Shear Determination

“What are the current opportunities in the global wool industry?”

Lawrence Henderson
Amsterdam Fashion Institute
Bachelor Thesis
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Research Report

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I, Lawrence Henderson, hereby declare that the work presented in this thesis is original, based on own research and investigations. The work of others has been clearly stated.

Date:
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Executive Summary

The global wool industry has suffered from the invention of synthetic fibres, improved heating in homes and financial pressures on consumers from increasing oil and food prices. Therefore, new opportunities are needed for its fortification.

The global wool industry is comprised of a highly segmented supply chain that inhibits information flow and restricts the ability for early additions of value. The current global supply of wool is at a seventy year low, driven by woolgrowers converting to enterprises with better profitability, and low sheep numbers in major wool producing countries. The demand for wool has been compromised by competition from other fibres and the effects of recent economic events on consumer spending. However, the outlook is positive due to an increasing interest from consumers into natural fibres and luxury goods, as well as the emerging affluence of China’s domestic market. This outlook confirms wool still has a relevant place in society.

Analysis of secondary data and interviews with those in the industry suggests that opportunities lay in dysfunctions of the supply chain of wool, and the contemporary drivers of supply. The identified opportunities are:

- Improving the flow of information along the wool pipeline,
- Innovating value additions at the beginning of the supply chain,
- Reducing the expenses of wool growing by developing the shearing workforce, and
- Investing in strong wool research and development

All of the identified opportunities are suitable for potential exploration and exploitation by the New Zealand wool industry.
Preface
Amsterdam, May 2013

Growing up in New Zealand, I always knew wool was significant. You were never told it was, or explicitly educated about it – you just knew. Once I became interested in fashion my understanding of this fibre’s significance and brilliance grew, as did my knowledge that the New Zealand wool industry was in demise. Nobody had to tell us that either, we just knew.

When it came to choosing a topic for my bachelor thesis, it occurred to me that this was the opportunity to investigate the wool industry and answer my own, long-pondered and concerned, questions.

The process of writing this thesis can be accurately described as a journey. I travelled along new paths and took surprising turns. I had anticipated I would conclude my thesis with some form of demand stimulus, perhaps the creation of a new product idea, a marketing ploy to remind the world of the beauty of wool, or a strategy to enter an emerging market. However, during my research I discovered that demand was not the major issue – the significant problem was lack of supply.

This finding truly stumped me. All along, I was under the assumption that the wool industry was innocently suffering from external factors; never did I expect to learn that problems were coming from the inside. This is when I learnt what it means to research.

I would like to thank those who supported me along these winding roads. Thank you to my coach Marco Mossinkoff for your guidance and encouragement during this semester. Also, thank you to my father, for always being open for light discussions of my topic, or the demise of society. To Carey, who has made all of this possible. And to my mother who has supported me unconditionally over the past four years.

Writing this thesis was both a challenge and a pleasure. I gained great knowledge, which I look forward to applying in my future career.

Lawrence Henderson

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Chapter I

Introduction
Chapter I

Introduction

Since their invention, synthetic fibres have become increasingly dominant in the apparel and textile industries and have caused the shrinkage of rival fibre industries, particularly that of wool. As wool’s presence fades in society, as it loses footing in the consumers’ minds, the countries built upon its significance have also suffered.

New Zealand has deep-set roots in wool; the fibre has been a key sector of the country’s economy since colonial times. So whilst the global wool industry has shrunk, so has New Zealand’s, rendering it in need of fortification.

Keen to aid in this reinvigoration, and having observed a variety of indications that wool still has relevance in a contemporary context – not only in the apparel and textile industries, but also within wider society; my decision to research opportunities in the global wool industry has been validated.

These indications include:

- Growing concerns over non-renewable resources,
- Increasing interests in natural fibres, linked to upward trends towards healthier lifestyles and sustainability, and
- Rising consumption of luxury products.

The culmination of intuition and validation has led to the formation of my research question:

“What are the current opportunities in the global wool industry?”

My intention in answering this question is to then distil which of these opportunities have potential for exploitation by the New Zealand wool industry. However, to answer this question, numerous sub-questions first need investigation. The sub-questions are as follows and are provide the chapter structure:
Chapter II: How does the global wool industry currently function?

Before opportunities can be recognised in the global wool industry, it is first necessary to understand the bigger picture, i.e. how it functions. Firstly, the functionality of the global wool industry is described vertically, analysing the supply chain of wool, and then horizontally, explaining the divisions of micron categories.

Chapter III: What are the current drivers of supply and demand for wool?

Once the mechanics of the global wool industry have been understood in Chapter II, the research is led to investigate what is currently driving its supply and demand.

After answering these two sub-questions, it is possible to identify and extract current opportunities in the global wool industry. This ensues in the following chapter:

Chapter IV: What are the current opportunities in the global wool industry?

This chapter ascertains the current opportunities in the global wool industry and funnels down which of these are the most suitable for follow through by the New Zealand wool industry. Suggestions are offered for how exploration and exploitation of the opportunities could be carried out.

1.1. Objective

The objective of this thesis is to identify the current opportunities in the global wool industry, and subsequently distil which opportunities could be explored by the New Zealand wool industry.

1.2. Intended Audience

This research is intended to be of interest and use to not only those involved in the global wool industry, or the New Zealand wool industry. It may also be of use to companies and brands currently, or interested in,
sourcing/using wool, agricultural investors exploring new opportunities or wool-producing countries in predicaments similar to that of New Zealand. Eventually, I hope it can be used by sheep farmers to restore confidence in their product.

1.3. Limitations and Boundaries

This research is constrained by both self-imposed and involuntary limitations. These limitations and boundaries are as follows:

- As I have a personal connection with the topic since I hail from New Zealand, I naturally have lenience towards wanting to help the country's wool industry when judgements are made and during the general carrying out of this research.

- Since this research is ultimately focused on the apparel and textile industry, this reduces or eliminates the relevance of certain topics, issues, and companies that would usually be relevant to the general wool industry. For example, there are organisations and issues that are important in the strong wool industry, but unrelated to the wool used for apparel and textiles. This also explains why the research has a heavy presence of Merino wool, since this is by far the predominant wool for apparel and textile applications. Curiously, I have found it very difficult to find information about alternative breeds for fine wool, other than Merino, as all information points to Merino sheep having become synonymous with fine wool products.

- The research was led down the path of agricultural issues of which my knowledge is limited as a student of a different field in Textile Technology.

- The research is limited by what was achievable within the given time period of approximately three months. The factor of time particularly effected the direction of research. In hindsight, I would have preferred to thoroughly analyse the New Zealand and Australian wool industries, comparing the two against each other and juxtapose them against developments in the global wool industry. However, it is only possible make this reflection having ventured into the research in this report. Because of limited time, I was unable to change direction and needed to continue on the chosen path.
When describing how the global wool industry functions it is difficult to give a general description, since functionality varies between the countries, companies, and procedures involved. Therefore, it has been described in the most conventional manner, by means of the main procedures that form the basis for the wool industries in all countries.

Difficulties arise in finding consistent quantitative data regarding virtually everything about the global wool industry as almost every source presents different readings. For this reason, quantitative data has been procured predominantly from Australian Wool Innovation Limited (AWI). AWI is connected to the Woolmark Company and conducts much research within the global wool industry, particularly for government studies and market reports. This source generates large amounts of industry data, and is regarded as reliable and elucidatory.

A large portion of the secondary data used in this research comes from an Australian source. This was not a deliberate decision; rather inadvertent because, as the largest producing country of wool, Australia has an abundance of wool orientated initiatives and research companies that provide information.

1.4. Research Methods

Due to the nature of the research being predominantly descriptive, the majority of the data has been acquired from secondary sources. This data has been collected from a range of sources including: books, journals, government reports, case studies, magazines, newspapers, dissertations, databases and the Internet. Ranges of industries were also spanned, from apparel and textile, to agriculture and farming.

Additionally, some informal interviews were conducted intermittently during the process. This primary data is woven through the thesis in combination with the secondary data.

1.5. Definitions and Other Prerequisites

The following paragraphs provide definitions for several key terms that are useful to know before reading deeper into this thesis. Because the topic of the wool industry requires the use of industry-specific
terminology a full glossary of terms and abbreviations is provided in Appendix A to accompany the definitions below.

Additionally, for those less familiar with the country of New Zealand and its wool industry, an overview can be found in Appendix B.

Apparel and Textile Industries

The term apparel industry refers only to the manufacturing of garments, everything before is assigned to the term textile industry (Strohm, 2007)

Micron

A micron (μ) is one millionth of a metre, and expresses the measured diameter of a wool fibre. The finer the fibre of the wool, the lower its micron number is.

Wool

Wool is the name given to the textile fibre that is acquired from sheep or other animals, such as cashmere and mohair from goats, or angora from rabbits (Braaten, 2005, p. 441). However, in this research, the term wool refers only to the sheep-obtained fibre.

Wool Industry

The term wool industry is used in its widest sense, including all parties involved in the supply chain, from raw wool fibres to finished products. Additionally it includes the companies and brands selling these goods, as well as institutes dedicated to the research and development of wool.

This thesis focuses upon the global wool industry (GWI) as well as the domestic wool industries of specific countries. When speaking of the global wool industry, or simply the wool industry, reference is being made to the wool industry on a global level. When speaking in domestic terms the country will always be stated, for example, the New Zealand wool industry.
Chapter II

How does the global wool industry currently function?
Chapter II

How does the global wool industry currently function?

Chapter II aims to paint a picture of the current landscape of the global wool industry, explaining what it is made up of and how it functions.

Currently, the global wool industry is composed of vertical and horizontal aspects. The vertical aspect is an atomised supply chain, and the horizontal aspect is its different micron categories of wool.

Firstly, the global wool industry is explained vertically, providing an understanding of the supply chain of wool. Following this, the horizontal division of industry is described by the difference in micron categories.

2.1. Vertical Industry Structure: Supply Chain of Wool

The wool industry is a value delivery system, with its various components creating a supply chain (Ryan, 2006, p. 4). “Supply chain” terms the sequence of steps in the transformation of wool from raw product to the final form at the retail stage (Kotler & Keller, 2006, p. 26).

The supply chain of wool is highly segmented. This is because the nature of the wool fibre requires it to pass through a pipeline of various processes to transform it from its raw state to something that can be used by consumers.

Historically, raw wool was processed and manufactured in close proximity of, if not within, its country of production. Italy emerged as a leader of the global wool industry after World War II by creating a concentrated, fragmented network of specialised entities to process and manufacture wool textiles and garments (Jenkins, 2003, p. 1012). But today, wool is increasingly being produced, processed and manufactured in different parts of the world.
2.1.1. The Wool Pipeline

The supply chain of wool is fragmented into many steps based on the nature of the wool fibre. Wool must go through various processes to transform it from its raw state into a product that can be used by consumers.

It is important to note that wool takes a long time to pass through this pipeline, averaging eighteen months from initial sale of raw fibre to end garment (Malcom, McSweeney, & Small, 2005). Because of this, total wool supply is measured as a combination of production and opening stocks. Opening stocks refer to the quantity of wool, which is already in the pipeline from woolgrower to manufacturer at the beginning of the measured period (Wilcox, 2009).

