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Accounting for nonconvergence in global wool marketing before 1939

David Merrett
University of Melbourne

Simon Ville
University of Wollongong, sville@uow.edu.au

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Keywords

accounting, before, nonconvergence, 1939, global, wool, marketing

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From the mid-nineteenth century, raw wool became a global commodity as new producing countries in the southern hemisphere supplied the world's growing textile industries in the north. The selling practices of these big five exporters - Australia, New Zealand, South Africa, Argentina and Uruguay - ranged from auction through hybrid auction-private sale to exclusively private sale. We explore why these countries persisted with different marketing arrangements, contradicting two streams of the institution literature, isomorphism and the new institutional economics. The paper makes several important contributions through blending distinct branches of theory and by focussing on the international constraints to convergence in an earlier period of globalisation.

Key words: wool marketing, raw wool, top making, iron cage, isomorphism, efficient institutions

JEL: D 4, N 50, N 80

Introduction

The growth of demand from the woollen textile industry called forth a major expansion of the world's production of raw wool in the second half of the nineteenth century.¹ New southern hemisphere producers, Australia, New Zealand, South Africa, Argentina and Uruguay, accounted for nearly all of the increase in global supply. By the 1870s a regionalised set of markets had become global as the price of wool converged within merino and cross breed produced in and consumed in different countries rose and fell in unison.² The shift in the geography of production was matched, with some lag, by a shift in the point of sale from auctions in the consuming countries, predominantly London and Continental cities, to sale in the producing countries. Our interest is in the marked differences in marketing methods in the main exporting countries, ranging from auction to a hybrid of auction and private treaty to solely private treaty. Marketing methods did not converge. A contemporary expert noted that "an examination of the system of marketing wool which is in vogue reveals astonishing differences in methods for so important an article of commerce."³ Two threads of institution theory that are rarely applied in tandem, a process of isomorphism and of rational self-interest of market participants, both suggest

convergence towards a single form of marketing should have occurred, albeit for different reasons.

Our objective, therefore, is to show why the differences in marketing methods were sustained in the face of well-respected arguments from several strands of institution theory that one form of organization will win out. We first review the seminal ideas of Paul DiMaggio and Walter Powell that firms would be motivated by the promise of legitimacy to copy the behaviours of leading firms in an organizational field, a process of isomorphism.⁴ We explore the degree to which the marketing methods employed within countries prior to the relocation of sales to the country of production were altered as a result, and the impediments faced in transferring London's auction-based system used for the sale of Colonial wools to new hosts. The choices made in each of the wool exporting countries in the late nineteenth century with respect to local selling institutions were perpetuated by the maturing of organizational fields. An alternative argument for convergence to which organizational form is superior, in terms of efficiency or profitability, comes from the economic rationalist school within institution theory. Douglass C. North makes the point that more efficient organizational forms will drive out less efficient forms.⁵ We employ this insight to determine whether or not there were significant differences in the efficiency of the various marketing systems for each or any combination of participants.

We conclude that a lack of convergence can be explained by two complementary arguments. First, deep-seated differences in the historical experience of the five major exporters shaped the evolution of their political and economic structures in such a way as to create localised organizational fields despite this being an era of economic globalisation. Second, the economics of transforming raw wool into tops entrenched the continued divergence of marketing methods.⁶ A surprising result is that the different forms of sale were efficiency neutral to the growers and buyers because the differentials in the prices received and paid, were more for the same quality of wool offered at auction than at private sale. This reflected the value provided by the grower regarding superior information about the character of the wool and its better preparation prior to sale.

The paper begins with a brief review of the changing geography of global raw wool production and consumption from the late nineteenth century until 1939. We then describe the marketing methods used in the wool trade both before and after the relocation of the point of sale to the exporting countries. Following this, we explain the several aspects of institution theory that anticipate convergence in the methods of marketing, before providing our account of why the iron cage of isomorphism remained unlocked.

Global Wool

The growing demand for raw wool reflected the broad-based stimuli of population growth and rising real income in Western Europe, the United States of America and Britain's dominions.⁷ Absorbing many of the technical advances made by the cotton textile industry, the mechanization of the woollen textile and hosiery industries reduced the cost of production while raising the quality and, importantly, the variety.⁸ Gradually and unevenly across countries, clothing advanced from a staple and a necessity to a discretionary fashion item for many. New forms of retailing, notably department stores, and new forms of merchandising, relying heavily on advertising, altered the attitudes of consumers to their wardrobes.⁹ On the eve of World War One, four countries, Britain, France, Germany, and the United States of America "probably accounted for over 90 per cent of world production of wool textile fabrics and an even higher proportion of tops and yarn...".¹⁰ The balance came predominantly from other European countries such as Austria-Hungary, the Netherlands, Italy and Belgium.¹¹ Japan was to emerge as an important producer after World War One. The inter-war years were a period of slower growth for woollen textile production as spending was restricted by a combination of declining population growth in Europe, the impact of rising unemployment in the 1920s followed by the Great Depression, and growing competition from cheaper cotton and synthetic fibres.

The textile producing countries could not continue to source their wool domestically from the mid-nineteenth century. Sheep numbers in Britain, France, Germany and Spain declined from 90 million to 72 million between 1840 and 1909 as industrialization shifted comparative advantage away from land-intensive activities. The switch to global supply was accelerated by the reduction in ocean freight rates and by a lowering or abolishing tariffs on wool imports in Britain in 1844, and later in France (1860) and Germany (1879). The heavily protected United States of America market remained an anomaly. By contrast, the new wool growing countries of Australia, New Zealand, South Africa, Argentina and Uruguay, all of whom enjoyed an overwhelming comparative advantage in land intensive activities, increased their collective sheep numbers from five million to 239 million over the same period. Merino sheep arrived in South Africa and Australia at the end of the eighteenth century. Wool growing on a large scale began later elsewhere, in the 1840s in New Zealand and Argentina and in the 1860s for Uruguay. By 1939-1944, these five countries supplied 70 per cent of the world's apparel wool.¹² The rapid spread of sheep over the grasslands of these countries was a story of the diaspora of European merino livestock. It proved to be an adaptive breed and with careful selection, particularly in Australia, increased the weight and quality of its fleece.¹³ As shown in Table 1, Australia became the undisputed leader in wool production, producing as much as the other four exporting countries combined through the first half of the twentieth century. Moreover, Australia was the pre-eminent producer of merino wool, accounting for roughly one half of the world's output.¹⁴ South Africa's climate also favoured the production of merino wool while the damper and colder climates of New Zealand and Latin America were better suited to British long wool sheep and crossbred

sheep with coarser wool and bigger carcasses. The latter became increasingly valuable following the development of the chilled and frozen meat trade in the late nineteenth century.¹⁵

