10 SEK does not cover his costs, but it still saves on discarding costs. He states, "… *to be honest, I would prefer the kind of agreement we have with company B, because it allows the store to make profits, while when dealing with company A we sometimes end up with losses* " (Interview 2, 2014). Contrastingly, stores that have the take back agreement, do not have any of such problems. Store 6, for instance does not have any discounts on bread that approaches its expiry date – the prices are still on, until the bread is taken back by the driver. The store manager explains that "*if the store decreases the price, it is only good for the suppliers, but the store's profit on bread decreases*" (Interviewee 6, 2014).

4.2.2 Maintaining the current take-back agreement

The absolute majority of the interviewed store managers consider take-back clause as a profitable agreement, which they would like to maintain. In general, the stores seem to be satisfied with the current agreement. As interviewee 1 (2014) puts it, "*If we were not satisfied, the store would probably prefer to order the bread itself*". The store managers believe that companies A, B and C are doing a better job in forecasting the demand and minimizing leftovers then the stores do (Interview 1, 2014). Interviewee 6 (2014), for example, states that he would be more cautious if he made bread orders himself, and might end up with either insufficient profits for the store or too much leftovers. He states, "… *if I do that [renegotiate the terms of agreement], it would most probably backfire on me* " (Interviewee 6, 2014). They all admit that the costs of managing waste might be significant for the store, if companies A, B and C did not have the reverse logistics (Interviewees 1-9, 2014). This is because stores usually have contracts with the garbage collectors, and buy a certain amount of containers (Interviewees 1, 2, 4, 6, 8 & 9, 2014). Regardless of how full the container is the store still pays the same price (Interviewee 4, 2014). According to interviewees 4 and 2 (2014), if the store would have to deal with access bread waste, it would most probably have much higher waste costs in general.

Interviewee 1 (2014) reveals that there have been discussions about changing the current agreement so that stores would handle both the orders and disposal themselves and in exchange bread suppliers would lower the bread prices. Interviewee 7 informs that around 4 years ago the chain that Store 7 belongs to tried to change the ordering practice so that stores started to make orders and handle the waste themselves. According to him, it did not work out very well, and the stores had to deal with a lot of waste. Now when companies A, B and C have their own logistics and take back the leftovers the amount of returns dropped (Interviewee 7, 2014).

Interviewee 5 (2014), on the contrary, supposes that bread suppliers have not tried to change the contract, because "… *they know it will not work for them*". She presumes that if bread sellers did not have the commission-based salaries, they would try to sell to the store unnecessary big amount of bread, which might have resulted in unnecessary waste. Today the store collaborates quite well with bread suppliers, and the bread department manager supposes that it is better for the store and for the customers when suppliers are fully responsible for the whole logistics (Interviewee 5, 2014).

4.2.3 Negotiating the amount of bread to be delivered

The bread suppliers' drivers are in general solely responsible for how much to deliver (Interviewees 1-9, 2014). Yet, according to interviewees 1, 6 and 7 (2014), it is possible to make a suggestion on how much the store needs. Interviewee 7 (2014) states, "*Usually I try to convince the drivers to order much more bread then they plan to, and most of the time I succeed in it. But in any case it is them, who decide on the amount of bread that they will deliver*". The parties may negotiate how much bread should be delivered, and how much of specific kind the store can sell (*Ibid*.). In case of increasing returns some stores even try to address the problem of forecasting together with bread suppliers and discuss how to order more of the best-selling bread types (Interviewee 1, 2014).

Most of the store managers that have been interviewed are aware of the fact that supplier sellers' salaries are calculated depending on how much bread they sell and the amount of bread they take back, and understand that the more bread sold combined with few returns is the best outcome for the bread suppliers (Interviewees 1, 3, 4, 5, 6, 7 & 9, 2014). Some of them mention that neither the bread suppliers nor the stores want to have many returns because it does not benefit anyone (Interviewees 3, 5, 8 & 6, 2014). Interviewee 3 believes that excess returns would mean the store´s shelves are filled with a lot of bread articles with approaching expiry and the store does not want that, it rather prefers the bread to be delivered in smaller quantities every day (Interviewee 3, 2014).

Yet negotiating is not always cloudless. Interviewee 6, for instance, assures that although bread suppliers want to sell as much bread as possible, it can sometimes be difficult to simultaneously have low returns, as store wants the shelves to be fully stocked. The manager of Store 6 states, "*I tell them everyday that I want MUCH more bread, because they won't deliver as much as I want. I expect them to fully stock the shelves, but sometimes we have to compromise in a way*". He adds that conflicts that he sometimes encounters arise due to the inability to negotiate with individual sellers/drivers. He asserts, "*The conflicts I have with them are usually connected with what and how much they deliver – either too much or too little. But often it is too little*" (Interviewee 6, 2014).

Interviewee 7 (2014), is more satisfied with the business relations that he has with company A, because as he puts it, "*they are not so afraid of higher leftovers and they usually dare to order more*". Company B, on the contrary, is not an equally good business partner for Store 7, as it often orders too little. The disagreement on the point is so serious that the whole chain plans to stop working with company B (Interviewee 7, 2014; Interviewee B, 2014).

Interviewee 6 (2014) also mentions that some disagreement may arise. There are two categories of products in the store: the products the store *must* have and the products it *can* have. It is agreed that bread suppliers are obliged to deliver the assortment the store must have on the shelves, and if they want to put something additionally, it is discussed with the store manager or the person responsible for the department. Yet, interviewee 6 claims that sometimes the bread salesman just delivers unnecessary bread assortment. He states, "… *in this case I just put it in the back storage and they will have to take it back the next day*".

Many store managers emphasize the prevalent aim of customer satisfaction when describing their agreements with bread suppliers (Interviewees 1-4, 9. 2014). Interviewee 1 (2014) clarifies that his ultimate goal is to satisfy consumers needs therefore he tries to make sure that no bread with approaching expiry dates is left on the shelves. He reveals that the store´s

staff controls the shelves every morning to make sure that bread suppliers have not deliberately left expiring bread, in hope that it will be sold. He gives an example. Since bread suppliers do not come on Sundays, when they come on Saturdays they may leave the bread that is according to the regulations should be taken off the shelves on Sundays. So the store´s staff have to remove this bread from the shelves themselves. As a consequence, bread suppliers can be dissatisfied that the shelves with their products are half-empty. Bread suppliers would prefer the bread to be left on the shelves as long as possible, while Store 1 needs to follow the regulations and remove the bread (*Ibid*)..