Although there are variations of the wool supply sequence, depending on the intended end use, Figure 2.1 illustrates the conventional pipeline for apparel wool. Figure 2.1 has been divided into three sections to assist with explanation—wool growing and selling, processing and manufacturing.
Wool Growing

Wool growing is the farming of sheep for wool. Farmers grow their sheep’s wool over the cold months. When a sheep’s fleece is ready to be removed, it is shorn off. This typically occurs once a year in early spring or summer. Freshly shorn wool is known as “greasy wool”, as it still contains lanolin.

Research by Ryan (2006, p.6) explains the process and importance of wool classing. After shearing, the wool is classed and tested for sale in the appropriate category. The wool classer is qualified to determine different qualities of wool, grouping these together to maximise the woolgrower’s return.

As an agricultural commodity, grade standards are of importance in the marketing of wool to ensure that information regarding economically significant attributes and defects are communicated to buyers.

Both Australia and New Zealand have sophisticated grading systems for classing the wool after is has been shorn. These systems strive to minimise the relative costs of dealing with wool’s inconsistent quality characteristics.

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Information Box 2.1

**Wool vs. Synthetics**

Manufacturing synthetic fibres uses significantly more energy than growing the equivalent weight of wool.

- Nylon = 5 times more energy
- Acrylic = 3.8 times more energy
- Polyester = 2.7 times more energy

Source: (Barber & Pellow, 2006)
With the ability to measure both non-measured and objective traits, buyers are provided with a detailed product description and a price that reflects the supply and demand for the traits of the lot.

Producing countries have different options for growers to sell their greasy wool that vary in accordance with enterprise scale and the micron of wool produced, though it is usually in one of two ways. They either sell the wool at auction using a broker, or sell directly to a buyer (Conforte, Dunlop, & Garnevska, 2011, p. 150).

Not unlike the apparel industry, changes in labour costs and developments in technology cause shifts in location for processing and manufacturing (The Australian Centre for International Economics, 2002, p. 12), hence why most wool is then shipped to its processing destination.

As the world’s dominant wool processor this destination is likely to be China (AWI, 2004), however Italy is still seen as the top quality wool processing country (The Australian Centre for International Economics, 2002, p. 11). Before export, to minimise shipping and storage costs, wool is processed into a compact form, known as “dumping” (Ryan, 2006, p. 5).

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### Information Box 2.2

**Wool Grading Traits**

**Examples of Non-Measured Traits:**
- Style
- Vegetable matter type
- Unscourable Colour

**Examples of Objective Traits:**
- Fibre Diameter
- Yield

Source: (AWEX, 2009)
Figure 2.1 The Conventional Apparel Wool Pipeline

Adapted from "The Conventional Wool Pipeline". Source: (i-Merino, 2005)
Wool Processing

Wool processing involves the scouring, carding, and spinning of the wool, essentially preparing it to be made into its end product.

“Greasy wool” requires cleaning before it can be used for commercial purposes. This is the first part of processing wool, called “scouring”, which is typically done industrially using specialised equipment and detergents.

Lyons (2008) explains that a card is used to detangle scoured wool and create a web of fibres. This web is then either divided into strips that are rubbed to form a twist less strand (for worsted processing\(^1\), which then needs to be combed to remove small fibres) or removed from the card as a single piece of fibres (for woollen processing\(^2\)).

These strands are then spun to add strength and create a yarn. This single strand is suitable for weaving, but not for knitting as this requires yarns to be two-fold. In that case, two yarns are twisted together in opposite directions to make a balance yarn\(^3\).

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1. Worsted processing produces products with a smoother finish and is usually more expensive.
2. Woollen processing produces products with bulk and a textured touch.
3. Blending: Non-wool fibres can be blended in before the yarns are spun, or twisted.
Wool Manufacturing

The intended end use then dictates which route the yarns or fabric will take to the consumer. For knitwear, it is possible for the yarn to be knitted straight into the garment shape (fully fashioned knitwear), or for a knitted fabric to be cut to a pattern and then sewn into a garment (cut, make and trim knitwear). For woven garments, the latter is the only option (a pattern cut from the woven fabric, followed by assembly of the pieces by sewing) (Eberle, Hermeling and Hornberger, 2008).

2.1.2. Problems in the Vertical Industry Structure

The vertical structure of the wool supply chain has several problems, all of which stem from its atomised nature. This nature has been criticised for:

- Hindering the flow of information,
- Limiting market response agility, and
- Being difficult for woolgrowers to add value.

However, although the wool supply chain does have its issues, there are also initiatives towards improving those problems that can be improved and new ideas for tackling the ones which are harder to change.

Poor Conductivity of Information Flow

It has been said that because the pipeline is very segmented, it is therefore not conductive of information flow between sectors (i-Merino, 2005). In the past, this was not a problem as the different segments were in close proximity to each other.

In the 1950's, Italy eclipsed Britain as the nation with the strongest wool industry, thanks to its network of small, specialised firms, co-operating in a densely like-focused area (Jenkins, 2003, p. 1013). But today, when

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Dyeing: There are several points in the process where wool can be dyed. Dyeing can be performed on the fibres, yarn, or end product.
different steps occur in different parts of the world that are far from each other, this structure of segmentation hinders communication between the stages of the wool supply chain.

Inspired innovation and proactive improvements are possible, provided that feedback is received but currently the exchange of information is too poor to incite this. During my research I have read many times that woolgrowers feel they lack feedback about sales and market needs and wants (Champion & Fearne, 2002, p. 2; Peloso, 1998, p. 1894; Ville, 2005, p. 13), and that this lack of feedback consequently discourages innovation (Faulkner, 2012, p. 22).

Contrastingly, it has been said that the wool supply chain has traditionally been a case of production pushing, rather than listening to what consumers want and reacting accordingly. Charles Pulham, a farmer whom has been wool growing for over forty years, explained:

“Over my career in wool, what we have done has always been production-orientated. Never have we looked at what the customer wanted and then worked backwards and produced it...we always worked the other way... I do know it doesn’t work like that anymore though.”

(personal communication, 2013)

This contrast suggests that woolgrowers are now aware that a production-oriented strategy is no longer the route to success, hence their complaints of lacking feedback from the end of the supply chain.

But my initial response to the point that woolgrowers feel they lack feedback, about sales and consumer needs/wants due to the convolute supply chain, was that this seemed like a poor excuse. If they do not feel that they receive information along the supply chain, then why are woolgrowers not proactively seeking it themselves? There is ample available information online about market changes and what the consumer is demanding from wool. Through my research, I have had first-hand experience in the ease of accessing this data using the Internet. With further digging, I discovered what could be the reason for the lack of proactive information-pursual. The average age of a woolgrower is sixty years (Fierravanti-Wells, 2009, p. 15). As widely understood, people in older age brackets tend to be less literate with computers and the internet, which could explain why woolgrowers are not accessing, or aware of the existence of, online market information.
Interestingly, although the supply chain appears to afford little information flow from manufacturer back to woolgrower – the information flow in the direction from woolgrower to manufacturer is more substantial due to the sophisticated and informative grading systems of wool.

**Limited Market Response Agility**

The segmented nature of the wool pipeline has also been criticised for leaving the industry less agile in responding to market changes. The transparent passing of information along the pipeline is crucial for efficiency, and quick market response is crucial for competitiveness in the apparel industry (i-Merino, 2005). The pipeline also lacks agility because transforming the wool from its raw form to a garment on the shelf takes a long time (eighteen months, as previously mentioned).

In response to this criticism, I would say that it is less crucial for the wool apparel and textile industry to be extremely agile to market changes as wool is generally made into more “luxury” items, which tend to be timeless, classic in nature, and therefore less trend-based. This is particularly true for fine micron wool. However, market agility could be more of an issue for mid micron wool, seeming as this wool is commonly blended with other fibres to make cheaper apparel. And cheaper apparel tends to be more trend-based, since people invest less in trend pieces, as they know the popularity of the style will pass.

It has been established that the supply chain of wool is very segmented, which has its problems. However, once I started to think about resolutions to these problems, it seemed that since wool has to be processed along this line for it to become “makeable” into a final product, is the segmentation not necessary? With further research, it became apparent that a situation of dominant players is reducing segmentation by taking over more of the steps themselves.

As the supply chain of wool is becoming more global, it is also reducing in length because of dominant parties. Australia is the world’s biggest wool producer, and China dominates its wool exports (as well as the world’s wool processing sector) representing 70 – 75 per cent of Australia’s wool exports (AWEX, 2012). Individual enterprises in China are growing and expanding to buy greasy or clean wool and do all the rest of the processing and manufacturing themselves, consequently making the wool pass through fewer hands (AWI, 2013a, p. 19). This movement has both positive and negative aspects to it. In one sense the fact that China is
the world’s dominant wool processor, and Australia is the world’s key wool producer, is positive for improving communication along the wool pipeline. Since the wool is being passed along fewer hands, information also has less possibility to get lost along the way. But that said it is also negative in that the situation of dominant players leaves Australia heavily reliant on China. Even outside of agriculture, Australia is already very dependent on China in other industries, particularly mining. This makes them vulnerable to the changes in the Chinese economy. Australia is well aware of this point and is attempting to create demand through reducing China’s dominance by redirecting wool-processing capacity to new regions, particularly Vietnam (Locke, 2012).

**Difficult to Add Value**

The final criticism of the wool supply-chain is that as a value-delivery system, it is difficult for woolgrowers to add value to their “product”. As with any commodity, there is more possibility to add margin at the end of the supply chain than there is at the beginning. The most possibilities for value adding lay in branding, specification, quality standards, and the addition of special performance features (e.g. insect resistance) (McKinnon, 2010).

Examples do exist of successful value-adding initiatives early on in the supply chain. In New Zealand, the fine wool sector has “broken away from the whole wool sector and differentiated its brand” (Marsh, 2005, p.11). Thus, moving towards a non-commodity type market by effectively branding New Zealand Merino wool as a premium product (Stevenson, 2004).

A particularly new initiative is ZQ Merino from New Zealand. ZQ is an “ingredient brand” developed by New Zealand Merino. The brand buys only the highest quality Merino wool from local suppliers, guaranteeing quality to buyers not only in the area of fibre but also animal welfare and environmental sustainability, as well as providing traceability. Working only via contract, ZQ Merino also provides economic sustainability to growers, as the price is more certain and allows woolgrowers to create more stable forecasts (Denend & Shiv, 2011).

Information Box 2.4

**Discover ZQ Merino**

“...Most Merino is a faceless commodity, sold through an adversarial supply chain whose ultimate goal is lowest price. ZQ Merino weaves human understanding with nature’s brilliance to produce the world’s premium fibre. Working in synergy with its partners at every level, ZQ Merino delivers on authenticity and provenance, amplifying a brand’s reputation and the value it is able to offer to its customers.”

Source: (New Zealand Merino Limited, n.d.)
Value-adding attempts have also been seen in the Australian wool industry with the rise of early stage processing (e.g. scouring and carbonising) of wool before export (Peloso, 1998, p. 1890).