Table 1 about here

The global wool trade relied on intermediaries to bring growers and buyers together as it had from medieval times.¹⁶ However, the geographic connection changed dramatically around the end of the nineteenth century. Britain had been the great market for foreign wool throughout the nineteenth century. Auctions conducted in London by a small group of selling brokers supplied the British, continental European and the United States of America textile industries with wool. Textile manufacturers purchased at auction on their own account and/or through brokers, and were able to tap into an extensive secondary market of wool held by speculators, dealers and merchants.¹⁷ Growers in the new producing countries in the early days did not possess the knowledge or means to get their wool to the central auction markets. Price information was fragmentary before the completion of the cable to countries in the southern hemisphere in the 1860s and 1870s. Local growers had to wait months between the shearing of their flocks and having their wool sold in London. Consequently, general merchants and banks operating in the exporting countries assumed the risks buying directly from growers to sell themselves in London or supplied services and credit which allowed growers to consign their wool to London for sale. By the late nineteenth century there were better information flows within the market about prices and stock. Moreover, the wool trade was able to use the infrastructure supporting the huge increase in international trade, improved land and sea transport, and trade finance.

Over time, as the volume of wool handled rose, specialist intermediaries, a combination of domestic firms, foreign participants with permanent local representation, or migratory buying agents who visited to attend sales, came to dominate the trade.¹⁸ By 1928 Skinner's trade directory identified over two thousand firms as "wool merchants (exporters of raw wool, wool buyers, fellmongers), wool washers and scourers".¹⁹ More than three-quarters of these firms were located in the four major importing countries and the five leading exporters. Moreover, many firms operated across multiple markets. A leading Dutch firm, Kreglinger & Fernau Ltd, had offices in London, Buenos Aires and Montevideo as well as in Boston, Sydney and Christchurch. The Bradford-based, Robert Jowitt & Sons, had offices in both South Africa and Australia. William Haughton & Co, a Melbourne-based firm of buying brokers and merchants, had offices in London, in four Australian states, two offices in New Zealand, and an office in Toronto. It also acted as a buying broker for British, American, French, Greek, Swiss and Italian textile manufacturers.²⁰

Between the 1890s and World War One the location of wool sales shifted decisively to the countries of production.²¹ A central market was becoming less appropriate for a textile industry which was expanding within Europe, and more broadly to include the United States of America and later Japan. Sales of foreign wool outside London had begun in a number of

European textile centres and ports from the 1840s to the 1880s, with some South American and Cape wool being auctioned along with local supplies.²² However, the growth of these emergent European auctions was also checked by the relocation of wool selling to the country where it was grown.²³ Having credit providers in the countries exporting wool was a critical precondition to break down the consignment model that involved drawing trade bills on import agents in Britain by foreign consignors to finance the trade. Australian stock and station agents accessing the London capital market became quasi-bankers in the late nineteenth century.²⁴

Having all started with some combination of direct sales to local merchants or using the services of local consignors, the exporting countries came to sell their wool through different channels. In Australia, combinations of selling brokers operated a centralised auction system in the major port cities which operated de facto as an integrated national system. Private treaty sales were vigorously opposed.²⁵ New Zealand and South Africa also adopted local auctions from the 1880s but there was a lack of co-ordination between selling centres in both countries compared to Australia.²⁶ However, in both countries, auctions ran side by side with large private treaty sales.²⁷ Clapham suggests that before World War One South African small growers “always sold their wool locally, in many cases to storekeepers. These in turn dispose of it to buyers for European firms, or to export houses at the ports – houses which frequently do business of a very general character, in which wool dealing forms but a single item”.²⁸ Little had changed by the 1930s.²⁹ The Latin American countries persisted with private treaty sales, although local brokers and European manufacturing interests took over from the import-export houses.³⁰ However, unlike in South Africa, a small number of very large private buyers dealt directly with the large estates, the estancias. These large estates had considerable market power in negotiating with buyers. Smaller scale growers’ wool found its way to markets in the major ports, which provided a location to regulate private dealings, settle disputes, grade and inspect produce and to disseminate market information generally.³¹ An American authority, Alston Garside, noted in the late 1930s that having made their purchases, buyers then sold “direct to importing companies in foreign consuming countries and to buyers in South America who represent those companies.”³²

The iron cage unlocked?

Several strands of institution theory predict that organizational structures and behaviours within an industry or organizational field will be driven towards a common form. Competitive forces and/or striving for the legitimacy attached to the practices of dominant participants will tend towards homogeneity of practice. We will argue that the shaping of institutions, wool marketing methods, over a long period of time in a global context tests the explanatory power of these arguments. We maintain that the geography and history of

each of the exporting countries provides different national environments in which the organizational fields associated with the wool trade developed.

DiMaggio and Powell expounded a novel explanation of the convergence of organizational structures and behaviours that enjoys wide currency within the organization studies discipline. We will not delve into the detail of a wide and contested literature.³³ Our purpose is to employ elements of the DiMaggio and Powell argument as a lens for explaining why isomorphism did not occur across countries in the global wool marketing arrangements. They suggest that in the twentieth century “structural change in organizations seems less and less driven by competition or the need for efficiency”.³⁴ As an alternative explanation, they employ the ideas of Giddens of the structuration of organizational fields, arguing that “once a field becomes well established...there is an inexorable push towards homogenization.”³⁵ In those organization fields with high levels of mutual recognition amongst participants the push for isomorphism takes on a new form: competition for “resources and customers, [and] for political power and institutional legitimacy, for social as well as economic fitness”.³⁶