Interviewee 7 assumes that whether negotiation will be translated into better ordering practices varies from store to store, because some store managers are thinking about the profits and others are thinking about the customers. Store 7 always makes sure the customers are satisfied. He states, "… *if a consumer comes two days in a row and does not find the bread he/she is looking for, the person will not come back again. That is why we try to make sure that our customer always finds what he/she needs*" (Interviewee 7, 2014).

5 Analysis and Discussion

As put by Robson (2011, p.412), "*analysis is a breaking up of something complex into smaller parts and explaining the whole in terms of properties of, and relations between, these parts*". The aim of this study was to explore the tack-back practice between Swedish bread suppliers and retailers, and how possible power asymmetries between suppliers and retailers may impact the overall sustainability of the supply chain by answering the following questions:

1. How is take-back practice carried out in the Swedish bread industry?
2. What are the power-relations behind the take-back agreement between bread suppliers and retailers in Sweden?
3. What implications does this take-back agreement and power-relations have in terms of bread supply chain's sustainability?

The findings are broken up into facts and ideas that relate to each of the research questions and are explained and analyzed by comparing how the study findings relate to conclusions of other peer-researchers studying the reverse logistics. The findings are analyzed using the market power theory and then using the theory of RSC sustainability to see the relations between the impacts of retailers' market power in context of take-back agreement to the overall sustainability of the supply chain. First the peculiarities of take-back practice in Swedish bread industry are discussed. Thereafter, power-relations behind take-back agreement between Swedish bread suppliers and retailers are analyzed, followed by the analysis of implications of these power relations in terms of sustainability of bread supply chain.

5.1. The take-back logistics in Swedish bread industry

According to Jensen et al. (2013) and Halldórsson et al. (2009), extending producer responsibility for their products, i.e. implementation of take-back practices, has gradually evolved from a costly legal producer obligation to a potentially beneficial element of a more sustainable SC structures. In the case of Swedish bread suppliers, there were most likely no legal obligation to arrange for recycling of the obsolete bread. Neither was it suppliers' business strategy aimed at creating value through minimization of environmental and social risks (Ji et al., 2014; Jensen et al., 2013; Lehr et al., 2013; Hanifan & Hoyle, 2011). The findings suggest that in case of Swedish bread suppliers the implementation of reverse-logistics rather supports the arguments of Radaev (2013) and Peitz & Shin (2012), who state that take-back agreement is an example of rules initiated by retailers taking advantage of their bargaining power (this issue will be further discussed in section 5.2).

The results of the study also support Jensen et al. (2013) and Guide et al. (2003), maintaining that the product in the CLSC might not necessarily get back to the point of origin, but can alternatively be used as an input for the other SC(s). In case of Swedish bread suppliers, the nature of a product (i.e. perishability and low heating values of bread) and re-seller policies (bargaining power of retailers) has led to the design of a reverse supply chain, where the products are not returned to the point of origin (bakeries), but are managed through redistribution to animal feed or donation (Interviewees A, B, C, 2014), i.e. used as input for other SCs. This type of recycling also corresponds to the examples of the most-wide spread waste management forms in the reverse SC at the distribution level mentioned by VCMC (2012).

Thus, take-back logistics in Swedish bread industry exemplifies a closed loop supply chain, mentioned by a number of studies focusing on the sustainable supply chain management (Jensen et al., 2013; Lehr et al., 2013; Hanifan & Hoyle, 2011; Halldórsson et al., 2009). The main difference is that in this study the reverse logistics is implemented for managing a perishable organic product, where the distribution phase is characterized by the active involvement of powerful retailers. The implications of these differences are discussed further in the analysis.

5.2 Power - relations behind take back agreement in supplier retailer interface in Sweden and its implications

The analysis of this section is broken down into evaluating the sources of market power that make it possible for Swedish retailers to exercise their bargaining power, followed by the discussion of how the degree of the power asymmetries differ among stores participating in the study. Next comes the analysis of implications these power asymmetries pose for the amount of overproduction and the ability of Swedish bread suppliers to maximize profits.

5.2.1 Manifestation of Swedish retailers' market power in bread take-back logistics

Almost all stores in this study that have take-back agreement with bread suppliers represent quite large retail chains (few exclusions will be discussed later in sub-section 5.2.2. of this chapter), together holding roughly 90% of the market share in the retailer industry. Moreover, the participating chains are most often located in well-populated areas all around Stockholm, and each chain benefits from a wide geographical spread of its individual stores. The size and geographical expansion of retailers in Sweden, just like in most other countries give them huge benefits in terms of access to consumers and thus a big bargaining power in the regional markets (Brandow, 1969, Li, et al. 2006). Stable relationships with retailers (that are almost the only distribution channel) enables easy access to consumers and helps suppliers to build the agile supply chain, that is crucial due to perishability, high elasticity and variability of bread demand. According to Li, et al. (2006), such conditions in the industry represent the perfect opportunity for the retailers to exercise their market power.

Apart from that, all of the participating retailers are also dominant players for distributing a huge range of commodities that consumers need to obtain on a daily basis. That is why they are relatively free in their choice of suppliers, for each individual product, including bread. This fact supports the statements of peer researchers on another strong power source of retailers in Sweden – diversification over products (Li, et.al, 2006, Brandow, 1969). A highly diversified product range allows Swedish retailers to engage in market struggles and always take only the best deal from the existing bread suppliers. The profits from bread sector are often insignificant for the retailers, relative to the profits from other convenience goods. They might as well quit selling bread all together (example of store 7 in this study) without any big risks for damaging its main sources of income, as a consumer will always return to the store for dozens of other products.

Thus, it can be inferred that these market power sources strengthen the bargaining power of Swedish retailers and their ability to choose the supplier offering the most tempting deal. Empirical findings show that initially take-back agreement was most probably the outcome of such power to choose: one retailer chose a supplier offering take-back agreement, other major

suppliers had nothing to do but follow the same trend simply to keep the access to consumers (Interviewee A, 2014).

The spread of this agreement was in turn fostered by another source of power available to retailers – concentration (Fofana &Jaffry, 2008, Brandow, 1969). The retailer industry in Sweden is highly concentrated – only three big corporate retailer ownerships collectively own the largest proportion of the industry market share (see Table 1). So it can be argued that Swedish retailers represent a rather strong olygopsony (Fofana & Jaffry, 2008), seeking out only the best deals and dictating the standards in the industry.

These sources of retailers' market power led to the establishment of take-back practice as the inseparable part of bread logistics throughout the whole country, changing the general market practices in the whole industry. This fact provides a vivid confirmation for Brandow's (1969) argument, holding that a firm possessing market power can not only materially affect the practices of the other actors in the industry, but also bring changes to the supply chain, distribution channels and other actors' services.