2.1.3. Conclusion of the Vertical Industry Structure

The vertical aspect to the structure of the global wool industry is a value delivery system, where various segments make up a supply chain. These segments consist of the steps that wool passes through in its transformation from its raw state, fresh from the woolgrower, through processing and manufacturing, to the final product that is available to the consumer.

The segmented supply chain of wool has been criticised for:

- Disrupting the flow of information along the pipeline,
- Being less agile in responding to market changes, and
- Being difficult for woolgrowers to add value to their product.

However, there is evidence of improvements to these problems.

In the past, woolgrowers were production-orientated but it appears that now they are requesting market feedback to respond to. With poor information-flow through the supply chain, the lack of feedback received by woolgrowers is inhibiting innovation and improvement.

Problems due to the atomisation of the supply chain may increasingly be reduced by the rise of dominant players. As Australia is the biggest producer of wool, and China the main processor/manufacturer of wool, the product is passing through fewer hands. This has both positive and negative effects, as although it is helpful for the flow of information, it is risky as Australia's reliance on China grows.

Additionally, for woolgrowers to add value to their product has traditionally been a difficult feat due to the commodity-nature of wool. Though examples of successful value adding are suggesting there are possibilities.
2.2. Horizontal Industry Structure: Micron Categories

The global wool industry has a horizontal aspect in different micron categories of wool. Different types of wool have different end uses, which means they have different markets. When we talk about these different types of wool, we speak in terms of microns.\(^5\)

The micron of wool is its most important characteristic, dictating 70 to 80 per cent of its price (AWI, 2012a). This fineness of wool divides the industry into categories, somewhat like “sub-industries” dealing in the different categories of wool. Wool is typically divided by micron into three categories of fineness – strong wool, medium wool and fine and super fine wool.

Different organisations have different micron definitions of these categories, so it is difficult to find an industry standard. I have chosen to use the micron definitions of Australian Wool Innovation (AWI) because they generate the most data about the topic of wool by micron. AWI defines wool by the micron categories specified in Figure 2.2.

Woolgrowers select the type of sheep (breeding line) and wool (micron range) based on what suits the physical characteristics of the farm, as well as personal view of market requirements (AWI, 2012b).

Due to the substantial role that land characteristics play in dictating what kind of sheep, and therefore wool, can be farmed on the land, different countries have strengths in producing different types of wool.

It is difficult to get a clear reading of which countries produce which microns of wool. The countries that make the biggest contribution to total global wool supply have readily available data, which is compiled together by research companies like AWI. These major producing countries are not an issue though; the difficulty is in finding data about the smaller producing countries that tend to be grouped together as “All Others”. Although their individual contributions are probably minor, once grouped together these countries make up a significant portion of total supply. For example, as visualised in Figure 2.2, over half of the strong wool produced comes from “all other” countries.

\(^5\) The definition of “micron” can be found in Chapter 1.5: Definitions.
As apparent in Figure 2.2, the portion of contribution from "all other" countries reduces with fineness of micron categories. This can be explained by finer microns of wool requiring more expert knowledge, and specific land conditions to cultivate. Generally, finer micron wools come from sheep that are farmed for their wool, whereas stronger microns of wool tend to be by-products of sheep farmed for their meat or milk.

Information Box 2.5

To Give Some Perspective...

The average human hair is approximately 60 microns.

Source: (Denend & Shiv, 2011)

Figure 2.2 Micron Profile of the World’s Major Wool Producing Countries

Super Fine and Fine Wool

Adapted from: “Micron Profiles by Country” Source: (AWI, 2011)
When discussing super fine or fine wool, the predominant providing breed is the Merino sheep. Other fine-wool sheep breeds, Debouillet or Rambouillet, are also bred from Merinos. Because of this, within the global wool industry, super fine and fine wool is virtually synonymous with Merino wool.

Originating from Spain, Merino sheep thrive in dry climates, hence Australia's capabilities as the leading producing country of super fine and fine wool (over 85 per cent of the countries clip is wool of this category, making up over 50 per cent of global supply) (AWI, 2012c). Other significant producing countries of fine wool are China, and South Africa.

Fine wool is seen as a luxury fibre, and is most useful for making products in the apparel and textile sector. These fashion products include luxury knitwear, suits, and active outdoor wear (a product group that rapidly growing in popularity) (Woolmark, 2012a).

**Medium Wool**

Commonly, medium wool (also known as mid micron wool) comes from sheep that are bred for both their wool and their meat. Prominent medium-wool providing breeds are: Corriedale, Dorset, Perendale and Suffolk (Sheep Breeders’ Association, 2012). When sheep are bred for dual purpose, the quality of the wool is compromised (Sheep 101, 2011). Therefore, countries that are strong in producing sheep meat consequently have a high production of this micron of wool, such as China and New Zealand.

As the fibre is heavier and less soft than fine wool, it is made into cheaper apparel, and often blended with other fibres. Other products of medium wool are interior textiles or heavy knitwear (Wilcox, 2009, p. 7).

**Strong Wool**

Strong wool is the coarsest wool fibre and is generally unsuitable for apparel products. It is mainly manufactured into heavier duty goods such as carpets, blankets, and upholstery textiles, or used for insulation (Nicol & Saunders, 2012). The prominent breeds that produce strong wool are: Coopworth, Drysdale, Lincoln and Romney (Sheep Breeders’ Association, 2012).
2.2.1. Conclusion of the Horizontal Industry Structure

The horizontal aspect to the structure of the wool industry is based on different micron categories of wool. These categories create sub-industries relating to the fineness of the wool and therefore its possibilities for final products.

- **Super Fine and Fine Wool**
  - The most applicable micron category for apparel and textiles
  - Predominantly comes from the Merino Sheep
  - Australia is by far the biggest producer for wool of this category

- **Medium Wool**
  - Typically blended with other fibres to make cheap apparel, or used in interior textiles
  - By-product of farming sheep for meat
  - Main producing countries are China and New Zealand

- **Strong Wool**
  - Unsuitable for apparel applications, mainly manufactured into carpet
  - Main producing countries are China and New Zealand
2.3. Contributing Component: Industry Organisations

Additional to the vertical and horizontal aspects of the wool industry, industry organisations also contribute to its structure. These organisations take on varying roles in the industry, and at various levels of influence.

The number of wool-oriented organisations that exist is overwhelming. At first during my research it was confusing that there were so many “fingers in the pie”, but with time it did become clear which organisations were truly important and influential in the global wool industry, or on national levels. The organisations identified in this section are the ones that I have found to be the most prominent and significant.

It should also be noted that several of the key companies are Australian – particularly Australian Wool Innovation Limited, and its subsidiary The Woolmark Company. This is not surprising since Australia is the world’s biggest producer of wool.

The categories of industry organisations explained in this section are:

- Woolgrowers’ Associations
- Government Organisations
- Market, Promoting and Branding Organisations
- Additional Key Organisations

Woolgrowers’ Associations

The information of this section is collected from the following woolgrowers’ associations: Australian Woolgrowers’ Association (2013), The Australian Superfine Woolgrowers’ Association (2013), California Woolgrowers’ Association (2013), Merino Incorporated New Zealand (2013) and the National Woolgrowers’ Association of South Africa (2013).

Wool-producing countries have organisations that represent their woolgrowers. The woolgrowers themselves drive these, with the intention of creating a unified voice for industry representation. Woolgrowers’ associations are interested in product promotion as well as research and development.
However, it appears that their abilities in these areas are limited. Therefore, activities focus on influencing organisations that have capabilities in these areas.

Their key activities are:

- Working with industry bodies to influence research and marketing directions.
- Lobbying to the government on behalf of members when appropriate/necessary.
- Facilitating education by running courses, information days etc.
- Supporting competitions, both regionally and nationally.
- Encouraging discussion between growers.

Woolgrowers’ associations are typically built on memberships that include an annual fee. They function at both regional levels, and at national level (generally the regional associations are linked by the umbrella of the national association). Additional to these levels, there are also associations that are focused on particular micron-categories, or sheep breeds.

When visiting the websites of woolgrowers’ associations from different countries, they all follow a similar format and provide similar content. Focus is placed on “Wool News” and “Events” – on regional, national, and international levels.

**Government Organisations**

Wool-producing countries typically have government organisations that play a role in the wool industry. These organisations are levy-funded and dictate their expenditure. Their aims are industry progress through research and development, marketing, and promotion - as well as facilitating data collection.

A crucial role that government organisations play in the wool industry is assisting with trade agreements. Although the supply and demand of wool has been trending downwards, the global trade of wool products has increased over 40 per cent over the past decade. By assisting in the lowering of trade barriers, government organisations allow greater market access and development (Australian Wool Research & Promotion Organisation, 2012).
However, imposed levies by these organisations must be met with equal perceived benefits, which is often not the case. For example, the woolgrowers’ of New Zealand refused to pay levies to the National Wool Board in 2009, due to “…a significant amount of dissatisfaction with past investments” (NZPA, 2009).

Marketing, Promotion and Branding Organisations

The wool industry is also made up of organisations dedicated to the marketing, promotion and branding of wool. Two of key examples are the infamous Woolmark Company, and the New Zealand Merino Company.

The Woolmark Company

The Woolmark Company is a subsidiary of Australian Wool Innovation Limited (see Pg. 35 for more information) and consider themselves to be “the global authority on Merino”. The company undertakes “marketing campaigns and R&D within the global textile and fashion industries to drive demand”. At local level, they collaborate with Australian farmers to maintain high standards of the national clip (Woolmark, 2012b).

Woolmark is also a brand, created in 1964, that operates via a licensing program. As the world’s best-known fibre brand Woolmark guarantees fibre content and quality to the consumer (AWI, 2012d).

Two of the key crusades the company runs for the promotion of wool is the “Campaign for Wool” and the “Woolmark Prize”. The Campaign for Wool, launched by the Prince of Wales – who described it as “Without doubt the largest coalition working to promote wool that has ever been put together“(2010) – collaborates with influential brands (e.g. Burberry, Marks & Spencer and Saville Row Bespoke) to put on events and exhibitions all over the world. The campaign’s intention is to increased demand but educating consumers about the benefits of wool (Campaign for Wool, 2013). The Woolmark Prize supports young designers working with the fibre, as well as raising the profile of wool. The prize is awarded to emerging designers with innovative wool designs – Karl Lagerfeld and Yves Saint Laurent were both awardees (Vogue U.K., n.d.).

The New Zealand Merino Company Limited
The New Zealand Merino Company Limited (NZM) is an “integrated sales, marketing, and innovation company” (Denend & Shiv, 2011) attributed with the transformational progress of New Zealand Merino wool in the global marketplace. By successfully marketing the characteristics of Merino wool that differentiate it from other types of wool, NZM have lifted Merino wool from the commodity basket to now demand a premium price for the fibre. More information on NZM can be found in Appendix B.

Additionally, the company has created its own brand of Merino wool, called “Zque”, which has been explained on Pg. 24.

**Additional Key Organisations**

Also operating in the global wool industry are other organisations that focus on research and development, and general industry representation. Two of utmost importance are:

- Australian Wool Innovation Limited
- International Wool Textile Organisation

**Australian Wool Innovation Limited**

Australian Wool Innovation Limited (AWI) is a global research, development, and innovation institute, owned by Australian woolgrowers. The company “initiates, commissions and delivers research and development” to both Australian woolgrowers and the global wool industry. They are also a key provider of economic and social data to the Australian Government (Australian Government, n.d).