Do the wool marketing methods we have identified above correspond to organization fields as defined by institutional theorists? We believe so; a market is as much an institution as an association of firms.³⁷ Each market comprises a collective of actors, in our case those individuals and firms engaged in supplying and making a market in raw apparel wool. The three forms of marketing methods that operated after the relocation of the wool markets to producing countries outlined above, auction, hybrid, and private sale, display the necessary attributes of organization fields. All forms of sale shared the following common elements: a supply chain which extends from wool growers to merchants and/or specialist intermediaries such as brokers; formal institutions for the sale of wool such as markets and auctions; and wool buyers and/or their agents. A central auction system required more specialised off-farm labour inputs such as wool classers, physical assets in auction rooms and specialist warehouses, and an industry group to control the auction system. The wool markets were dependent on the provision of additional infrastructure and specialist intermediaries such as transport routes from the farm to the port, storehouses, merchants or agents, a market place where sellers and buyers could meet, and the provision of credit to buyers to pay the growers. Importantly, the wool market was situated in a wider network of economic activity. The geographic concentration of wool markets, clustered in major ports, and frequent interaction between them generated high levels of mutual awareness amongst participants which strengthened the emergence of these markets as organization fields.³⁸

What pushes firms within an organizational field to become more alike over time? DiMaggio and Powell employ three mechanisms: coercive; normative; and mimetic.³⁹ They are both external and internal to each firm, which can work in various combinations. Broadly speaking, the coercive mechanism represents the “rules of the game” as set by formal and

informal institutions.⁴⁰ Normative mechanisms have the descriptor of professionalism. Decision-makers whose training and experience lead to common patterns of thought and action, particularly amongst professional classes such as accountants, lawyers and engineers, prompt the isomorphism of organisations' structures and behaviours. Finally, mimetic behaviours drive firms to moderate uncertainty and to obtain legitimacy by copying the structures and behaviours of the most successful firms.

We have seen that the initial response by the textile producers to the rise of new sources of supply was to buy directly from growers or to buy at auctions in Europe wool that had been sent on consignment by growers or acquired by merchants. A variety of marketing methods were becoming established in the producing countries. There was a transition from private sale to auctions in some countries but not others.

Each of the marketing systems, a narrow organization field, developed within a wider set of national institutions. The evolution of national meta-institutions in the five wool exporting countries was shaped in part by the transmission of institutional characteristics from the imperial powers of Britain to Australia, New Zealand and South Africa and from Spain to Argentina and Uruguay. Colonial influences within the formal and informal British Empire were moderated by the culture and ethnicity of the recipients.⁴¹ Australia and New Zealand benefited from stable relations with Britain from the earliest years of the wool trade. South Africa had a more chequered association with the Dutch and then British; the Union of South Africa in 1909 eventually gave the new country dominion status in the British Empire. Argentina and Uruguay were at odds with their Spanish coloniser but drew upon an intermediating economic and political relationship with Britain sometimes referred to as "informal empire".⁴²

Numerous comparative studies have sought to explain differences in national development and prosperity. Climate, geography and culture are often referred to as contributory factors.⁴³ Acemoglu and Robinson argue that institutions matter most in determining outcomes development trajectories, whether they provide incentives which reward work and investment or permit elites to extract rents. It is not our purpose to undertake a detailed comparison of institutions between the five countries, except to note that Acemoglu and Robinson describe Australia's institutions as inclusive and those of both Argentina and South Africa as extractive.⁴⁴ The emergent institutional framework of each of the wool-producing countries shaped the direction and strength of the coercive mechanisms contributing towards an international convergence.

The choice of marketing method by each of the exporting countries reflected the nature of their institutions in a number of ways. The terms and conditions under which wool growers had access to land differed across countries. A wool industry made up of farmers with large flocks was more conducive to the development of auctions than one populated by many small scale growers who of necessity sold directly to merchants. Clapham notes that "the large squatters of Australia could afford to wait for the whole or part of their money; the

smaller farmers at the Cape, especially the native flockmasters, very seldom could.”⁴⁵ The average size of Australian and New Zealand flocks around World War One was nearly twice that of Argentina.⁴⁶ In the first half of the nineteenth century, “squatters” took possession of vast areas of grazing land in Australia. The British government, when permitting self-government to the colonies in the 1850s, imposed a far wider franchise than was sought by this group who had hoped to entrench their power. As a consequence, a democratic political system introduced land reform which offered access to pastures to many others while still allowing for very large holdings.⁴⁷ Australian experience contrasts to that of Argentina and Uruguay where access to land became concentrated in the hands of the elite, and to South Africa where non-whites were denied access to land held exclusively for European races.⁴⁸ Moreover, Boer farmers operated on smaller farms than British settlers.⁴⁹ Countries such as Australia and New Zealand whose inclusive institutions protected property rights and provided incentives for enterprise were also better placed to invest in the public and private infrastructure required by the central auction system. Private financial institutions provided credit more liberally in environments where property rights were assured. Specialist intermediaries servicing the pastoral industries were common in Australia and New Zealand, and conspicuous by their absence elsewhere.⁵⁰

Normative pressures for institutional isomorphism did exist in the global wool trade. The industry was steeped with shared knowledge about the nature of the raw material and its conversion into thread and fabric. Cities like Bradford in England, a cluster of closely associated industries dealing and processing raw wool and top making, were at the heart of the creation of knowledge and institutions supporting the industry through its technical colleges, conditioning houses, trade associations and arbitration mechanisms. Knowledge was shared and information was transmitted via the movement of people across borders, the publication of technical manuals and prices.⁵¹ Global trade and challenges from competing fibres motivated greater standardisation and cooperation between the wool growing and the consuming countries. The establishment of the International Wool Trade Organization in the 1920s was prompted by the need to standardise sale contracts for raw wool and tops, and to create an arbitration mechanism to deal with disputes. Further, the wool exporters set up the International Wool Secretariat in 1937 as a cooperative enterprise to promote wool as a fibre.⁵² By the 1930s there were regular conferences between representatives from the wool producing and consuming countries on a range of issues.