So one can suggest that retailer chains in the Swedish industry have substantial market power to exert a strong influence on bread suppliers. Yet, as the Brandow (1969) puts it, the degree and scale of the firm (a retailer, in this case) might vary in its degree and scale. Although the retail chains in general possess quite big market power, the differences in the degree of power possessed by individual stores are traceable in the context of take-back clause phenomenon. These differences are discussed in the next section.

5.2.2 Retailer's/chain's size & market power

The observation that comes to front is that bread suppliers only have the full service contract (delivery, ordering and take-back) with stores that are part of the larger retail chains or simply have a big turnover (see table 2 in Empirical findings). Bread suppliers explain that they do not offer full service to some smaller stores because those are situated outside of normal logistics (Interviewees A & C, 2014). However, some of the stores like Stores 2 and 4 are not distant at all, but they are smaller in physical size and turnover and they do not have the take-back agreement with company A and C respectively (Interviewees A & C, 2014). In fact interviewee 4 (2014) emphasizes that his store could not get the take-back agreement with company A because of this very reason – his store is too small. Following the arguments of Walden (1990) and Brandow (1969) these stores do not represent the best, access channel to consumers and thus have much weaker source of bargaining power. This demonstrates that in contracts with smaller stores, that have less power to negotiate, bread suppliers have the opportunity to opt out of having reverse logistics.

Also, the findings reveal that the frequency of delivery and agreement on the limit of days to bread expiry for take-back to be performed also depends on the turnover and size of that store (Interviewees A, B & C, 2014). While it makes sense that bigger stores are naturally visited by drivers more often because of the better turnover rates, the reason why some stores might require suppliers to take-back the bread much earlier than others is less clear. Both companies and retailers' representatives agree that the majority of bread is taken back two-three days before expiry, but some stores (usually bigger ones) might require the bread to be taken back up to four days before expiry (Interviewees A & B, 1-9 2014). Also it is clear from the findings that the terms of tack-back agreement is easier to re-negotiate only in case the individual store does not belong to certain bigger chains. Otherwise, such contract terms are

agreed with headquarters and are much stricter (Interviewees B, 4, 2014). It goes in line with the ideas presented by Brandow (1969), referring to the power that retailer chains gain from their market share, geographical spread and concentration and suggests that certain bigger stores and more powerful retailer chains have greater power in dictating certain take-back-terms, because of their size and olygopsony power.

5.2.3. Implications of power relations in the take-back contracts

Previous studies by Priefer et al. (2013), VCMC (2012), Monier et al. (2010), and Parfitt et al. (2010) argued that major negative implications of take-back agreement in the context of retailers' market power are reflected in the financial losses for the producing companies and in overproduction. This section of analysis will seek support for/rejection of these arguments in the case of Swedish bread industry.

The effect of retailers' market power on the ability of bread suppliers to maximize profits

One of the strongest confirmation of the existence of retailer's market power and its abuse using the take-back practice is the fact that suppliers A and B were trying to change the agreement multiple times (Interviewees A, B & 6). Even though the bread suppliers do not appear to be very eager to terminate the agreement completely, some terms of it are not beneficial to bread companies and are dictated by powerful retailers. For instance, the take-back agreement in case of Swedish bread suppliers involves the term that enables retailers only pay for the bread that have been sold, and get full refund for everything that has been returned (Interviewees A, B, C & 1-9, 2014). Even if supplier B does not want to terminate the agreement, as it would mean changing the whole system, Interviewee B (2014) admits that ideally, it would be better if retailers handled the returns. Interviewee A (2014) also considers current terms of agreement not perfect and suggests sharing the responsibility for unsold bread with retailers.

Another characteristic of current take-back agreement that can point to a power abuse on the part of retailers is their unwillingness to allow discounts on bread that approaches its expiry dates. At the moment no store that has reverse logistics for bread puts discount tags on bread from companies A, B and C (Interviewees A, 1, 3, 5, 6, 7, 8 & 9, 2014). With the existing terms, there is no incentive for stores to increase the chances of bread to be sold. As the manager of store 6 puts it "*if store decreases the price* [when the bread approaches its expiry date], *it is only good for the suppliers, but the store's profit on bread decreases*" (Interviewee 6, 2014). This shows that some retailers are using take-back agreement as a tool to maximize their profits at the expense of the profits of bread suppliers, or as Brandow (1969, p.2) puts it, "[…] *directly and materially affect the incomes of the firms* […and] *marketing practices of the market in which it participates*". This somewhat supports the arguments of Priefer et al (2013), VCMC (2012), Monier et al. (2010), and Parfitt et al. (2010), as Swedish bread suppliers are deprived from maximizing the profits because of take-back agreement (Interviewees A, B & C, 2014).

The effect of retailers' market power on overproduction

Findings proved to be consistent with previous studies, arguing that product availability and well-stocked shelves remain a very important factor for every store (Strid et al., 2013; VCMC, 2012). In the case of Swedish retailers there are certain instances where big retail stores, usually with high turnovers, try to exercise their power through influencing orders

(Interviewees 1-8, 2014). Findings show that some stores make sure no expiring bread is left on the shelves by imposing specific rules on how many days certain type is allowed to lie on the shelves (Interviewees 1 & 6, 2014). Two of the bread suppliers are annoyed by the fact that retailers have no cost in managing returns and want their shelves to be fully stocked. According to the company A's representative (2014), the retailers "… *don´t care about leftovers because it is not the retailers who is managing them* " (Interviewee A, 2014). Interviewee A (2014) continues by saying, "… *there is a constant battle between us* [Company A] *and retailers' headquarters – they always complain that the shelves are not full enough*". The pressure on the part of some retailers appears to be quite serious, as Company B was forced to quit working with retailer 7 (constantly demanding higher deliveries) and the whole chain at all (Interviewees 7 & B, 2014).

The above-mentioned lack of incentive on the part of retailers to sell the right amount of bread can be argued to be the potential source of small overproduction and bigger returns (Interviewee A, B & C, 2014). As proved by the findings, retailers are more cautious when they are dealing with the bread they manage or bake themselves (*Ibid*.). With this bread, retailers make sure to minimize the amount of unsold items by trying to order just enough and by discounting the bread that is approaching the expiry date (Interviewees A, B, 2 & 6, 2014). If this incentive is present, bread suppliers as well as retailers might decrease the returns, hence overproduction. After all, selling enough bread (not less) is a joint aim that would help to boost the profits of both parties (Interviewees C, 1, 6 & 7, 2014). But at the moment retailers seem to have enough market power to reject any additional responsibilities (Interviewees A, B, 2014).