Their market intelligence services put them at the forefront of information about the global wool industry. From my research experience, no other organisation comes close to the quantity and quality of data available from AWI.

**International Wool Textile Organisation**
The International Wool Textile Organisation (IWTO) is the international representation of the global wool-textile trade and industry’s interests. Its membership includes virtually everyone involved in the wool-textile industry – from woolgrowers and traders to spinners and weavers, as well as all kinds of organisations working with wool products or generally in the wool business.

The IWTO is important as it provides a platform for discussion of topics of common concern between the different member-countries, and those working in different areas of the industry. When a joint approach is necessary, the IWTO acts as a spokesperson for those bodies and authorities involved (IWTO, 2013).
2.3.1. Conclusion to Contributing Component: Industry Organisations

Besides the vertical and horizontal aspects of the global wool industry structure, industry organisations add a contributing component. These organisations operate in varying areas and have varying levels of industry-influence.

- **Woolgrowers’ Associations**
  - Give woolgrowers a unified voice, particularly to influence research and development bodies and for lobbying to government.

- **Government Organisations**
  - Provide funding for the R&D and marketing and promotion of wool.
  - Influence the global trading abilities of the wool industry.

- **Marketing, Promotion and Branding Organisations**
  - Generally, work towards increased the demand for wool products.
  - Key organisation: The Woolmark Company
    - Raising the profile of wool on simultaneous global and local (Australia) levels.

- **Additional Key Organisations**
  - Australian Wool Innovation Limited
    - Important initiator of R&D, and data provider for the global wool industry
  - International Wool Textile Organisation
    - Spokesperson and discussion-forum for the global wool industry.
2.4. Conclusion to Chapter II

How does the global wool industry currently function?

Once the picture of the global wool industry has been painted, it is apparent that it is a work in the style of divisionism – from afar it looks like a complete picture, but on closer inspection it actually made up of small parts. It is not only segmented vertically, in terms of its value-delivering supply chain, but also horizontally, in its different micron categories of wool.

Wool is passed along the pipeline, as the various processes transform it into its final product. The micron category of the wool generally dictates what this product will be, with finer categories of wool being the apparel and textile industry’s most useful. However, its journey through the supply chain is not quite smooth sailing since the atomised pipeline suffers from various complaints:

- Poor conductivity of information, particularly lack of feedback to woolgrowers
- Low agility to market changes
- Difficulties in adding value at the start of the supply chain

The global wool industry is currently not operating effectively and inspiring for all parties involved. It is based on a historical model that is does not function optimally in a contemporary context, and particularly leaves the producers of wool out of the loop.

Although this picture has an overriding tone of melancholy, there have been successful initiatives in adding value to wool at the beginning of the supply chain – majority of which are for fine wool – breathing hope and a notion of potential prosperity into the wool industry, particularly in apparel’s direction.
Chapter III

What are the current drivers of the supply and demand for wool?
What are the current drivers of the supply and demand for wool?

The previous chapter painted a picture of the structure of the global wool industry, in both its vertical and horizontal aspects. Now this chapter aims to assess the supply and demand situation of the wool industry, and identify what the drivers of this are.

Firstly, the global wool industry will be explained from a supply perspective, beginning with a description of the current state of the global supply of wool, followed by an explanation of this state by looking at what is driving it.

Next, the demand for wool will be explored, starting at the leading apparel-wool consuming countries, and continuing with the chief contemporary drivers of the demand for wool.

This chapter employs the intuitive theory of the law of supply and demand – that the availability or desire of a product affects its price. It is generally understood that a product’s price will be high if demand is high and supply is low. Further, if supply is high and demand is low, the price will lower (Klein, 1983).

In this chapter, I have tried to ascertain the drivers that can be described as initial and key. Additionally, this chapter focuses on the wool market of apparel, not the other possible applications of the fibre which were identified in Chapter 2.2.

3.1. Global Wool Industry Supply

The global supply of wool is at a seventy-year low because almost all of the major wool producing countries\(^6\) are producing less wool. The major wool producing countries, which in 2008 provided over 60 per cent of the world’s wool, have declined their wool production by 45 to 60 per cent, with the exception of China (Wilcox, 2009).

\(^6\) The major wool producing countries are Australia, Argentina, China, New Zealand, the United Kingdom, Uruguay and South Africa (Wilcox, 2009).
These countries are producing less wool due to several factors, which can be explained by the contemporary drivers of supply.

Figure 3.1 depicts the trends in global wool production and opening stocks (which together equal total supply) over the past thirty years. It does not take more than a glance to see that global wool supply is at a serious low and trending downwards yet.

Figure 3.1 World Wool Production

Adapted from "World Wool Production". Source: (IWTO, 2012)
3.1.1. Drivers of Supply

For this section of explaining the current situation of global wool supply, and what is driving it, I decided to focus on the top three wool-producing countries.

The top three wool-producing countries are:
- Australia, contributing 22 per cent to global supply
- China, contributing 15 per cent and
- New Zealand, contributing 12 per cent.

Since these three total almost half (49 per cent) of the total global supply of wool, their supply situation and drivers can be seen as the most significant to the global wool industry, as well as possibly giving an indication towards the situation/drivers of lesser-contributing countries.

The key contemporary drivers of supply have been identified as:
- Opportunity Cost of Wool Growing
- Sheep Numbers
- The Expenses of Wool Growing
- Governmental Influence

**Driver 1: Opportunity Cost of Wool Growing**

Currently the key factor affecting the global supply of wool is that woolgrowers are increasingly changing to farming sheep for meat instead of wool. Although wool prices have been, and still are, experiencing a long-term increasing trend (Wool Network, 2012), the prices for sheep meat are more attractive than the prices for wool, so woolgrowers are converting to farming enterprises with better returns.

The International Wool Textile Organisation (IWTO) has said that at present, wool prices are being supported by low supply. However, despite wool prices being at decent levels, other types of farming are more lucrative.

This driver is the prevalent force behind the reduced wool supply from the major wool-producing countries, Australia and New Zealand (Landmark, 2013).
Figure 3.2 illustrates New Zealand’s shift from farming sheep for wool, to sheep for meat. In 1989, New Zealand experienced a peak in wool prices and the total export value of the nation’s wool reached a historic high. By 2011, this had fallen 60 per cent. In comparison, exports of sheep meat rose 190 per cent over the same period.

Figure 3.2 Wool and Sheep Meat Export Values in New Zealand: 1953 - 2011

![Wool and sheepmeat export values 1953-2011](image)

Adapted from “Figure 4: The shift in emphasis from wool to sheep meat”. Source: (Statistics New Zealand, 2012)

The change to farming more sheep for meat is reflected in the changing of the global shares of wool supply by micron category, as depicted in Figure 3.3. In the early 2000’s majority of the world’s wool supply was fine micron wool. As established in Chapter II, fine wool comes from sheep farmed primarily for their wool. However, in 2012, strong wool took over the biggest portion of the pie. This ratio change reflects that more farmers are focusing on sheep for meat, as these sheep produce coarser wool, therefore pumping up the world’s supply of strong wool.
The reduction in supply of fine wool has a direct impact on the apparel industry. From the total amount of wool produced in the world, 60 per cent is used to make apparel and majority of this apparel is made from fine wool (Denend & Shiv, 2011, p. 4). The global supply and production of apparel wool has seen even greater decline that that of total wool production as apparel wool supply is down a massive 66 per cent (Landmark, 2013). In Landmark’s 2013 “Wool Economic Focus Report”, it is expected that since apparel wool will continue to be limited into the future, it will help support the price for this wool.
Driver 2: Sheep Numbers

As a sheep-product, sheep numbers influence the supply of wool. Decreasing sheep numbers in major wool producing countries is also responsible for driving the decline in global wool supply. Australia and New Zealand have both seen a massive reduction in their sheep populations (see Information Box 3.1) due to environmental factors and alternative enterprises.

In Australia sheep numbers have dropped by 43 per cent over the past thirty years as environmental reasons have forced farmers to de-intensify their flocks. De-intensification is a common response to extreme climatic conditions as feed is usually compromised so older sheep are slaughtered making flocks smaller. A decade long drought, beginning in 2003, known as the “Big Dry” (Kennedy, 2012), has created high costs for maintaining stock conditions (for example, the necessity of hand feeding), leading farmers to reduce flock size and lambing percentages (Ashton, 2003, p. 6).

New Zealand has also seen a reduction in sheep numbers, due to conversions to non-sheep farming enterprises. Farmers with land suitable for cows have been converting to the more lucrative dairying business, whilst those with hillier farms have changed towards forestry (Woodford, 2010).

In a conversation with ex-dairy farmer Iain Henderson about sheep farmers increasingly changing to dairy farming, he believed the shift to be a significantly indicative.

“When I was dairying, we were jealous of sheep farmers. They seemed to have it much better – no early mornings to milk the cows. Plus it is much cleaner; when you are milking you get covered in cow’s muck... Sheep farming always had some kind of prestige about it, maybe that was just a New Zealand-thing, but I think if a sheep farmer changes to dairy farming that shows that there is something very serious happening.”

Information Box 3.1

Fading Flocks
Sheep populations of Australia and New Zealand in 1980 and 2012

<table>
<thead>
<tr>
<th></th>
<th>1980</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aus.</td>
<td>173 mil*</td>
<td>75 mil†</td>
</tr>
<tr>
<td>N.Z.†</td>
<td>70.3 mil</td>
<td>31.2 mil</td>
</tr>
</tbody>
</table>

* (Hassal and Associates Proprietary Limited, 2006)
† (MLA, 2012)
‡ (APNZ, 2013)
Driver 3: The Expenses of Wool Growing

The expenses of wool growing influence the supply of wool. When the cost of keeping sheep and farming for wool begins to outweigh the revenues they bring in, farmers are driven to cheaper ventures, and the supply of wool decreases. This driver has been particularly attributed to the reduced wool supply from Australia and New Zealand (AWI, 2007).

Currently the cost of wool harvesting is notably the single greatest sheep-to-mill cost for woolgrowers. To produce wool sheep need to be shorn. The cost of shearing made up 37 per cent of all the direct costs paid by woolgrowers in the 2010 season for delivering their wool to market – and 14.5 per cent of the average greasy wool price received (NPIRDEF, 2011, p. 23).

The increase in shearing costs can be explained by two factors. Firstly, there is a reduction in the number of wool shearers. With an aging workforce outweighing the inflow of new blood, the profession of the sheep shearer is fading. This scarcity has increased the cost of their labour (Fierravanti-Wells, 2009, p. 364). Secondly, many of these costs are related to work place injuries, with shearers having seven times more injury claims on average than other agricultural, forestry or fishing professions (AWI, 2007).

These rising costs pose a significant threat to the long-term viability of the wool industry because shearing costs are increasing much more quickly than the rate of inflation (AWI, 2007).