However, these developments, important as they were, had none of the power of the professionalism, a dominant paradigm of thought and action shared by individuals within all organizations in the “field”, which motivated isomorphism in DiMaggio and Powell’s argument. Significant country-based differences in outlook and experience remained within the wool trade. For instance, custom and practice in the manner of classifying types of wool continued to differ between the textile producing countries despite negotiations between the American and British government and trade representatives in the ‘twenties.⁵³ Skinner’s still published a comparative table of international standard of wool qualities

shortly after World War Two.⁵⁴ We are unaware of any pressure from the consuming countries for the wool producing countries to adopt a uniform marketing method. They were divided amongst themselves with respect to the establishment of futures markets for wools, France and the United States of America opting to do so and Britain declining before 1939.⁵⁵ In this respect, wool marketing differed sharply from the isomorphic tendencies of the cotton trade where from the mid-nineteenth century “the old-fashioned importers, brokers and factors declined” to be replaced by a unified system of marketing based around a small number of cotton exchanges which dealt in futures for a standardised product linking growers directly with manufacturers. Such exchanges, in the words of Kenneth Lipartito, “helped impose worldwide supply and demand conditions on local markets, thus moving the entire Cotton trade towards the ideal of a single market with a single, internationally determined price for each grade of cotton”.⁵⁶ The marketing arrangements for wool were disturbed only by World War One when Britain acquired all of Australian and New Zealand wools from 1916, and as this unused stock was fed back into the market in the early 1920s.⁵⁷

Contemporary experts were correct in their belief that a centralised auction as operated in Australia was the best system for both growers and buyers. It involved the largest concentration of buyers competing for wool, with large clips offered in multiple smaller “lots” enabling many buyers access to their preferred type, and generated the best prices for the grower.⁵⁸ Auctions saved time. At the Brisbane sales in 1914 and 1915 six to seven thousand bales were sold a day with each “lot” selling in around 10 seconds.⁵⁹ Was it a lack of knowledge of the superiority of auctions over the alternative forms of marketing which prevented its adoption? The strength of a mimetic impulse to copy the leader might depend upon how much participants in the raw wool market knew about systems which operated elsewhere and their comparative benefits and costs. International buyers were most aware of the differences between the markets in which they acquired wool. Growers, more remotely located and less directly engaged with the trade, may have been less well informed. We argue below that the end users, the top makers, were indifferent.

Insert Table 2 about here

Even if participants in the wool trade in countries using predominantly private sales wanted to change marketing mode to auctions, they would incur costs and risks in doing so. In Table 2 we show in the far right hand column the ascending costs to third party market makers as marketing modes alter from private sales direct for growers and at markets, to auctions. Little institution building was required where storekeepers bought directly from growers, especially if the growers were indebted to them. City-based merchants seeking out larger clients would invest in building some ongoing relationship. Markets were more complicated affairs as some third parties provided physical infrastructure in which growers and buyers could have wool available for inspection and to trade. The market would provide a standard contract of sale, and provide a dispute resolution mechanism. Auctions relied on a more

formal set of institutional arrangements. Selling brokers needed to make significant investments in the warehouses in which wool was stored before and after sale, and to provide buyers with extensive opportunity to examine wool prior to the auction. Auction house associations needed to liaise with those other intermediaries on whom the smooth operation of the auction system depended, such as wool dumpers, carriers, railway and port authorities, shipping agents and banks.

Table 3 around here

Persuading growers and buyers to change behaviours took time as the Australian experience demonstrates. Whereas private sales are not scale reliant for their success, the auction system enjoyed increasing returns as throughput rose because of the high fixed costs associated with the physical assets used by selling brokers.⁶⁰ The inability of auctions to quickly supplant private sales in New Zealand and South Africa undermined its attractiveness to those operating the auctions. As shown in Table 3 there were marked differences in the volume of wool handled through auction centres in Australia, New Zealand and South Africa. By the late 1920s Sydney was the world's largest market for wool surpassing the London sales. Australia had another four centres which outstripped the volumes sold at the leading auction centres in New Zealand by a large margin. We assume that a broker needed to sell around 30,000 bales a season to operate at a profit.⁶¹ Moreover, the majority of brokers in all of the New Zealand centres were operating at volumes well below profitable levels. Reflecting the different geography of New Zealand with long coastlines and shallow but rugged hinterlands compared with Australia, the plethora of small broking firms across many centres earning low profits may have lessened their desire and ability to invest in a national auction system. Around the turn of the century, one contemporary bemoaned New Zealand's "want of one great centre" from which similar economies of scale could be derived.⁶² The successful and relatively swift transition to auctions at the expense of private sales or consignment in Australia rested heavily on prior relationships between large pastoral service providers and growers who were reliant on them for credit. Growers were locked into the auction system and selling brokers were bound to it by association rules. Pressure from buyers for a decisive shift to a coordinated set of auction sales was also crucial in prompting change.⁶³

Buyers of 'Colonial wool' in Britain in the nineteenth century had many decades of experience of a central auction system.⁶⁴ We might expect a strong mimetic pressure to replicate this form of marketing in the wool producing countries. Auctions took hold more strongly in those countries which were British colonies and later Dominions. By comparison, Latin American wools had bypassed London going directly to continental markets. The textile producing countries, Britain, France, Germany, Belgium and the United States of America, produced roughly a quarter of the world's apparel wool.⁶⁵ However, in those countries wool buyers purchasing domestic wool did so almost entirely through private sales.⁶⁶ Buyers were accustomed to buying through multiple channels.

The three isomorphic mechanisms may also have interacted in unforeseen ways. Those countries with extractive institutions may have suppressed entrepreneurial ambition, a vital ingredient of a mimetic process. It was not an inability to change the organization of wool marketing *per se* in countries with “rules of the game” which favoured entrenched elites. We think it more likely that the opportunity to identify and exploit new areas of economic activity in such countries was captured by the elite. Australia was not only the largest wool exporter, wool was also the nation’s dominant industry in most years, and most sheep were found on sheep stations not mixed farms. Thus, the interests of those associated with the industry were closely aligned with the national interest.⁶⁷ This was less the case in any of the other exporting countries. In twentieth century Argentina and Uruguay sheep farming was fast losing ground to cereal and meat production. The growing export trade in hides and frozen meat brought a vigorous response from both local and foreign capital to develop a vertically integrated supply chain.⁶⁸ Likewise, mining took precedence over pastoral activities in South Africa as an opportunity for those with capital and connections. In New Zealand small mixed farming was more prominent.