It might be thus concluded that there are instances of retailer market power, reflected in some specific terms of take-back agreement that, negatively affect bread suppliers' profits and might be the source of slight overproduction, hence increased waste, which partially supports the arguments of _Priefer et al (2013), VCMC (2012), Monier et al. (2010), and Parfitt et al (2010) . This is reflected in the power of retailers to refuse any additional responsibility for managing the waste, obliging bread suppliers to provide full refund for the unsold items and unwillingness of retailers that have take-back agreements to put any discounts on bread that is approaching its expiry date.

5.3 Sustainability implications of the take-back clause agreement between Swedish bread suppliers and retailers

The analysis of retailers' market power in the context of Swedish bread take-back logistics (section 5.2.) has proved that there are certain instances of power abuse on the part of the retailers that have a negative impact on suppliers' profits and might be the cause of small overproduction. This section provides a further analysis of potential sustainability breaches caused by retailers' market power abuse, as well as other sustainability implications of take-back practice through discussion of each sustainability pillar of RSC in question.

5.3.1 Economic pillar of bread reverse logistics

Costs of handling waste and competitiveness

According to Winter and Knemeyer (2013), the economic dimension of sustainability presupposes that reverse logistics should ensure company's long-term success and competitiveness. The findings show that reverse logistics is present in all major bread

suppliers' SCs (Interviewees A, B & C, 2014). It is also known that once one company introduced it many years ago, all the others followed the trend (Interviewee A, 2014). So, it can be inferred that having take-back agreement with the retailers helps companies to stay competitive. Yet, it cannot be called a distinctive capability of any of the companies – the structure of reverse logistics and activities it involves are very similar for all three bread suppliers and do not help them to differentiate.

Rogers et al. (2010) suggests that for the RSC to be sustainable, it should help cutting costs and liabilities associated with environmentally undesirable disposal, and should be potentially profitable for the supplier. Thus, the costs of recycling the product should not exceed the costs of sending it to landfills (*Ibid*.). It has been found that all three bread suppliers dispose of the bread by selling almost all of it to farmers (Interviewees A, B & C, 2014). Insignificant amount from company A's obsolete bread goes to the NGO, but no bread is sent to waste collectors (Interviewee A, 2014). Even though the cost of selling the bread to farmers does not cover companies' production costs, the suppliers still get some revenue on it (Interviewees A, B & C, 2014). It was confirmed by store managers that costs of waste containers might be quite high when the amount of waste is big (Interviewees 1,2,4 & 6 2014). So, if the bread were discarded in a conventional way, i.e. sent to waste collectors, it would only bring quite high costs both for suppliers and retailers. Today by feeding pigs, bread suppliers not only cut disposal costs but also obtain some revenue on it.

Rogers and Tibben-Lembke (2001) state that if the disposition of products with quickly declining residual value is not carried out in a very short time, the remained value of the product cannot be put at use to bring the company some profit. In this study processing of returned bread is carried out almost immediately (Interviewee B, 2014). Bread suppliers usually have yearly contracts with pig farmers, who come and pick up the bread on a regular, almost daily basis (Interviewees A, B & C, 2014). Besides, buying the bread is considered a profitable business for farmers, so there is always a demand for the obsolete bread and all of it is bought – no bread is left to be disposed through other markets (*Ibid*.).

Rogers and Tibben-Lembke (2001) also mention that the pricing of the taken-back products might complicate the reverse logistics, depending on the characteristics of the product and its remaining value. The nature of bread, i.e. its quick perishability would most probably complicate the possibility to sell it at all, not speaking about the very low value of such a product. Yet, all bread suppliers take back the bread in four to two days before its expiry date, so the farmers can collect it in a good time before it begins to grow mold (Interviewees A, B and C, 2014). The pricing of all the bread is the same, no matter how many days is left until expiry or if the product is fresh and simply damaged – all the bread is sold for 1 SEK per kilo (*Ibid*.). Thus, it can be argued that the remained value of the bread can always be put at use to bring bread suppliers some revenue, which supports the findings of Rogers and Tibben-Lembke (2001).

It has been stated by some scholars that arranging for proper recycling might involve further investments and changing many of the firms' processes, which might be overwhelming, so companies might decide to save themselves from those troubles, and returned products will eventually be turned to landfills (Stock & Mulki, 2009; Rogers & Tibben-Lembke, 2001). Swedish bread suppliers appear to have almost no additional processes that might be associated with overwhelming costs in their reverse logistics. All three companies do not spend money on separating bread from plastic (Interviewees A, B & C, 2014). The farmers prepare bread for further use themselves; they even invest in machines that separate plastic

packaging from the bread. The only process that might add to their costs is extending the duties of the drivers to include forecasting bread demand, managing the shelves and handling returned bread (*Ibid*.). Even though turning their sellers to regular drivers would mean decreasing the salaries of personnel, the interviewees B and C admit that doing this would mean changing the whole logistics process, which would mean not only extra costs in the short-run, but also possible shrinking sales as a result of retailers´ fear to order less (Interviewees B & C, 2014). Thus, it can be argued that the current reverse logistics processes are not economically sacrificial for the bread suppliers.

Rogers and Tibben-Lembke (2001) state that if the reverse logistics does not allow the company to dispose of the returned products in a way that helps minimizing the costs of disposal, the investments done (in production, marketing, logistics) risk to fall behind the costs. In the case of Swedish bread suppliers one may argue that the costs of disposal are not lossmaking for the bread suppliers. The costs of disposal are minimal, and the suppliers even obtain some revenue on selling obsolete bread to farmers. Moreover, all three companies include a certain percentage of waste in their production calculations, and the waste rate is not dramatically higher then the rate that is included, so the practice does not leave the company with losses (Interviewees A, B & C, 2014).

Costs from overproduction

Another question of interest in the discussion of economic dimension is whether the existing take-back leads to over-production. Findings show that there are only two schemes for making the bread orders. When a store has the take-back agreement, bread-suppliers are responsible for the whole process (ordering, delivering and taking care of the returns) (Interviewees A, B, C & 1-9, 2014). When there is no take-back agreement, the stores make orders and dispose of the unsold bread themselves (Interviewees A,B,C, 2,4, 2014). In case the take-back agreement is present, which is true for most of the stores, the whole logistics system seems to be tuned and thought-through to ensure as less returns as possible.