Driver 4: Governmental Influence

Activities of governance in wool producing countries can have effects on wool supply. China’s materialisation as a major wool production country is a key example of governmental influence upon wool supply. Between 1991 and 2009, China increased its wool production by a staggering 70 per cent, meanwhile every single other major wool producing country had an average reduced production of 50 per cent (Wilcox, 2009).
China’s astounding rise in wool production was driven by the country’s privatisation of agriculture. The privatisation allowed farmers to decide independently on enterprise mix. Sheep numbers and wool production both consequently catapulted due to preferable returns from sheep (Wilcox, 2009).
3.1.2. Conclusion of Supply in the Global Wool Industry

With global wool supply at a seventy year low due to almost all, major wool producing countries producing less, I think the situation can be appropriately described as dire. Numerous drivers are responsible for influencing the supply from these countries:

- Opportunity Cost of Wool Growing
  - Woolgrowers have changed to more lucrative farming enterprises, particularly sheep meat
  - Key reason for decreased wool supply from Australia and New Zealand

- Sheep Numbers
  - Major wool producing countries have had a reduction in sheep numbers, consequently reducing wool supply

- The Expenses of Wool Growing
  - The costs of producing wool have increased, making the venture less profitable and deterring woolgrowers

- Governmental Influence
  - A change in agricultural policies has driven a significant increase in wool supply from China

The current supply situation is particularly alarming for the apparel and textile industry, since it is the finer microns of wool, the predominant categories for garment use, which are suffering the most.
"We’ve seen terrorist attacks, financial crises of various natures, we’ve had natural disasters. All of them have ultimately affected the demand for wool."

Chris Wilcox, Wool and Livestock Economist
(ABC Rural News, 2012)

3.2. Demand in the Global Wool Industry

The global wool industry has seen trying times for demand over the past decades but it appears that we are entering a wool-friendly context.

As the global wool supply and production has decreased, wool has met strong retail challenges from rival fibres and competing demands on the consumer’s purse.

In particular, electrical products and energy costs have preceded consumer spending, as opposed to clothing, over the past fifteen years or more. Combined with a string of extraordinary, tumultuous events since 2000 – from terrorist attacks (which consequently subdued consumer spending) and China’s climb to prominence in the world economy, to record-level oil prices, crashing house values, and the infamous Global Financial Crisis (GFC), this has all created a tough environment for wool consumption and effected levels of demand (Wilcox, 2009).

This section aims to explain the current situation of demand in the global wool industry. Firstly, we look at what the leading apparel wool consuming countries are. Then the chief contemporary drivers for the demand of wool are identified.

3.2.1. Leading Apparel-Wool Consuming Countries

The major consuming countries of apparel-wool at retail are Australia, China, South Korea, Italy, the UK, Japan, and Germany, as estimated by the Woolmark Company in 2011. This can be seen in Figure 3.4, which
plots per capita wool consumption (measured at clean kg/head) against per capita incomes (measured in US$/head).

The significance of per capita incomes to the consumption of apparel-wool must be highlighted, since it can be generally ruled that apparel wool consumption rises with the rise of consumer incomes. Previous economic studies have indicated that the consumption of wool clothing is more sensitive to changes in incomes than in wool prices (Wilcox, 2009).

When analysing Figure 3.4, several points become prominent:

- Firstly, that the majority of the major apparel wool consuming countries are mature developed markets with aging populations.
- Secondly, it appears that those countries with high per capita wool consumption also have high per capita incomes.
- Thirdly, most of these countries are currently experiencing an economic recession, which stifles wool consumption as it constrains per capita incomes.

It must also be noted that consumer incomes probably have greater influence over demand for fine or superfine wool garments, rather than higher micron wools, as these products tend to be more expensive.

It is visible from the chart that the United States sits well outside of the trend-line, with lower wool consumption per capita than would be expected from per capita income. This can be explained in part by the country’s greater familiarity with cotton as opposed to wool (Wilcox, 2009).
Figure 3.4 Per capita Apparel Wool Consumption vs. Income

Adapted from "Per capita consumption ". Source: (Wilcox, 2002)

Note: Income is US GDP per head in 2011 on a purchasing power parity basis
3.2.2. Chief Contemporary Drivers of Demand for Wool

The demand for wool reflects a range of factors that include economic conditions in the leading apparel-wool consuming countries, the perceived advantages of wool, fashion trends and the price competitiveness of wool relative to synthetic, and other natural, fibres (NPIRDEF, 2013, p. 21).

From these key factors, the chief contemporary drivers of demand for wool can be identified and sorted into four categories:

- Economic Conditions
- Consumer Sentiment
- Fashion and Retail Trends
- Attributes of Competing Fibres

Driver 1: Economic Conditions

The economic conditions in the major wool-consuming countries are a weighty driver on the demand for wool because it affects consumer incomes, spending, and confidence. Although each of these are themselves drivers for the demand of wool, they stem from changes in the economy and therefore can be categorised under the broader umbrella as “Economic Conditions” as a driver.

Impact of the Global Financial Crisis on demand for wool

The Global Financial Crisis (GFC) is the most recent significant economic event that heavily influenced the demand for wool, and acts as a prime example for the effects the economy can have on the wool industry.

Research by Rabobank (2010) revealed that during the GFC wool was the hardest hit of agricultural commodities due to its premium and niche market status. The report described the nature of demand for woollen products as “discretionary” – thus closely aligning consumption (and price) of the fibre with global economic activity.
Figure 3.5 demonstrates this alignment between economic growth and wool consumption. The year 2009 obviously was a dismal year for the wool industry with economic conditions dramatically worsening in the major wool consuming countries\(^7\) and sending global wool consumption plummeting (NPIRODEF, 2011).

Figure 3.5 Economic Growth in the Main Wool Apparel Consuming Countries: Weighted by Wool Consumption

Note: Economic growth in China, Japan, USA, UK, Germany, Italy, France and South Korea, weighted by apparel wool consumption. 2010 and 2011 as forecasted.

Adapted from "Economic Growth in Main Wool Apparel Consuming Countries ". Source: (Wilcox, 2010)

\(^7\) In 2009 the major wool consuming countries were China, the United States of America, Japan, the United Kingdom, Germany, Italy, South Korea and France. They accounted for 62% of world consumption of wool used in clothing.
Consumer Spending and Confidence

In the wake of the GFC, the importance of consumer spending and confidence on the demand for wool was highlighted. All of the major wool consuming countries, with the exception of China, went into economic recession. This resulted in severely decreased consumer confidence. In February 2009, consumer confidence in the US and the EU was at the lowest recorded level. Record-low consumer confidence equated to consumers reducing their spending on all products (Wilcox, 2009).

Consumer Income

The per capita income of consumers in developed countries is growing the demand for higher quality textiles and apparel. China is now the second largest consumer of luxury goods in the world, and is expected to overtake the United States to occupy the number one spot by 2015 (AWI, 2011).

Australian Wool Innovation Limited identified the growth in affluence of China’s domestic market as a “key demand driver” for wool (2011, p.14). In their “Market Intelligence Report”, they stated that:

“China has always had two of the three key triggers for mass consumption of wool: they have always had the suitable climate and large population; they now have the third trigger which is wealth.”

Textile Outlook International (2012) also commented on China having the greatest influence on the demand for wool, as the country accounts for 38 per cent of global consumption.

Driver 2: Consumer Sentiment

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8 Consumer confidence is defined as: “The degree of optimism that consumers are expressing for the state of the economy through their saving and spending activity.” (Investor Words, 2013)
Consumer sentiment strongly contributes to the demand for wool. What consumers are leaning towards in the moment (their tastes, social habits, etc.) have relevance to their wool consumption.

A constant in consumer sentiment can be seen in seasonal dressing as people have a tendency to buy more wool garments in colder seasons. During the Northern hemisphere’s winter months (from October to January), Australia sells 60 per cent of the wool it sells for clothing manufacturing (Pearson, 2004).

Australian Wool Innovation Limited (2013) has indicated an increasing interest by consumers into natural fibres is driving up the demand for wool. This is motivated by corresponding trends in rising interests in renewable resources, as well as growing awareness towards healthier lifestyles.

These consumers have been aptly named the “LOHAS” consumer, a consumer seeking a Lifestyle of Health and Sustainability (LOHAS) and its products of coherence. The LOHA consumer desires products that provide wellbeing as well as being eco-friendly (French & Rogers, 2007).

The focus by consumers on their wellness and own health is creating openings for wool products that are suited to new healthy leisure pursuits or meet new comfort requirements, such as temperature regulation and breathability (AWI, 2013b, p.21).

Particularly since the 2012 Olympics, interest in healthy lifestyles and in sport and fitness has risen. This has seen a growth in sportswear sales, an area that is cultivating a lot of wool innovation and new wool-orientated brands.

Leading the pack is Icebreaker, an international brand that specialises in Merino performance wear. In an interview with Time magazine, founder Jeremy Moon emphasised the rapid pace that demand for Merino sports products was growing which was creating a need for increased supply, “I know we can get bigger...any bigger and we may run out of sheep” (Saporito, 2010).

Recent studies by the University of Sydney, and funded the Woolmark Company, revealed that sleeping in wool garments or with wool bedding provides a better nights sleep. Merino wool has also been proven to effectively treat chronic dermatitis conditions (Woolmark, 2011). These proven health benefits in combination with the growing offerings of woollen products in the sportswear market, create plenty of opportunities for wool to ride and exploit the LOHA wave.
Relating to the eco-friendless concentrations of the LOHA movement, the horsemeat scandal of 2013 in Western Europe has further underlined consumers’ interest in origin of product. Consumers want to know where their products come from and traceability is an important focus point presently in the wool industry (Doherty, 2012).

Additionally, there is growing consumer interest in luxury goods (KPMG, 2011, p.10). Although in times of economic hardship, when competing with other fibres, it has not always been positive that wool is seen as a “niche premium product” (Watkins, 2012, p. 76), this reputation of the fibre could see it take advantage of this trend towards decadence.

At the European Fabric Fairs for Autumn/Winter 2013/14 Philippa Watkins reported in Textile Outlook International (2012) that there was a strong global demand for European luxury fabrics, particularly woven woollen fabrics with a traditional British essence, as well as innovatively super-light knits from Italian companies.

**Driver 3: Fashion and Retail Trends**

Fashion and retail trends are key drivers in demand for wool. When garments typically made of wool are in fashion, such as knitwear or suits, there is an increased demand for wool.

Currently, Western countries are seeing a growing casualisation of workplace attire (AWI & Meat and Livestock Australia, 2011). Suit retailers have reported selling fewer suits with the rise of “business casual”, but the suits they do sell are more expensive. Although the idea of the suit as a daily uniform is fading, for many men it has become a luxury item worth investing in (Antongiavanni, 2007). Additionally, Australian Wool Innovation Limited (2013) reported that less-traditional markets for suiting in developing countries are seeing an increase in suits sold, counter-acting the Western casualisation-trend. Office casualisation has also encouraged a rise of knitwear in the workplace (AWI, 2013b, p.21).

Wool is very much in fashion on the catwalks, which drives the demand for wool to increase. Over the past five years, as a student at the Amsterdam Fashion Institute, I have witnessed the note-worthy trend of the “chunky knit” sweater. A trickle-down trend, first seen on the catwalk at New York Fashion Week from
Alexander Wang in 2008, half a decade later it still lingers, or prevails, and has morphed into a variety of other forms (the chunky knit scarf, cardigan, even home wares). With the quickness of the apparel industry today, within months mega-retailers H&M and Zara had versions of the chunky knit for admirers of the high-fashion initiative. Although acrylic tends to dominate the high-street versions of wool-instigated trends, there is usually at least a small percentage of wool in the blend to add "value".