Information, risk and investment in marketing methods

The lack of institutional convergence is the more surprising given, as we argued earlier, that auctions were a more efficient form of marketing wool than private treaty sales. Why did these alternative systems coexist? Our argument is that the buyers of raw wool were largely indifferent to the method because the prices paid reflected how much preparatory work of converting raw wool had been done by the growers and brokers or remained to be done by the top maker. The costs of such transformation were set by the technology in use. By the late nineteenth century the textile industry had progressed from a domestic to a factory based system in all of the major producing countries. Mechanization replaced hand labour and similar technologies were universally applied. David Jenkins reports that “the first forty years of the twentieth century saw remarkably little technical development beyond relatively minor adjustments to well-tried machinery.”⁶⁹

The starting point is to work backwards down the value chain in the wool textile industry. Prices paid in wholesale markets for clothing, hosiery and other woollen products set the prices paid for intermediate inputs such as tops and yarn. The price spinners paid for tops in turn set the prices top makers would pay for raw wool. Top makers faced considerable uncertainty and potential processing costs when purchasing raw wool. This uncertainty comes from two sources. First, determining whether the wool purchased is of the required quality. Wool is a heterogeneous fibre whose quality differs within a single fleece, within flocks of similar breeds of sheep from the same farm, between similar breeds from different countries, and between breeds. There were no objective measures of wool fibre characteristics or quality. Grading or classing wool was an art rather than a science. Experienced classers and sorters working by feel and sight allocated wool into trade

categories, by breed of sheep and then attributes of wool, usually the British system of “counts”, reflecting the fineness and length of the fibre. For example, “counts” of 60’s and above were merino wool, 58’s to 40’s’ for crossbred wool and all numbers below 40’s for carpets.⁷⁰ Second, the wool fleece contains a large volume of grease, as well as dirt and vegetable matter, which must be removed prior to its conversion into tops. Nearly all wool was presented for sale in a greasy state. Shrinkage rates differ between breeds and between countries.⁷¹ The top maker or his buying agent had to estimate the “yield” or the weight of wool after washing and scouring. Ready reckoners of the bid price for raw wool, having calculated the yield, for any price of tops were in common use in the trade.⁷² The guarantees of clean yield offered by wool merchants in Buenos Aires and Monte Video suggest that some buyers found the risk of receiving less clean weight than expected so great that they lowered their offer price to compensate or sought alternative sources of supply.⁷³

Clean wool of known type and quality had to be made ready for the top manufacturers. Wool classers, sorters and blenders attended to the first task. Growers, especially small producers, generally lacked the skills to do this. In Australia and New Zealand professional classers worked in the shearing sheds filling up bales with wool of a consistent type and skirting fleeces to separate the dirtiest and most stained wool of lowest value.⁷⁴ Fleeces were packed in bales with information about the character of wool contained therein and the name of the grower and/or farm clearly displayed. Alfred Barker and E. Priestly, both instructors at Bradford Technical College, observed that South American wools were “badly marketed” and blamed the poor standards of shearing, classing and packing.⁷⁵ Consequently, wools required classing or reclassing after their purchase in the exporting countries either by top makers or by specialist sorting and blending firms working on their account or on commission. Scouring wool and removing extraneous matter required the application of factory-based chemical or mechanical processes, and these were usually undertaken in the textile producing countries as wool scoured in the southern hemisphere tended to arrive “discoloured and felted”.⁷⁶

There is a fault line between the marketing methods with respect to what the buyer knew prior to purchase about the quality of the wool and its weight after cleaning. Private sales, whether directly from growers or at markets in Latin American ports, offered raw wool which had not been subject to any of the conversion processes required by top makers to have clean wool of known type and quality. The risks facing the buyer in private sales rose markedly compared to those faced when buying at auction. Auctions usually meant that the grower had undertaken a first stage of classing and packing fleeces indicating type. Geoffrey Jeffrey and Henry Smith both argued that by doing this Australian growers received an increase in price well above the cost of providing the service.⁷⁷ It is likely that this reflected a premium the buyer was prepared to pay for the reduced risk regarding the final wool volume and quality. Moreover, as shown in Table 2 above, the grower using auctions paid for part of the marketing costs including transporting his wool to the port, and for services

provided by the selling brokers in their stores. Marketing costs comprised roughly ten per cent of the expenses Australian wool growers incurred in the 1930s.⁷⁸ By comparison, Latin American growers paid none.⁷⁹

Tables 4 and 5 around here

Our argument is that the differences in the “efficiency” of the private and auction system of sale were largely offset by the lower prices buyers offered in the former. Hypothetically, any difference in the price paid by a Bradford comber for greasy crossbred wool of comparable count, quality and potential “yield” from Australia and Argentina should reflect two things: the respective cost of transport to the United Kingdom; and how much of the expense in preparing wool for tops manufacture remains to fall on the buyer.⁸⁰ Some of the preparatory work has been undertaken at the expense of the grower in the auction system. The buyers pay a lower price in private markets to compensate for the higher risks resulting from the lack of knowledge about the wool being purchased and because they will have to pay for all of the transformation processes before wool can be made into tops. We find a consistent price differential in favour of greasy crossbred wool which had been well classed, skirted and packed from Australia and New Zealand compared with similar wools from South America which were poorly prepared.⁸¹ Our data is supported by Hilda Sabato’s observation that when an Argentinian “grower sold his produce at the door of his estancia, he did not cover any of the costs involved in the process of marketing, but he received a price that was normally lower than that which was quoted in the Buenos Aires markets.”⁸² Moreover, Sabato argues that the differential between the price received for similar types of wool offered by Argentinian and Australian growers was “because the condition in which each of them reached the market was not the same.”⁸³

Conclusion

Du Plessis’ wonderment at the variety of marketing methods for apparel wool is not surprising when placed in context.⁸⁴ The world’s textile industry relied on large volumes of cross border trade in fibres such as wool, cotton, other natural fibres and synthetics.⁸⁵ Wool was condemned to sale through physical markets until an effective form of objective measurement was developed and reluctantly accepted by the trade in the 1980s.⁸⁶ By contrast, increasing standardization of the classification of cotton fibres, particularly in the United States of America in the 1920s, and the production of synthetic fibres encouraged the use of different marketing methods: sale by description and trading in futures contracts.⁸⁷ Moreover, the relatively small number of industrial firms producing synthetic fibres swapped technical information and attempted international market sharing.⁸⁸ Wool lagged behind substitute fibres in modernizing its market methods.