First of all, for companies A and B the fixed orders to bakeries two days in advance make it possible to have almost no waste at bakeries (Interviewees A & B, 2014). Even though the report of company A mentions that it is challenging to adjust the production according to such orders, the interviewee A assures that the company manages to keep the waste at production level at almost 0% (Interviewee A, 2014; A's Environmental Report, 2013). Secondly, the drivers/sellers are working with the same stores regularly, so their experience and knowledge of each store's needs makes it possible to forecast the demand quite well (Interviewees A, B, C, 4, 5 & 8, 2014). Even though there are some insecurities (mostly for drivers of companies A and B) that are associated with guessing the order amount two days in advance, the drivers are usually able to adjust the ordered quantity to correct the possible faults for each store (Interviewees A & B, 2014). For Company C these problems are not so significant – the fact that their products are frozen makes it easier to handle them: the ordering times are much shorter and the driver can decide what to bring at the day of the delivery without big risks of ordering wrong quantities (Interviewee C, 2014).

Moreover, since drivers' salaries are provision-based, they are very interested in selling more and bringing back less (Interviewees A, B & C, 2014). Furthermore, the drivers are continuously trained on how to minimize the returns (Interviewees A & B, 2014). They try to get hold of historical data and other information that can influence the bread´s sales, discuss with retailers the bread campaigns and competitors' moves (*Ibid*.). The company A has even

special strategy to decrease the possible returns – it includes a big store as a buffer zone for every driver´s district (Interviewee A, 2014).

It was also found that in most cases the stores that make orders themselves end up with much higher amounts of unsold bread, compared to leftovers from driver's orders (Interviewees A, B, C, 1, 6 & 8, 2014). Bread suppliers do not allow the stores to order the exact amount they want, stores can only order in full carts, which might lead to potentially higher leftovers (Interviewees 4 & A, 2014). The higher leftovers might partly depend on the above-mentioned fact and partly on the inability of the store manager to forecast the demand as good as supplier's sellers (Interviewees A, B, & C, 2014). In any case, both parties – suppliers and retailers – claim that they have tested another ordering system, allowing the retailers to make the orders. The tests proved that ordering done by stores leads to higher leftovers and shrinking sales (Interviewees A, B, C, 1, 6, 7 & 2014). All the above-mentioned facts speak for the sophisticated ordering and forecasting practices that help suppliers performing take-back to deliver the right amount of bread and avoid over-ordering to the best possible extent.

Yet the fact that the bread suppliers are managing the whole process appears to also pose some difficulties. When the store has a take-back agreement with suppliers, the retailers are not responsible for managing the shelves anymore. Consequently, there is hardly anyone from the store staff in the bread department who could advise and give information about the campaigns and competitors' moves. Compounded with the fact that historical data on the sales is not always readily available for the driver, this makes it difficult for the sellers, especially inexperienced ones, to make optimal decisions about the order and may potentially lead to some forecasting faults (*Ibid*.).

Since sellers are most often the ones who make the decisions about the order's quantities can give them certain power to prevent over-ordering (Interviewees A, B, C, 2, 4, & 5, 2014). Moreover, even though the analysis in the previous section confirmed the fact that biggest retailers put the most pressure on filling the shelves usually have only around 6% in returns, while in smaller stores about 14% is left unsold, which means that their power do not impact so much to increased leftovers (Interviewees A & B, 2014). Additionally, the bread suppliers' representatives all mention the fact that in case of conflicts about orders they try their best to have a dialogue with the store manager and to either convince him/her to rely on the driver's orders or offer the store to handle the leftovers itself (Interviewees A, B & C, 2014).

However, the companies' targets for bread returns rate is not met – it is slightly higher than the figure included in production calculations (Interviewees A & B, 2014). Findings show that this might be the result of some cooperation issues with retailers, as well as driver's inexperience, and even the result of highly variable demand for bread (Interviewees A, B, C & 1-8, 2014). The example of Stores 2 and 4 where company B had very different returns rate show that the experience of the driver has a direct influence on the amount of leftovers (Interviewees 2 & 4, 2014). Thus, the sellers' ability to forecast is compounded with the willingness of store manager to cooperate. For instance, stores 1 and 5 show their readiness to join the forces, minimize the waste and use reverse logistics to create value for both parties and for the consumer, while stores 6 and 7 are not so willing to pursue any other's interests, but their own (Interviewees 1,5,6 & 7, 2014).

Yet, all representatives of bread companies agree on the fact that the amount of pressure from the retailers to keep the shelves full is one of the major factors that prevents bread suppliers to keep within the returns rate targets (Interviewees A, B, C, 2014; A's Environmental Report,

2013; C's Sustainability Report, 2012). This problem is most frequent for some larger retailer chains that dictate strict rules on the time the expiring bread should be removed from their shelves and thus prevent the bread that is still fresh enough or sometimes completely fresh from selling (Interviewees 1 & 6, 2014). Considering this, one can argue that existing take-back clause under the retailer power abuse leads to a certain amount of over-ordering and consequently to unjustified production costs, which negatively impacts economic performance of suppliers and increases avoidable waste.

Overall profit maximization

Overall profit maximization with take-back agreement can be further discussed. Seeing that suppliers have this agreement with bigger stores, but not all of the suppliers have it with smaller stores questions the profitability of the reverse logistics for bread suppliers. The analysis of the degree of retailers' market power in the previous section has shown that smaller retailers with lower turnover do not have enough market power to require a supplier to arrange for take-back. So, with smaller stores, where the bread suppliers have power to negotiate, they choose not to have the reverse logistics. Moreover, company A even allows a 5% discount to stores that manage waste themselves (Interviewee 2, 2014). This may mean that it is more financially beneficial for the company A to lower the prices by 5% than to arrange the reverse logistics. If bread suppliers A and C revoke the take-back where they can, it may mean it is not overly profitable for them, at least not in smaller stores with lower turnovers.

The above conclusions are confronted by the fact that company B has the reverse logistics in all the stores it delivers to, even the small ones (Interviewee B & 1-8, 2014). But it can be supposed that company B is probably taking advantage of the fact that some other companies do not have the take-back agreements in a particular small store and by offering it gets hold of the biggest shelf space and better possibilities for selling more products there. That might make the reverse logistics in small stores quite profitable for company B.

The fact that all bread companies have been trying to change the agreement also confirms the belief that some terms of it prevent them from maximizing profits (Interviewees A, B, 1 & 7, 2014). Analysis of retailer' market power in previous section provided several examples of such terms, including retailers getting full refund for all bread that has been returned and their unwillingness to allow discounts on bread that approaches its expiry dates (Interviewees A, B, C & 1-8, 2014). Lack of incentives to cooperate in making these terms more profitable for suppliers significantly affect bread suppliers' economic performance. Sharing the responsibility for the costs of returned bread and discounting the bread would allow maximizing the profits on sold bread for the suppliers, decrease returns and would potentially bring some benefits for the consumers, who could buy the bread for lower prices.