In addition to fashion trends, retail price trends also drive the demand for wool. Currently decreasing retail prices for clothes are creating difficult conditions for wool demand. Wool is not a cheap fibre (wool clothing averages around twice the price of comparable garments in other fibres) so when consumers are paying less for their clothes, other fibres become more attractive (Wilcox, 2009, p. 7).

**Driver 4: Attributes of Competing Fibres**

Wool competes with other natural fibres, and since their invention synthetic fibres, in the apparel and textile market for consumer demand. Although this competition is predominantly based on price, physical attributes of the fibre and demand for particular types of end product also contribute to rivalry (Ashton, Brittle, & Sheales, 2000, p. 500). Therefore, these attributes of other fibres can be identified as wool demand drivers.

Ashton et al., describe synthetic fibres as wool’s main competition. This is because they have been developed to closely imitate the physical characteristics of wool, and have many of the same end uses too. As productivity has improved in the manufacturing of man-made fibres, the prices of synthetic fibres has fallen, which has made synthetic apparel more and more appealing (p. 502).

My observation of the "chunky knit" trend also exemplifies the competition between synthetic and wool fibres. Despite the catwalk trend of exaggerated knitwear being inspiring of wool demand, synthetic fibres which imitate many physical aspects of wool (particularly acrylic) were used to “hijack” the trend by fast-fashion retailers, who quickly translated the trend to cheap knits for the high street.

However, just because other fibres are cheaper than wool, does not mean they are preferred. In consumer surveys carried out by the Woolmark Company, consumers expressed an overriding preference for wool clothing (over other fibres) if price was out of the equation. Consumers described wool as of more quality and prestige than other fibres, and worth paying more for (as cited by Wilcox 2009, p. 8). This indicates that
price is indeed the main factor of the fibre competition. Wilcox highlights the price factor, explaining that the price of raw wool is usually between three and four times the price of either cotton or synthetic fibres (p. 7).

Figure 3.6 indicates that the consumption of synthetic fibres has steadily increased since their invention, while the global consumption of all other fibre types has been decreasing.

Figure 3.6 Consumption and Prices of Different Textile Fibres

Adapted from: “Percentage share of fibre types making up total world fibre consumption”. Source: (Oerlikon, 2010)
3.2.3. Conclusion of Demand in the Global Wool Industry

The demand for wool has been negatively affected by an array of events, from the Global Financial Crisis impacting consumer spending and confidence, to the rise of mega-rival, synthetic fibres. Nevertheless, despite these challenging conditions, the outlook for wool demand appears positive by the following contemporary factors:

- Increasing affluence of China’s domestic market and their growing consumption of luxury products
- Rising consumer sentiment towards healthy lifestyles, including products from natural, renewable sources as well as performance wear (the LOHA consumer)
- Changing dress codes in the workplace
  - “Business casual” in Western countries raising the prevalence of knitwear
  - Increasing popularity of suits in developing countries
3.3. Conclusion of Chapter III

What are the drivers of supply and demand for wool?

Chapter III has looked at the current situations for supply, and for demand in the global wool industry and thus, the contemporary drivers of supply and of demand have explained these situations.

The global supply of wool is at a historical low and trending downwards still. The decreasing supply of wool is driven predominantly by better returns from alternative farming enterprises, especially sheep meat. Other drivers of the decreasing supply are:

- Lower sheep populations in major wool producing countries, and
- Increasing costs of farming sheep for wool deterring woolgrowers from farming sheep for wool.

These drivers are all having negative effects on supply, particularly from key producing countries Australia and New Zealand.

China is the lone major wool-producing country to have increased their supply of wool over the past decade. The driver responsible for this was governmental influence.
The demand for wool has faced difficult conditions in recent times, mainly driven by steep competition from rival fibres, and economic conditions negatively impacting consumer spending. However, contemporary drivers of demand in the global wool industry are building a picture of the future that suggests conditions for prosperity:

- The main wool-consuming country, China, is experiencing a growth in affluence that has been deemed as a “key demand driver” for the global wool industry. This is relative to an increased consumer interest in luxury goods – both working together to drive the demand for wool.

- The emergence of the LOHA consumer indicates that consumer sentiment favours wool. As consumers are becoming increasingly interested in natural fibres, due to trends in healthier, sportier lifestyles. Brands that are already providing products to this consumer have expressed that they predict to continue experiencing increasing popularity, and are worried they will not have the wool-supply to support it.

- Changing work place dress codes are increasing both the popularity of knitwear and suits in various consumer markets.

Burgeoning demand, dwindling supply, dysfunctional supply-chains...all of the findings thus far have rendered me (and hopefully, you) radically illuminated and admittedly rather baffled. However, most importantly, plenty of light has been shone upon the existence of opportunities in the global wool industry, which will be explored in Chapter IV.
Chapter IV

Conclusion

What are the current opportunities in the global wool industry?
Chapter IV

Conclusion:
What are the current opportunities in the global wool industry?

Thus far, the research has explained how the global wool industry functions and what the contemporary drivers of supply and demand are. Chapter IV aims to extract the opportunities from within Chapters II and III. Firstly, the general opportunities in the global wool industry are identified, and then these will be funnelled down to those that can be suggested for exploration and exploitation by the New Zealand wool industry.

4.1. General Opportunities

The global wool industry is currently housing opportunities in the areas identified below. The categories used to class these opportunities are based on the previous chapters and are as follows:

- Opportunities in the Supply Chain of Wool
- Opportunities in the Supply and Demand Drivers of Wool

Opportunities in the Supply Chain of Wool

There are two opportunities identifiable from within the supply chain of wool (explained in Chapter 2.1):

- Improving the flow of information along the wool pipeline
- Adding value at the beginning of the supply chain

Improving Information Flow

The wool industry’s supply chain is currently not effectively conducting the flow of information between the parties involved. Therefore, there lies an opportunity in the improvement of this issue through integrated supply chain management (SCM) by means of information technologies (IT).
Research by the Helsinki School of Economics (2005) highlighted the effectiveness of implementing IT for supply chain management in logistically demanding environments, making it a match for the supply chain of wool. The found uses for IT in this context included the sharing of “planning-related information” such as demand forecasts, stocks information, and production capacity information.

To improve the flow of information along the supply chain using IT for SCM would require investment from all of the involved parties, therefore rendering the solution with a long-term orientation. However, this investment would see rewards for everyone involved, as the woolgrowers could receive the feedback that they feel they lack, and manufacturers could receive timely information regarding wool qualities or shipping.

Beyond this, with this feedback, woolgrowers could develop new products and have a better focus on innovation. Product development, innovation and improvement could be further elevated if more wool was sold directly to the buyer, rather than through the auction system. If more transactions were made between manufacturer and woolgrower via contracts, then woolgrowers could work on producing a contract-specified product, the manufacturers would have guarantee of improved quality consistency, and both parties would deal with a pre-negotiated, stable price.
Adding Value at the Beginning of the Supply Chain

Currently the supply chain of wool makes it difficult for woolgrowers to add value to their product. This presents an opportunity for lateral thinking; what could be done to add value at the beginning of the supply chain?

Most noticeable is the branding of the wool. Merino wool has been effectively branded to differentiate it from wool from other sheep breeds, lifting it to a premium position, which commands a premium price (ADMRA, 2012).

Woolgrowers could also add value by improving the quality of their wool. Australia’s Department of Agriculture executed research in 2005 that found when specially made coats were put on sheep, wool quality and quantity was improved. With reduced contamination from dust, and other matter, the wool was cleaner as well as stronger and longer when the sheep was coated. Therefore, unconventional procedures like sheep coating could be used to enhance the value of woolgrowers’ product.

Although separate from adding value to their wool, the returns to woolgrowers could be enhanced by the branding of sheep by-products such as lanolin and leather. Particularly relevant for the Merino sheep, which already has a well established premium position in the consumer’s mind – the lanolin and leather of this sheep could also be branded into niche markets by riding on the back of Merino wool’s reputation.
Opportunities in the Drivers of Wool

The direction that the global wool industry is being driven in, as identified in Chapter 3.1.1, also presents numerous opportunities:

- Reducing the expenses of wool growing by developing the shearing workforce.
- Investing in strong wool research and development.

Reducing the Expenses of Wool Growing

The third driver identified for the supply of wool "The Expense of Wool Growing" pointed out that as the costs of harvesting wool are rising, woolgrowers are being deterred from the industry as their returns shrink. Shearing costs are rising since there are few people entering the profession, as the majority enters or nears retirement, and because there are a high amount of workplace injuries.

An opportunity lies in encouraging young people into shearing, promoting the profession, and subsequently reducing the costs of wool growing.

Becoming a shearer has many positive points which could be used in a promotion scheme, particularly at high schools in rural areas, to target teenagers who are preparing to head into the workforce but unsure of which path to take. The job aspects to be highlighted include the potential for travel (as shearers move around the world following the shearing seasons), the physical strength one develops in the job, and the reputation one can build through shearing competitions.

Additionally, it would be necessary to invest in improving the safety of the job and the equipment used to reduce the costs related to workplace injury and increase career appeal.

Investing in Strong Wool

As the returns for sheep meat grow increasingly lucrative, the quantity of strong micron wool grows accordingly, as illustrated earlier in Figure 3.3. Currently this wool is predominantly made into carpets.
blankets, and used for insulation. There is an opportunity here to invest in how to make more from this wool, not just in terms of other possible applications but also in enhancing its consumer perception so that current products can receive a higher price.
4.2. Opportunities for the New Zealand wool industry

Now that the current opportunities in the global wool industry have been identified, suggestions will be made as to which of these can be distilled as the most suitable for the New Zealand wool industry (NZWI) to explore and exploit.

The verdict towards suitability for the NZWI of the opportunities is based on a combination of research into secondary data and personal judgement.

The opportunities deemed the most suitable for the NZWI are:

- Improving the flow of information in the supply chain by implementing IT for SCM
- Increasing woolgrowers’ returns by developing branding for sheep by-products
- Reducing the expenses of wool growing through increasing the number of shearing professionals
- Investing in the branding and research of new applications for strong wool

**Improving the flow of information in the supply chain by implementing IT for SCM**

The opportunity for better conductivity of information along the wool pipeline through supply chain management by means of information technologies is particularly suitable for the NZWI because the national wool industry is currently functioning in a way that increases the ease of this option. Efforts by the New Zealand Merino Company to improve the country’s supply chain have lead to the increasing amount of growers and manufacturers transacting via contract\(^9\).

These contracts indicate the long-term interests of both parties, which supports the possibility to employ IT systems. Implementing IT systems would require investments from all parties involved. The existing contracts show that these parties are already collaborating and intend to continue doing so into the future – which could suggest a higher likelihood for investing in new systems.

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\(^9\) Further information about the New Zealand Merino Company’s initiatives can be found in Appendix B.
Factors for consideration:
Despite increasing numbers of these contract-based relationships, majority of wool sales in NZ are still through the auction system. At auction, the parties involved in transactions change – complicating the implementation of SCM/IT, and inferring that these parties have a shorter-term interest in the passing of information between one-another.