The global wool trade persisted with different country-based marketing methods after the relocation of wool markets to the five major wool exporting countries in the decades straddling the turn of the twentieth century. Argentina and Uruguay continued with the nineteenth century form of wool marketing: sales direct from farmers. Australia, by contrast, shifted decisively to an almost universal central auction system. Marketing in New Zealand and South Africa fell somewhere in between by having a mix of private sales and a series of poorly co-ordinated auction sales.

The puzzle which motivated the paper is why these differences persisted when there are strong arguments from institution theory and the new institutional economics that some convergence in the marketing methods should occur. Our argument is that the history and geography of these countries, broadly defined, give rise to a particular form of isomorphism as defined by DiMaggio and Powell and later scholars: country-specific organizational fields.⁸⁹ The shift of wool markets from the consuming to the producing countries resulted in the development of localised organisational fields, not only between countries but sometimes locally between selling centres within countries.⁹⁰ Once these became mature, the likelihood of any convergence between them was very low. Each of the wool exporting nations had a unique set of natural resources whose comparative advantage shaped the path of economic development. However, social and political institutions, themselves influenced by the nature of their relations with colonizing European powers, gave rise to distinct patterns of access to resources, particularly land, power and influence. The coercive mechanism facilitating isomorphism has greater predictive and operational power within a single nation state or jurisdiction. The international wool trade had not been tamed by normative pressures. Geography and history had bequeathed a variety of husbandry techniques and country-specific classifications of wool types. Pressures from the wool consuming countries did lead to some standardization and co-operation in wool sale contracts, dispute resolution and so on. However, this development owed little to “professionalism” as discussed by the institution theorists. The wool trade remained a craft industry, where experientially acquired tacit knowledge was the dominant route to evaluating the character and quality of wool. We argue that the power of the mimetic mechanism was weakened by information asymmetries between market participants in the various countries. Growers may have been the least well informed about alternative systems. Buyers from the wool importing countries, many of whom operated in several markets, were most aware. Scale considerations also helped shape comparative marketing choices. Moreover, Skinner’s directory of the wool trade reveals that most of the multi-country operators were in the British Dominions rather than Latin America. Understanding the possibility of different outcomes under a regime change is a first step. The more difficult one is to find a group of institutional entrepreneurs who will build the required new institution. Australian stock and station agents were uniquely well placed to undertake this move.

An explanation for lack of institutional convergence can also be understood through economic rationality on the part of the principal actors. An auction system has benefits to both growers and buyers in that by offering smallish lots of wool of the same quality the maximum number of buyers can bid for the growers' wool. Moreover, auctions are more economical in transaction costs than private sales and save time. We argue that there was little pressure from either growers or buyers to shift from private sales to auctions because of the economics of preparing raw wool for combing and carding. In the private sale, buyers bore the cost of accurately classing and cleaning wool. In the auction system many of these preparations were performed by the grower prior to sale. Buyers paid more for the same quality wool, in part, because their processing costs prior to combing were reduced.

Blending two streams of institutional theory, isomorphism and the new institutional economics, has guided our explanation of a lack of convergence at a supranational level for a key international commodity trade. This occurred in the wake of the first phase of globalisation in the later nineteenth century and provides some insights into the limitations of that process. Relatedly, it also speaks in general terms to the broad literature on the so-called "great divergence" from which we have drawn, including the work of Acemoglu and Robinson.⁹¹ Our contribution reminds us of the geographical, historical and cultural differences that shape the distinctive development paths of each nation in the face of apparently immutable forces of convergence.

DAVID MERRETT DAVID TOLMIE MERRETT is a professor emeritus in the Department of Management and Marketing at the University of Melbourne, Australia. He is the author of numerous works on Australian business history, including “The Australian Bank Crashes of the 1890s Revisited”, *Business History Review*, Autumn (2013).

SIMON VILLE is Professor of Business and Economic History at the University of Wollongong, Australia. He is a fellow of the Academy of Social Sciences in Australia and a member of the College of Experts at the Australian Research Council. He has written widely on big business, industry associations, social capital, the Vietnam War, and the rural and resource industries. His edited (with Glenn Withers) *Cambridge Economic History of Australia* has just been published.

Table 1: Apparel Raw Wool Production by Main Exporting Producers, 1909-44 (million lbs, 5 year av.)

	Australia	New Zealand	South Africa	Argentina	Uruguay
1909/10-1913/14	757	220	154	341	112
1919/20-1923-24	700	229	186	326	108
1929/30-1933-34	981	275	305	361	122
1939/40-1943-44	1112	324	258	457	126

Source: Gerda Blau, "Wool in the World Economy", *Journal of the Royal Statistical Society* 109, (1946), 184

Table 2: Information, risk and investment in marketing channels

Market type	Relationship between grower and buyer	Information about wool quality to buyer	Search costs to buyer	Pre-sale investment by grower*	3 rd party investment in marketing channel physical and organizational infrastructure
Direct from grower	Bilateral	Low	Highest	Lowest	Nil
Markets and fairs	Arm's length to relational	Medium	Medium	Low	Medium
Auction	Arm's length	Highest	Lowest	High	High

*Classing, skirting, packing, branding, transport, storage and handling charges.

Table 3: Size of auction markets in Australian, New Zealand and South Africa, 1928-29

Australia			New Zealand			South Africa	
City	Bales 000s	Brokers selling more than 30,000	City	Bales 000s	Brokers selling more than 30,000	City	Bales 000s
Sydney	1155	10/10					
Melbourne	421	7/7					
Brisbane	376	6/11					
Adelaide	227	3/5					
Geelong	199	4/4					
Perth	157	2/4	Wellington	120	1/8		
Albury	62	0/3	Napier	102	0/7		
Hobart	23	0/2	Dunedin	87	0/7		
Launceston	20	0/4	Christchurch	78	0/6	Cape Town	<50
			Wanganui	62	0/10	East London	40
			Auckland	53	0/6	Durban	30
			Invercargill	36	0/9		
			Timaru	35	0/5		
			Gisborne	2	0/6		
	2646			575			115

Sources: Australian and New Zealand data from *Dalgety's Annual Wool Review, 1928-29* (Sydney, 1929) 180-81; and South African data from A F. Du Plessis, *The Marketing of Wool* (London, 1931), 182-84.