It is believed that introducing reverse logistics might help a company to maximize profits by recovering the value of returned products (Winter & Knemeyer, 2013; Presley et al., 2007). The discussion of sustainability's economic dimension in take-back agreement gave good grounds to claim that bread suppliers in our case study minimize the costs of discarding the bread, yet it is still not possible to argue that with current terms of reverse logistics their profits are maximized. There is a much higher potential for profit maximization, and thus, for improving the economic dimension of sustainability, if some changes are brought to the terms of existing take-back system.

5.3.2 Environmental pillar of bread reverse logistics

The environmental facet of sustainability in RSC implies including mechanisms and networks that promote greater environmental responsibility, i.e. implement environmentally sound practices such as recycling, remanufacturing and reclamation (Winter & Knemeyer, 2013; Rogers et al., 2010). In case of Swedish bread suppliers, the RSCs and take-back agreements should minimize the undesirable environmental consequences of landfilling by reusing and recycling the waste.

All the three bread suppliers dispose of the returned bread by selling it to pig farmers (Interviewees A, B & C, 2014). Almost all the bread that is returned is disposed of in this way, and not sent to landfills or incineration, which are the most common ways of disposing of biodegradable food waste (Interviewees A, B & C, 2014; Priefer et al., 2013). The small amount of bread that is not sold to farmers is donated to NGO, which implies that the bread is used for human consumption (Interviewee A, 2014). In this way, the bread does not help company to generate any cash, but it still diverts it from landfills. Rogers et al. (2010) maintain that the RSC helps to divert the unsold items from landfills through recycling or redistributing them to secondary markets. By doing so it reduces the product's ecological impact through reducing waste. Implementing environmentally sound practices – selling bread to pigs and donating to NGOs diverts it from landfills, and thus minimizes environmental impact.

Jack et al. (2010) argue that RSC can bring benefits to the company and environment only if the latter has sufficient knowledge about the disposal ways and secondary markets and when the capabilities of the firm to perform reverse logistics are adequately weighed. A company should be able to dispose of returned products and handle them adequately without the cost for environment (Stock & Mulki, 2009; Rogers & Tibben-Lembke, 2001) Bread suppliers in this study appear to adjust the reverse logistics practices in a way that finding secondary markets and other proper disposal channels for the bread is rather easy, despite of the quick perishability of the product (Interviewees A, B & C, 2014). All companies have sufficient knowledge about disposal channels, and more than that - these channels are well established and secure. The farmers sign yearly contracts with all three companies, so there is no need to constantly look for the new disposal channels and be insecure about recycling channels (*Ibid*.).

Thus, the disposal channels and recycling networks used by bread suppliers in Sweden help to minimize the undesirable environmental effects of food waste. Instead of being wasted, the life of unsold bread is prolonged and the bread serves additional purposes. Finding disposal channels is quite easy, and the bread is handled without cost for the environment. In this way, the findings of this study coincides with the argument presented by Winter and Knemeyer (2013) and Presley et al. (2007), who suggest that a company uses reverse logistics to help cutting costs of environmentally undesirable disposal and benefit from recovering the value of the returned products, hence making the SC more sustainable.

Yet, current study also provides support findings of Partfitt et al. (2010) and DEFRA (2007), pointing that in supplier-retailer interface the efficiency of take-back systems is not guaranteed. Regardless of the fact that reverse logistics of Swedish bread suppliers diverts the waste from landfills, there are still some instances of market power that (combined with other aspects) may lead to increase of avoidable waste in the stores. The lack of the incentive on the part of retailers to decrease the rate of bread returns in the presence of take-back agreement

was argued to be one of the sources of small overproduction (about 2%) (Interviewees A & B, 2014). Overproduction, no matter how small it is, might still lead to environmental consequences, as it still involves utilizing the resources, and impacting the environment by certain production processes to some extent (Eriksson, 2013; Bakas & Herczeg, 2010). These environmental costs, no matter how small, would be totally unjustified if the produce would finally be left unconsumed and become waste (Priefer, 2013). So, the effects of overproduction still negatively affect the environmental pillar of sustainability.

5.3.3 Social pillar of bread reverse logistics

When discussing the social dimension in reverse logistics Presley et al. (2007) argued that external population should see greater benefits, and not greater problems as a result of reverse logistics activities. Mena et al. (2011) and Schrettle et al. (2014) argue that measures to reduce and manage waste can have a positive effect on life quality of the community as whole. Particularly, preventing avoidable food waste is also a question of ethics and morality. Discussing the environmental dimension in current analysis, it was demonstrated that bread suppliers in Sweden are able to manage the waste in a way that diverts it from landfills (Interviewees A, B & C, 2014). Moreover, the companies managed to find a better alternative to incineration and landfilling through prolonging the life of unsold bread by directing it to human consumption, or animal feed (*Ibid*.). Such extended use of an asset and avoiding its going to landfills is generally considered to be socially responsible (Rogers et al., 2010; Stock & Mulki, 2009).

The improved relations between SC actors are also argued to contribute to the social dimension of sustainability on the organizational level by providing benefits to all actors in the SC (*Ibid*.). Jensen et al. (2013) argue that reverse SC is one of the processes that can potentially lead to sustainable improvements, as it facilitates the move of the supplier-retailer relationship from a more transaction-oriented towards more collaboration-oriented and creates good conditions for value-sharing.

The findings from this study, however, show the contrary. The problems of cooperation and power struggles are still present in the existing reverse logistics of bread suppliers in Sweden. The discussion of economic dimension of take-back practice's sustainability in current analysis shows that there is space for improvements in the cooperation between the retailers and bread suppliers, which would help to not only improve the relationships of the suppliers and retailers, but will positively impact consumers. It was found that the value of bread that is annually sent to farmers only by company B exceeds 100 millions SEK (Interviewee B, 2014). Enforcing retailers' incentive to decrease returns might lead to reduced consumer prices for bread that reaches its expiry dates, and promote better savings for the companies which would provide greater benefits for economy and the society as a whole. Moreover, decreasing the existing overproduction that was argued to be partially connected to specific terms of take-back agreement between bread suppliers and retailers would decrease both economic and environmental impacts and provide increased benefits for the society as a whole.

Summary of sustainability implications

In summary (see table 3), the analysis shows that powerful retailers did not impose reverse logistics to the bread suppliers, although the spread of take-back agreement was a consequence of retailers' olygopsony power. Bread suppliers have a very good knowledge of, and make use of disposal channels that divert the waste from landfills. They have also built

the reverse logistics schemes that enable them to avoid high economic and environmental costs of handling the waste. That means that in case of Swedish bread suppliers the take-back practice does not lead to higher waste caused by inability of suppliers to properly dispose of it, which runs counter to the findings Rogers et al. (2010) and Tibben-Lembke (2001).