Increasing wool growers returns by developing branding for sheep by-products

It has been identified that woolgrowers are leaving the industry due to poor returns from their wool, which could not be the case if they could receive more money for their sheep by-products.

The opportunity to profit from these by-products is very much a suitable option for the NZWI since branding around the Merino sheep is already established and valuable. Therefore, much of the groundwork for reaping the rewards from the lanolin or leather of these sheep is in place, setting strong foundations for this opportunity.

Reducing the expenses of wool growing through increasing the number of shearing professionals

As a country with historic roots in the agriculture industry, and particularly the wool industry, the opportunity of increasing the numbers of shearing professionals to decrease wool-growing expenses is suitable to New Zealand.

Although the profession has undoubtedly become less popular over time, because of the country’s familiarity with the job, its perks (e.g. possibilities for travel) and prestige (those who champion shearing competitions receive much media attention) it is not unthinkable that it could be successfully promoted.

Additionally, from my experience I believe that in New Zealand there is a limited variety of options for male students who do not want to go to university post-high school. These students usually seek labour-apprenticeship positions (e.g. builder, plumber, electrician), which are not easy to come by because they are highly sought after. This leads me to think that encouraging possible career path for young men would be beneficial in more ways than one.
Factors for consideration:
Currently the costs of shearing take up a notable proportion of the costs of wool growing, reducing the profitability of the venture. Although encouraging more people into the shearing profession would alleviate this problem, it would not be ideal for have a significant increase in shearers when the number of woolgrowers is decreasing. Therefore, the long-term orientation would need to focus on simultaneously increasing the number of shearers, and the number of woolgrowers.

Additionally, although I have confidence that these professions could be successfully promoted and effectively increase their popularity, research would need to be conducted into the factual interest towards these career paths.

Investing in the branding and research of new applications for strong wool

The opportunity to exploit the increased strong wool production, which presented itself as but a consequence of woolgrowers switching to sheep meat ventures, has strong suitability and relevance to the New Zealand wool industry.

The majority of the New Zealand wool industry’s clip is strong wool, so to give as much focus and effort towards the branding and research of this wool type as has been given to Merino wool, would be of benefit.

The current demand for wool indicates the increasing interest in natural fibres and luxury products from consumers. Products such as wool carpets and blankets are in harmony with this trend, and when combined with the “pure and sustainable” reputation of New Zealand made products (Conforte, Dunlop, & Garnevska, 2011), effective branding of these products would make for constructive investment for the industry.

Beyond the existing strong wool products, the country could also benefit from advancing in research and development for other possible, new applications of the fibre. It seems nonsensical to me that for a country with such a rich history in wool, New Zealand is still mainly making mere carpets with the fibre. One would expect that the potential of the fibres go beyond just this.
Factors for consideration:
Akin to apparel wool, synthetic fibres are stiff competitors in the markets of strong wool (particularly carpets). So the complexity of convincing consumers that a strong-wool product is worth paying more for, when cheaper alternatives are available, should be considered. However, this is obviously the point of growing brand value.

4.3. Final Words

Despite my belief that all of the identified opportunities are suitable for the NZWI and could be applied in the ways explained, I do not think that any single opportunity presents the ultimate key to saving the wool industry. Although each suggested application to explore the presented opportunities would be a move in the right direction, to activate a combination of the suggestions simultaneously would have greater impact.

Additionally it must be noted that my personal judgements of opportunity suitability, ideas for applications and predictions of complications are limited by my knowledge. So it is possible I am under the wrong impression, or have a lack of understanding that could compromise the suggestions.

Overall, I believe the most important finding was that supply is the issue, so creating a supportive, inspiring and efficient environment on this side of the farm gate is critical to the future of the wool industry, both globally and in specific nations.
This leads to potential for future research in the following areas:

- The applicability of integrated supply chain management systems where auction-based transactions are central to the supply chain
- The willingness for financial investment by the involved parties into the global supply chain of wool, and the scale of improvement that could be provided
- The potentiality of sheep by-products in terms of markets, branding and profits. Particularly the potential to use the added value that “Merino-origin” provides to wool for these by-products of the same origin.
- The potential interest in shearing and wool growing career paths, and the possible societal impacts of introducing new education/career options into the agriculture industry. As well as the possibility to re-brand these professions to enhance their attractiveness.
- The possibilities for decreasing work-place injuries related to shearing
- The potential for fresh product innovations using strong wool

Peripheral questions that are of additional interest for future investigation and research are:

- Could it be possible for individual growers to brand their wool, as opposed the more broad brands built around the reputation of a country (e.g. Made in New Zealand) or breed of origin (e.g. Merino wool)?
- As a breed of Spanish-origin, why is the Merino production from Mediterranean countries virtually non-existent? Moreover, is there potential to exploit wool supply scarcity by starting farming investments in these areas?

The findings of this thesis do inspire plenty of future research ideas, but most importantly, they highlight that there are opportunities existing in the global wool industry and these are applicable to the larger concept of apparel in society.

As consumer focus has turned towards synthetic fibres since their rise to prevalence, with their abilities to impersonate natural fibres and offer cheap alternatives, the industries that we can connect to have suffered. We can all relate to the cosiness offered by a well-loved woollen sweater, or the feeling of sensuality stimulated by silk brushing along one’s skin – and although synthetic fibres have come closer and closer to imitating these experiences, I doubt that they will ever reach the point of becoming a true substitute.
The deeper connection that we get from our natural world is a key facet to wellbeing and underlines that what we get from natural fibres transcends price or convenience. It is for this reason that the wool industry is worthy of every possible effort towards its reinvigoration and restoration, of which I hope my thesis will be of assistance.
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http://www.vogue.co.uk/promotions/wool/about


Appendices
### Appendix A: Glossary of Terms and Abbreviations

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A/TI</td>
<td>Abbr. Apparel and Textile Industry</td>
</tr>
<tr>
<td>Bale</td>
<td>See: Wool bale</td>
</tr>
<tr>
<td>Carbonising</td>
<td>The chemical process to remove vegetable matter from wool</td>
</tr>
<tr>
<td>Clean wool</td>
<td>Wool that has had the lanolin removed from it</td>
</tr>
<tr>
<td>Clip</td>
<td>See: Wool clip</td>
</tr>
<tr>
<td>Cull</td>
<td>To reduce a population of animals by selective slaughter</td>
</tr>
<tr>
<td>Driver</td>
<td>The term driver explains factors that produce effects on, and cause changes from, the wool industry. Drivers give direction for industry development</td>
</tr>
<tr>
<td>Dumping</td>
<td>The compacting of wool into a smaller sized package, with the intention of fitting more packages into a container.</td>
</tr>
<tr>
<td>Enterprise</td>
<td>A systematic purposeful activity</td>
</tr>
<tr>
<td>Ewe</td>
<td>A female sheep</td>
</tr>
<tr>
<td>Flock</td>
<td>Collective noun for sheep</td>
</tr>
<tr>
<td>Greasy wool</td>
<td>Wool that has not had the lanolin removed from it</td>
</tr>
<tr>
<td>GWI</td>
<td>Abbr. Global Wool Industry</td>
</tr>
<tr>
<td>Lambing percentages</td>
<td>The number of lambs successfully reared in a flock compared with the number of ewes that have been mated</td>
</tr>
<tr>
<td>Lanolin</td>
<td>A greasy substance found naturally on sheep’s wool</td>
</tr>
<tr>
<td>Micron</td>
<td>The unit of length equal to one millionth of a metre, used to express the measured diameter of a wool fibre.</td>
</tr>
<tr>
<td>NZ</td>
<td>Abbr. New Zealand</td>
</tr>
<tr>
<td>NZWI</td>
<td>Abbr. New Zealand Wool Industry</td>
</tr>
<tr>
<td>Opportunity</td>
<td>A chance for progress or advancement</td>
</tr>
<tr>
<td>R &amp; D</td>
<td>Abbr. Research and Development</td>
</tr>
<tr>
<td>Scouring</td>
<td>The process of removing the lanolin from wool</td>
</tr>
<tr>
<td>Shear</td>
<td>To cut the wool from a sheep</td>
</tr>
<tr>
<td>Shorn</td>
<td>The past participle of shear</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
<td>--------------</td>
<td>---------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Stockpiling</td>
<td>To accumulate a supply for future use</td>
</tr>
<tr>
<td>Stocks</td>
<td>Refers to the quantity of wool, which is already in the pipeline from woolgrower to manufacturer.</td>
</tr>
<tr>
<td>Wool</td>
<td>The fibre obtained from a sheep</td>
</tr>
<tr>
<td>Wool bale</td>
<td>A standard sized and weighted pack of classed wool compressed by the mechanical means of a wool press.</td>
</tr>
<tr>
<td>Wool clip</td>
<td>The total quantity of wool shorn from a particular flock or in a particular area in the course of a year.</td>
</tr>
<tr>
<td>Wool grower</td>
<td>A person who farms sheep for their wool</td>
</tr>
<tr>
<td>Wool growing</td>
<td>The farming of sheep for their wool</td>
</tr>
<tr>
<td>Wool harvesting</td>
<td>The process of gathering a season's growth of wool – including wool handling, shearing and pressing.</td>
</tr>
<tr>
<td>Wool pressing</td>
<td>The process of compacting the shorn wool into bale form</td>
</tr>
<tr>
<td>μ</td>
<td>See: Micron</td>
</tr>
</tbody>
</table>
Appendix B: An Overview of New Zealand and the National Wool Industry

A Country, Its Sheep, and Their Industry
An Overview of New Zealand and the National Wool Industry

Introduction
Since colonial times, the wool industry has been a main sector of the New Zealand (NZ) economy. But, not dissimilar to the global wool industry, the last few decades have seen NZ’s wool industry pressurised by enduring competition from synthetic fibres, increasing returns from alternate ventures and less appealing takings from wool (Conforte, et al. 2011).

This overview aims to provide an understanding towards the situation of woolgrowers in New Zealand and the conditions they are operating in, in order to make educated propositions and suggestions as to how they can increase their production of fine wool.

Firstly, a brief summary of the country of New Zealand is provided in “The Country”, followed by a look at the star of the show “The Sheep”, and finally the NZ Wool Industry will be examined in “The Industry”.

1. The Country
As the world’s youngest country, originally inhabited by the Maori (migrants from Polynesia), New Zealand was colonised by the British in 1840, but has since become independent in 1947.

Located in the South Pacific Ocean, the country is made up of two islands, called the North and the South Islands. The North Island comprises of flatter terrain than that of the South Island, which is characterised by its great mountains. Combined, these islands are larger than the United Kingdom, but smaller than Italy (Conforte, et al. 2011).

New Zealand has traditionally had an agriculturally based economy. Today, it is still the main industry of exports although it is a minor accountant (4.8%) for GDP – as opposed to industry (24.6%) and services (70.6%) (CIA World Fact Book 2013).

The government of New Zealand performed a massive structural overhaul of the country’s economy in 1984. By making import regulations more liberal, reducing tariffs and eliminating wage, price, and interest rate
controls – as well as removing agricultural studies –, New Zealand’s economy expanded remarkably until the Global Financial Crisis in 2008 (U.S. Department of State, 2012).