Table 4: Average price for Australian and Argentine wool in London 1883-1890, pence per pound

	Australian	Argentine
1883	8.8	6½
1884	9.5	6
1885	9.7	4½
1886	9.5	5¾
1887	9.9	5¾
1888	9.5	6
1889	10.3	6¾
1890	10.1	5¾

Sources: Australian wool is average medium crossbreed greasy. Alan Barnard, *The Australian Wool Market 1840-1900* (Melbourne, 1958), Table XXVII, 229-30, column 8; Argentine wool is crossbred in grease and containing vegetable matter. Hilda Sabato, "Wool Trade and commercial Networks in Buenos Aires, 1840s to 1880s", *Journal of Latin American Studies*, 15, 1 (1983), Table 5, 62.

Table 5: Prices per pound for fine greasy wool at London auction 4 October 1929

Crossbred fine greasy	Super	Average to Good	Inferior to Average
Australia	19-20	14-18	11-13
New Zealand	17-18	14-16	11-13
Punta Arenas	15½ - 16½	12½-14½	9-11½

Source: Textile Mercury, *Wool Year Book 1930*, 51.

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¹ For an account of the growth of the woollen textile industry in the nineteenth and twentieth centuries see David Jenkins “The Western Wool Textile Industry in the Nineteenth Century” in David Jenkins, ed., *The Cambridge History of Western Textiles* (Cambridge, 2003), vol. 2, 761-89 and David Jenkins, “Wool Textiles in the Twentieth Century”, in Jenkins, *The Cambridge History of Western Textiles*, vol. 2, 993-1022.

² Stephen C. Brearley, “The International Wool Market 1840-1913”, PhD diss, University of Leicester, 2004, chapter 3.

³ A. F. Du Plessis, *The Marketing of Wool* (London, 1931), 102.

⁴ Paul J. DiMaggio and Walter W. Powell, “The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields”, *American Sociological Review* 48 (1983): 147-60.

⁵ Douglass C. North, *Structure and Change in Economic History* (New York, 1981) and Douglass C. North, *Institutions, Institutional Change and Economic Performance* (Cambridge, 1990). His later work emphasizes the role of institutions in reducing uncertainty which is a necessary but not “a sufficient condition for efficiency”, 84. The existing set of institutions within a country may result in an incomplete refashioning of institutional frameworks spurred by new information or technologies.

⁶ After cleaning the wool fibre is broken up by a process of carding or combing into tops which enables it to be spun. For a contemporary description of the processes involved see Alfred F. Barker and E Priestly, *Wool Carding and Combing with Notes on Sheep Breeding and Wool Growing* (London, 1912), chapters 9 and 10.

⁷ Angus Maddison, *Contours of the World Economy: Essays in Macro-Economic History* (Oxford, 2007), Table 2.1, 70.

⁸ Jenkins, *The Cambridge History of Western Textiles*, vol. 2, 762-65.

⁹ W. Hamish Fraser, *The Coming of the Mass Market* (London, 1981), chapter 5; Penelope Bydre, “Dress: The industrial revolution and after” in Jenkins, *The Cambridge History of Western Textiles*, 882-909; Lou Taylor and Fiona Anderson, “Fashion for women and men in the twentieth century” in Jenkins, *The Cambridge History of Western Textiles*, vol. 2, 1044-74.

¹⁰ Jenkins, *The Cambridge History of Western Textiles*, vol. 2, 993.

¹¹ Jenkins, *The Cambridge History of Western Textiles*, vol. 2, Table 19.6, 788; John H. Clapham, *The Woollen and Worsted Industries* (London, 1907), 221-70.

¹² Gerda Blau, “Wool in the World Economy”, *Journal of the Royal Statistical Society* 109, (1946), 183 and Table II, 181

¹³ Harold B. Carter, *His Majesty's Spanish Flock* (Sydney, 1964); James F. Guthrie, *A World History of Sheep and Wool* (Privately published, 1957); K. G. Ponting, *The Wool Trade Past and Present* (Manchester and London, 1961); Charles Massy, *The Australian Merino* (Ringwood, Vic, 1990).

¹⁴ Anon, *Concerning Wool*, (Melbourne, no date), 94.

¹⁵ James Troubridge Critchell and Joseph Raymond, *A History of the Frozen Meat Trade: An Account of the Development and Present Day Methods of Preparation, Transportation and Marketing of Frozen and Chilled Meats* (London, [1912], 1969), chapters I-VI.