Table 3:Sustainability implications of take back agreement in Swedish bread industry [own creation]

Take - back clause´s sustainability		
Economic	**Environmental**	**Social**
• sophisticated ordering and forecasting practices helps to avoid over-ordering and helps to partly suppress retailers´ market power • almost no costly additional processes and no high economic costs of handling the food waste for suppliers	•no obsolete bread ends up in landfills or is sent to incineration •all the food waste is minimized through -reusing it for animal feed -donating to charity organisation	•getting extended use of an asset •avoiding its going to landfills
BUT: returns target is slightly higher: the compound result of sellers´ ordering faults & slight market power exercise, i.e. • lack of retailers´economic incentive to decrease the amount of unsold bread • lack of cooperation between some store managers and suppliers' sellers	**BUT**: overproduction, as a compound result of retailer market power abuse and seller´s ordering faults • no matter how small overproduction is it might still lead to environmental consequences	**BUT**: space for improvements: • better cooperation – consumer benefits • decreasing overproduction - better benefit for the society as a whole
Conclusion: the overall sustainability of the take-back practices of Swedish bread producers in the supplier-retailer interface have a potential for improvement.		

It is also clear from the analysis that Swedish bread suppliers performing take-back logistics have sophisticated ordering practices, helping to adjust the bread supply to varying demand and thus minimize overproduction costs. Moreover, the fact that bread suppliers manage the ordering themselves, and have a thought-through system to ensure as less returns as possible, leave the retailers little space to exercise their power and to over-order. Thus, the findings do not fully confirm the conclusions of previous research arguing that reverse supply logistics systems serve as additional incentive for powerful retailers to over-order (Buzby & Hyman, 2012; Monier et al., 2010; Parfitt et al., 2010; DEFRA, 2007).

However, there are other instances of retailer's market power within this take-back agreement that can still cause over-ordering and other negative effects on the overall sustainability of the reverse logistics, and consequently, the sustainability of the whole bread SC. This includes the pressure to fill the shelves, the terms that oblige bread suppliers to refund retailers for the unsold bread and unwillingness of retailers to discount the expiring bread. These instances of retailers' market power manifestation have not been discussed in detail by previous research. Yet, this market power effects may lead to significant sustainability breaches, including increased returns. The findings of current research also suggest that introducing the economic incentive for the retailers to decrease the amount of returned bread might cut the amount of returns, and hence reduce avoidable waste.

6 Conclusions

The aim of this work was to explore and the tack-back practice between Swedish bread suppliers and retailers; describe how it is carried out, and more specifically, how this particular agreement and possible power asymmetries between suppliers and retailers may impact the overall sustainability of the supply chain.

The findings led to conclusion that retailer chains in the Swedish industry have many sources of market power to exert influence on bread suppliers. A combination of certain market power sources, i.e. retailers' ability to choose suppliers offering the best deals and the fact that retailer industry is highly concentrated, has led to a rapid spread of take-back agreement. This has gradually changed the general market practices in the whole industry, altering supply chain of bread and bread suppliers' services.

The analysis of take-back clause implications on sustainability of bread supply chain has not fully confirmed the arguments of previous research, claiming that reverse supply logistics systems serve as additional incentive for powerful retailers to over-order (Buzby & Hyman, 2012; Monier et al., 2010; Parfitt et al., 2010; DEFRA, 2007). It is mainly disproved because in Swedish bread industry it is the suppliers (and not retailers) who are responsible for ordering. Although the spread of take-back agreement was a consequence of retailers' olygopsony power, swedish bread suppliers, performing take-back logistics, have sophisticated ordering and forecasting practices that help to deliver the right amount of bread, and partly suppress the possible instances of market power (Interviewees A, B & C, 2014). Yet, the fact that bread suppliers' targets for bread returns rate is slightly higher than the figure included in production calculations might be the compound result of bread sellers' forecasting faults and other forms of retailers' market power exercise.

When assessing the economic dimension of take-back practice in the context of Swedish bread suppliers, it can be argued that there is a much higher potential for suppliers' profit maximization. It was found that one reason for that might be retailers' abuse of market power through imposing some terms of the take-back practice that prevent suppliers from realizing full economic potential. The market power is manifested in lack of economic incentive on the part of retailers to decrease the amount of unsold bread and lack of cooperation between some store managers and suppliers' sellers, which may lead to higher amount of bread returns. The above confirms that in the context of perishable products, such as bread, the take-back agreements in the retailer-supplier interface may be the cause of some overproduction.

Overproduction, no matter how small it is, might lead to environmental consequences, as it still involves utilizing the resources, and impacts the environment by production processes (Eriksson, 2013; Bakas & Herczeg, 2010). Even small environmental costs are totally unjustified as the bread is finally left unconsumed and becomes waste (Priefer, 2013). Thus, even though it was found that RSC and take-back agreements in case of Swedish bread suppliers are organized in a way that minimize the undesirable environmental consequences of landfilling and incineration, the environmental pillar of sustainability is still negatively affected by the effects of overproduction.

The discussion of take-back practice's implications on SC's sustainability in current analysis shows that there is also space for improvements in cooperation between the retailers and bread suppliers, which would help to not only improve their business relationships, but will positively impact consumers. Moreover, decreasing overproduction, that appeared to be

partially connected to specific terms of take-back agreement, would decrease both economic and environmental costs, and thus provide more benefits for the society as a whole.

To sum up, take-back practices of Swedish bread suppliers in the supplier-retailer interface have certain negative effects due to existing power asymmetries. There is a potential for improvement across all SC's sustainability pillars if the problems caused of these power asymmetries are addressed. The sustainability breaches are mainly connected with specific terms of the take-back agreement with retailers that may become the source of overproduction, and thus lead to economic, environmental and social costs.

Epilogue

During the interviews both with retailers and bread suppliers a serious concern has been repetitively mentioned. It is the persistent consumer pressure on retailers to fill up the shelves with all possible sorts of bread. This, as mentioned before, may lead to over-production hence to excessive food waste (Interviewees 1, 5, 6, 7 & A, 2014). When discussing the problem of empty shelves vs. full shelves, some retailers and suppliers believe that a consumer expects that the shelves in the evening will look exactly as in the mornings (*Ibid*.). As put by the manager of Store 5, "*consumers do not accept when they do not find fresh bread every day at any time*" (Interviewee 5, 2014). Store 7 (2014), for instance, always makes sure that the customers are satisfied. He states, "… *if a consumer comes two days in a row and does not find the bread he/she is looking for, the person will not come back again. That is why we try to make sure that our customer always finds what he/she needs*". Store 1 also emphasizes that its ultimate goal is to satisfy consumers' needs. Therefore, it tries to make sure that no bread with approaching expiry dates is left on the shelves (Interviewee 1, 2014). Finally, store manager 6 mentions that consumers are often too demanding and states, "*The problem is that people always want the best expiry dates on the products they buy. It goes for every product. They don't care if the product expiring one day earlier might be of the same quality, and always pick the one with the longest expiry date*" (Interviewee 6, 2014).