Figure 1. Regional Map of New Zealand

New Zealand is also fortunate to have a reputation of value. Studies have shown that consumers have an overwhelmingly positive perception of New Zealand, despite limited knowledge about the country. Products from New Zealand are perceived to be exceptional in sustainability and high in quality – which is certainly an advantage for exporting companies (Hartman Group, 2009).
New Zealand Quick Facts

Population: 4,365,113 (July 2013 estimated.)
Official Languages: English and Maori
Total Land Area: 267,710 sq. km
Climate: Temperate with sharp regional contrasts
GDP at purchasing power parity (PPP): $128.5 billion (2012 est.)
GDP – real growth rate: 2.2% (2012 est.)
GDP – per capita (PPP): $28,800 (2012 est.)

Note: GDP data is in 2012 US Dollars
2. The Sheep

The main producing breed of fine wool in New Zealand is the Merino sheep. Approximately 6 per cent of the nation’s flock is Merino (IWTO, 2010). Merino sheep produce wool renowned for its softness, and premium quality (it is thought to rival the luxury of cashmere). The wool is also recognised for its whiteness, even though the sheep appear to be deceivingly grey. The sheep also tend to have slower growth than other breeds, but their coat is almost three times denser. Typically, the fibres of Merino wool are exceptionally strong but they can be weakened by stress, which results in breakages during processing. Most commonly, stress is caused by unusually severe weather (e.g. droughts) or inhumane treatment (Denend, L. and Shiv, B. 2011).

Merino sheep are a robust breed, thriving on land that would be deemed to extreme for other breeds. Merino sheep are farmed nearly exclusively (97%) in the South Island areas of Otago, Canterbury, and Marlborough. These are mountainous areas of high altitude where temperatures can reach highs of 35 degrees Celsius in the summer and -15 degrees Celsius in the winter. Farming Merinos on lower altitudes tends to produce wool that is less fine (Merino Inc. 2010).

Figure 2. New Zealand Merino Sheep

Source: FAQ’s Merino Inc., 2010.
3. The Wool Industry

Development of the NZ Wool Industry

Below are the key milestones of NZ’s wool industry development (Conforte, et al. 2011; Carter and MacGibbon, 2003)

1777 – British navigator James Cook brings the first sheep to New Zealand, but they do not become established

1843 – First successful attempt to establish sheep in NZ. Charles Bidwill, Charles Clifford, William Vavasour, and Henry Petre bring 1600 merino sheep from Australia to the Wairarapa region of NZ.

Over following decade, sheep population increased to 500,000 and over the succeeding twenty years to over 3 million sheep.

1887 – Introduction of shearing instruments to NZ.

1920’s – First wool co-operatives founded.

1942 – First availability of nylon and polyester for making carpets competes with wool.

1944 – The New Zealand Wool Board is established to assist in marketing NZ wool abroad, as a reaction to the competition from synthetic fibres.

Early 1950’s – NZ wool industry booms because of US policy during the Korean War. Wool prices triple overnight and the number of sheep farms increases as the US strategically stockpiles all wool produced by NZ.

The economic growth that New Zealand experienced from this is yet to be repeated since.

1970’s – Agricultural Subsidy Programme installed, supports progress of the Wool Industry.
1982 – The wool industry becomes New Zealand’s most valuable agricultural sector. Sheep numbers reach over 70 million.

Mid 1980’s – Government subsides removed, causing an abrupt drop in wool production, and initiating the gradual deterioration of the national wool industry.

2000 – Farmers vote for the disbanding of the Wool Board and the formation of a farmer-levy-funded industry body named Meat and Wool NZ. Meat and Wool NZ takes responsibility for wool promotion and research and development.

2010 – Farmers vote to stop paying wool levies, Meat and Wool NZ ceases all wool related doings and changes name to Beef and Lamb NZ.

Current Situation of New Zealand Wool Industry

NZ Wool Production
New Zealand produces predominantly wool of the strong micron category. Fine wool makes most of the balance of the national clip, with medium wool contributing a minor percentage (Figure 3) (Beef and Lamb NZ 2012).
Wool Prices

The price of wool varies between micron categories. As can be seen in Figure 4, fine wool fetches a higher price than medium or strong microns of wool. However, although the price of fine wool is consistently higher, it fluctuates far more than prices of other microns.

Recently, wool prices have been increasing. The 2011-12 average auction wool price (of all grades) saw a 10 per cent increase on the previous year. Particularly favourable prices have been seen for fine micron wool (Figure 5).

Despite decent prices, the real returns to woolgrowers have declined due to increasing input costs, notably labour (Conforte, et al. 2011).
Figure 4. Annual Wool Price Trends by Micron Categories

![Annual Wool Price Trend Diagram](source: Beef and Lamb NZ, 2012)

Figure 5. Average Wool Prices in New Zealand by Micron Categories

<table>
<thead>
<tr>
<th>Year</th>
<th>Fine</th>
<th>Medium</th>
<th>Strong</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010-11</td>
<td>955</td>
<td>443</td>
<td>412</td>
</tr>
<tr>
<td>2011-12</td>
<td>1,146</td>
<td>491</td>
<td>431</td>
</tr>
</tbody>
</table>

Percentage change: 20% for Fine, 10.8% for Medium, 4.6% for Strong

Source: Beef and Lamb NZ, 2012
NZ Wool Exports

New Zealand exports 90% of its wool production, making it the world’s second biggest wool exporter after Australia. The biggest importer of New Zealand wool is China (50%), followed by the European Union (28%). From July until December 2012, New Zealand’s wool exports to China climbed 21 per cent on the previous season (Beef and Lamb NZ 2012).

Over 70% of the wool NZ exports is in raw form (clean or greasy), the rest is “value added” wool products (such as yarns, carpets and other wool products)(Beef and lamb NZ, 2010).

NZ Wool Supply Chain

Despite traditionally selling their wool at auctions, recently woolgrowers have increasingly been selling their wool privately. By selling directly to private buyers and end users, woolgrowers intend to adjust their wool production to meet the specifications of market requirements (MAF 2009).

There are two major auction brokers, Elders Primary Wool (EPW) and Wool Partners International (WPI) that handle 42 per cent, and 32 per cent, of the auctioned wool consecutively. The balance is auctioned by a number of minor brokers.

Independent wool merchants who cultivate region-oriented relationships with woolgrowers buy majority of privately sold wool. There are also exporters and manufactures that deal in direct procurement from growers (Conforte, et al. 2011).

Exporters purchase majority of the wool sold at auctions or by merchants. Seventy per cent of this exported wool is done so raw, either scoured (70%) or greasy (30%)(Beef and Lamb NZ, 2010). The scouring is commissioned by exporters to be executed in NZ, usually by one of the two main scouring companies (Cavalier Wool Scourers, who handle 65% of national wool scouring, or NZ Wool services, who scour approximately 30%)(NZWSI, 2010).

Figure 6. Methods of Wool Sales in NZ during 2009

<table>
<thead>
<tr>
<th>Method</th>
<th>Percentage</th>
</tr>
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<tbody>
<tr>
<td>Auctions</td>
<td>46%</td>
</tr>
<tr>
<td>Private sale</td>
<td>41%</td>
</tr>
<tr>
<td>Slipe wool*</td>
<td>13%</td>
</tr>
</tbody>
</table>

* Wool removed from the hide of the slaughtered sheep.

Source: Beef & Lamb NZ, 2012
Since peaking in 1982, at 70.3 million, New Zealand’s sheep population have been decreasing due to environmental factors (bad droughts in the 1990’s) in combination with competition from alternative farming activities and lower-appeal from wool prices. While the mid 2000’s saw a stabilisation, and even slight growth, of the sheep population, the flock soon shrunk again to a mere 31.1 million in 2011 (Statistics New Zealand 2012).
The majority of New Zealand’s sheep population are Romney sheep, followed by Perendale, Coopworth, and Merino. The Romney sheep is suitable for the climates and land of both the North and South islands of New Zealand. But the rest thrive in only specific areas of the South island (Beef and Lamb NZ 2012).

**Key NZ Wool Industry-Good Initiatives**

**Merino Wool**
The New Zealand Merino wool industry has seen numerous initiatives over the past twenty years that have poised it into a position of strength. Much effort has gone into the marketing and promotion of NZ merino wool in international markets that has built up brand value. Work has also been done to revolutionise the supply chain, and employ new business models that provide greater returns to growers.

The industry has seen most of its progress thanks to The New Zealand Merino Company Limited (NZM). NZM was founded in 1995 by Merino woolgrowers who wanted to differentiate their product through marketing, with the goal of lifting it out of the commodity basket. Fluctuating prices characterise any commodity market, but the Merino market was outstandingly volatile – second only to sugar in commodity-price volatility. Growers were struggling in a market that lacked stability, with a product that lacked identity. Facing “unsustainable prices, an increasing cost of production, and diminishing returns”, NZM created a model that shattered many industry-myths and revolutionised the NZ merino industry. Today, about 85 per cent of all NZ grown Merino wool is transacted by NZM (Denend, L. and Shiv, B. 2011).

Initially NZM researched the benefits of NZ Merino wool and used these to successfully brand the nation’s product, differentiating not only Merino wool from other types of wool, but New Zealand Merino wool from the Merino wool produced in competitor countries. Now, New Zealand Merino wool has fetched prices higher than Australian Merino of comparable fineness. (Greer 2003)

Another comparison to Australia is that New Zealand Merino wool now has far stronger brand value. Retailers can command a premium price for their NZ Merino, which has consumer connotations of purity, sustainability and quality (Denend, L. and Shiv, B. 2011). But retailers have been dropping the “Australian-grown” branding angle since the country’s sheep industry extremely damaging mulesing expose (Clancy 2009).

After cultivating brand value for the country’s Merino wool, NZM continued to make the following achievements (Denend, L. and Shiv, B. 2011; Greer 2003):
A transition of a significant amount of Merino wool sales from auction to direct contracts (from 2 per cent in 2001, to over 30 per cent today). Which has meant:

- Growers have received higher returns thanks to receiving a negotiated, sustainable fixed-price for their wool, protecting them from commodity-market volatility. Moreover, manufacturers receive guaranteed quality and a stable input price.
- The model creates the possibility for brands to trace the wool back to its production farm.

New Zealand Merino wool is a very competitive, premium product due to the successful efforts of NZM. Beyond this, the supply chain of Merino wool in New Zealand is much healthier than that of the global wool industry due to NZM pushing through the traditional functions of commodity markets, creating a much more profitable and sustainable environment for both Merino wool growers, and manufacturers.

**Wools of New Zealand**

Wools of New Zealand is a promotional body and strong-wool brand, started by the New Zealand Wool Board, working on increasing the demand for New Zealand’s strong wool. The initiative works with a quality assurance program that spans all aspects of the supply chain, and has effectively channelled a substantial proportion of the national strong wool clip through this. Wools of New Zealand work with over 250 brand partners in the global carpet and rug sector (Denend, L. and Shiv, B. 2011).
Bibliography

Appendix B: An Overview of New Zealand and the National Wool Industry


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