Interviewee A explains that in the end it is the consumer who puts pressure on retailer by expecting to find whatever he/she is looking for at 9 in the evening. The retailers in turn put pressure on bread suppliers. He believes that the key problem is that consumers got used to finding all kinds of products at any time of the day. He says, " *they* (consumers) *see no difference between ketchup and bread*". Interviewee A is convinced that bread suppliers and the retailers should explain to consumers that the bakery business is a "*fresh*" business and that the fresh bread arrives in the morning and one cannot expect to find all sorts of fresh bread at 9 o'clock in the evening. So in order to minimize the waste bread suppliers and retailers need to educate the consumers. They should learn to accept that fresh products can be out of stock by the end of the day and that the retailers and suppliers have the burden of managing the waste (Interviewee A, 2014).

These concerns should speak for the importance of raising consumer awareness about the need to reconsider their buying behavior. This is true for bread and for other perishable products as well. Happily, a recent study from YouGov (2013) showed that consumers' awareness of food waste issue is growing and that 6 out of 10 Swedes now are ready to accept less stocked bread shelves in the supermarkets if it would benefit the environment (A´ Sustainability Report, 2013). The ways of raising consumers' awareness about the problem of avoidable waste might serve as a good topic for further research on food waste.

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Appendix 1: The major brands and corporate ownerships in Swedish retail market

Table 2. *The major brands and corporate ownership in the Swedish retail market, divided into five business segments, and a description of these segments according to Axfood (Axfood, 2010)*

Corporate group	Hard Discount 5% of market	Low Price 11% of market	Hypermarket 22% of market	Conventional 45% of market	Convenience 17% of market
ICA 46% of market			ICA Maxi	ICA Supermarket ICA Kvantum	ICA Nära
COOP 20%of market			COOP Forum	COOP Konsum COOP Extra	COOP Nära
Axfood 20% of market		Willys PrisXtra		Hemköp	Tempo Handlar´n
Bergendahls 5% of market			CityGross	Matrebellen	Matöppet
Others 9% of market	Lidl Netto			Vi-butikerna[1]	7-Eleven Petrol companies
Description of sectors	1100-1800 articles Price index –[2] Residental areas External areas	7500- articles Price index 88-97 Residental areas External areas	12000- articles Price index 93-97 External areas	10000-15000 articles Price index 96-110 Residental areas Urban areas	1000-3000 articles Price index 104-130 Residental areas Near high traffic roads

[1] Loosely connected to Axfood
[2] To few articles to calculate a price index

Source (Eriksson, 2012, p.16)

Appendix 2: Questions to bread suppliers

Market Power

Can you describe how take-back agreement works in you company?
How has the take-back clause developed?
Why do you have take-back agreement?
Since when do you have it?
Has this agreement always been present between you and retailers?
Who initiated the take-back clause practice (retailer or your company)?
Do the terms of take-back clause vary from store to store?
Who do you negotiate with (with headquarters or with each individual store)?
What kinds of contracts do you have and why do they vary?
As I know you have take-back agreement with Coop and ICA stores. Do you have this agreement with the all stores in Coop and Ica chains (ICA nära, maxi, kavntum etc., and Coop, forum, extra, nära etc.)?
Do you have this agreement with all the retailers you supply bread to?
When do you have to take-back the bread?
Are these rules the same for all retailers?
Do retailers get refund for unsold bread? full or partial?
Are there any points of disagreement that sometimes arise between you and retailer, specifically regarding the take-back system?
What do you think, how would the situation look like if you did not have the take-back clause?
Do you see any better alternative ways of contracting with the retailers?

Economic

Who is responsible for forecasting and ordering?
What are the ordering routines?
How do you decide on the amount of bread supplied?
How much bread is usually returned?
How hard is it to dispose of returned products?
Do you think that the fact that you take care of the disposal adds value to your company?
How does the take-back policy influence your production (overproduction) and overall waste at your bakeries?
Does the process of taking back the bread require you to take additional actions and investments? (additional labor hours, extra transportation, extra keeping space, extra time resources, etc.)

What percent of value are you able to recover when you sell the bread to farmers?
Do you have any contractual agreement with farmers on the amount of bread they are ready to buy?
Are the farmers always capable of buying the full amount of bread that is left unsold? If not, what happens to the bread that farmers refuse to buy?
What are the costs of handling it then?

Environmental

What happens to the bread that has been taken back?

Do you have individual food waste reduction targets?
Have you already reached any targets that you have set?
Do you cooperate with retailers in order to reduce waste?
What are the advantages or disadvantages of waste handling, namely selling the bread to farmers in your company, today?

Social

Is there any legislation/regulation that obliges you to take care of the product throughout the whole life cycle, which encouraged the take-back provision?
Do you have any sustainability or CSR programs?
Does it include food waste management?
Do you have any environmental certification/labeling (miljömärkning) for your products or store? If yes do certification criteria include management of food waste?

Appendix 3: Questions to retailers

Market Power

Can you describe the ordering process of fresh bread from suppliers namely how suppliers take back the unsold/expired bread and fill the shelves with fresh bread?
How often do you require a supplier to replenish the shelves?
How important is for your store to have full stocked shelves?
Do you require from bread suppliers to fill up the shelves fully?
When suppliers have to take back the left/unsold bread? (Exact days before the expiry date)
Do all bread suppliers have to take back bread the same days before expiry date?
All sorts of bread is taken back or returned to the bread supplier?

Who negotiates contract terms with bread suppliers (the headquarters or the each individual store)?
Do you know why and how this provision (take-back clause) has been developed?
Is it your initiative or the suppliers'?
Since when do you have this provision in the contracts?
Do you have this kind of agreement with all of your bread suppliers at all stores in your chain?
Do you see any better alternative ways of contracting than the current practice?
Does the supplier refund the amount of money for the bread that is left unsold?
Do you encounter any conflicts with suppliers regarding the take-back process?
Does take-back activity add value to your company?
Do you benefit from this activity and how?
Is it costly to manage the unsold bread?

Environmental

What happens to the leftovers of your own-produced bread and bread that has no take-back agreement?