- ¹⁶ See Adrian. R. Bell, *The English Wool Market, c1230-1327* (Cambridge, 2007) and Raymond De Roover, *The Rise and Decline of the Medici Bank, 1397-1494* (Cambridge, 1965). We thank one of the referees for drawing our attention to the continuities in marketing and financing in the international wool trade.
- ¹⁷ G. L. Rees, *Britain's Commodity Markets* (London, 1972), 320-30; Cuthbert Maughan, *The Markets of London* (London, 1931), chapter 20.
- ¹⁸ Rees, *Britain's Commodity Markets*, 321-26; Simon Ville, *The Rural Entrepreneurs: A History of the Stock and Station Agent Industry in Australia and New Zealand* (Cambridge, 2000). "Towards the end of winter a number of well-paid foreign gentlemen arrive to buy wool in Sydney. Towards the end of summer they sail home again, and find out roughly what wool their principals will be wanting next summer. Towards the end of winter they will come back again to buy it." Charles E. W. Bean, *On the Wool Track* (London, 1910), 270.
- ¹⁹ Thomas Skinner, *Skinner's Wool Trade Directory of the World 1928* (Bradford, 1928).
- ²⁰ Thomas Skinner, *Skinner's Wool Trade Directory of the World 1948* (Bradford, 1948), 21, 30 & 10.
- ²¹ For an excellent overview see Brearley, "International Wool Market", chapter 4. This process of relocation has been examined most fully with respect to the establishment of local auction sales within Australia. Alan Barnard, *The Australian Wool Market 1840-1900* (Melbourne, 1958), chapter 7; Simon Ville, "Relocation of the International Market for Australian Wool", *Australian Economic History Review* 45, 1 (2005): 73-95.
- ²² Barnard, *Australian Wool Market*, 167-68.
- ²³ Rees, *Britain's Commodity Markets*, 323-30.
- ²⁴ Noel George Butlin, *Investment in Australian Economic Development 1861-1900* (Cambridge, 1964); Ville, *Rural Entrepreneurs*.
- ²⁵ David Merrett, Stephen Morgan and Simon Ville, "Industry Associations as Facilitators of Social Capital: The Establishment and Early Operations of the Melbourne Woolbrokers' Association", *Business History*, 50, 6 (2008): 781-94 David Merrett and Simon Ville, "Institution Building and Variation in the Formation of the Australian Wool Market", *Australian Economic History Review*, 53, 2 (2013): 146-66.
- ²⁶ For New Zealand's auctions see Simon Ville, "Rent Seeking or Market Strengthening? Industry Associations in New Zealand Wool Broking", *Business History Review* 81 (Summer 2007): 304-5; for South Africa see Malcolm Abbott, "South African Wool Marketing" *South African Journal of Economic History*, 12-13 (1997-8): 2-3; Peter Wickens, "State and Private Enterprise in the Development of the Cape Wool-Growing Industry", *South African Journal of Economic History*, 1, 1 (1986): 47; and Du Plessis, *Wool Marketing*, 184-5.
- ²⁷ The proportion of New Zealand wool auctioned domestically rose from 35 per cent in 1900 to 85 percent by 1938. Australia, *Statistical Handbook of the Sheep and Wool Industry* (Canberra, 1949), 76.
- ²⁸ Clapham, *Woollen and Worsted Industries*, 98.
- ²⁹ David Martin Goodfellow, *An Economic History of South Africa* (London, 1931), 118-19, 128 and 136. On an overseas visit in 1931, Walter Devereux, a representative of the Australian Wool Growers Council, confirmed the continuation of private sales arrangements in both South America and South Africa. Correspondence: Devereux to Australian Wool Growers Council 30.3.31 2nd letter, Devereux to Waddell 23.4.30. E246/1-5. Australian Wool Growers Council, Noel Butlin Archives Centre, Australian National University.
- ³⁰ Brearley, "International Wool Market", 136. After 1900 growers not selling direct from the farm used commission agents to consign their wool to be offered to the 50 or 60 firms operating in the main markets, Buenos Aires and Bahia Blanca. Australia, *Statistical Handbook of the Sheep and Wool Industry*, 77. See also Jonathon C. Brown, "Dynamics and Autonomy of a Traditional Marketing System: Buenos Aires, 1810-1860", *The Hispanic American Historical Review*, 56, 4 (1976); Hilda Sabato, "Wool Trade and Commercial Networks in Buenos Aires, 1840s to 1880s", *Journal of Latin American Studies*, 15, 1 (1983) and Hilda Sabato, *Agrarian Capitalism and the World Economy: Buenos Aires in the Pastoral Age 1840-1890*, (Albuquerque, 1990), chapter 6.
- ³¹ Sabato, *Agrarian Capitalism*, 234.
- ³² Alston Hill Garside, *Wool and the Wool Trade* (New York, 1939), 69.
- ³³ For a review of the literature see W. Richard Scott, *Institutions and Organizations: Ideas and Interests* (Los Angeles, 2008), 3rd edition.
- ³⁴ DiMaggio and Powell, "Iron Cage Revisited", 147.
- ³⁵ Anthony Giddens, *Central Problems in Social Theory: Action, Structure and Contradiction in Social Analysis* (Berkeley, 1979); DiMaggio and Powell, "Iron Cage Revisited", 148.
- ³⁶ DiMaggio and Powell, "Iron Cage Revisited", 150.
- ³⁷ Merrett and Ville, "Institution Building and Variation", 148-50.
- ³⁸ DiMaggio and Powell, "Iron Cage Revisited", 148.

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- ³⁹ DiMaggio and Powell, "Iron Cage Revisited", 150-54.
- ⁴⁰ Douglass C. North, *Institutions, Institutional Change and Economic Performance* (New York, 1990), chapters 5 & 6.
- ⁴¹ Gary B. Magee and Andrew S. Thompson, *Empire and Globalisation: Networks of People, Goods and Capital in the British World c.1850-1914* (Cambridge, 2010), 6-9.
- ⁴² For a careful discussion of the nature of the connections between Britain and its empire see Magee and Thompson, *Empire and Globalization*. Institution building in Latin America is explored by John H. Coatsworth, "Structure, Endowments and Institutions in the Economic History of Latin America", *Latin American Research Review*, 40, 3(2005), 126-44, and John H. Coatsworth, "Political Economy and Economic Organizations" in Victor Bulmer-Thomas, John Coatsworth and Roberto Cortes-Conde, eds., *Cambridge Economic History of Latin America* (Cambridge, 2005), 235-74.
- ⁴³ See, for instance, Daron Acemoglu, Simon Johnson and James A. Robinson, "The Colonial Origins of Comparative Development: An empirical investigation", *American Economic Review*, 91, 5 (2001), 1369-1401; Daron Acemoglu and James A. Robinson (2012), *Why Nations Fail: The Origins of Power, Prosperity and Poverty* (London, 2012); Jared Diamond, *Guns, Germs and Steel: The Fates of Human Societies* (New York, 1997); Stanley L. Engerman and Kenneth L. Sokoloff, "Five Hundred years of European Colonization; Inequality and Paths of development" in Christopher Lloyd, Jacob Meltzer and Richard Sutch, eds, *Settler Economies in World History* (Leiden 2013); and Jeffrey D. Sachs, "Notes on a New Sociology of Economic Development" in Lawrence E. Harrison and Samuel P. Huntington, eds., *Culture Matters: How Values Shape Human Progress* (New York, 2000), 29-43.
- ⁴⁴ Acemoglu and Robinson, *Why Nations Fail*, 279-80, 282, 299, 329, 341, 372, 385, 387, 398, 401-2 and 445.
- ⁴⁵ Clapham, *Woollen and Worsted*, 98.
- ⁴⁶ Textile Mercury, *The Wool Year Book and Diary 1915* (Manchester, 1915), 40 and 50; *Statistical Handbook of the Sheep and Wool Industry*, Table 21, 19.
- ⁴⁷ Stephen Roberts, *History of Australian Land Settlement* (South Melbourne, [1924] 1968), Parts III-V.
- ⁴⁸ Coatsworth, "Structure, Endowments", 131 and "Political Economy", 259-61; Samuel Amaral, *The Rise of Capitalism on the Pampas: the Estancias of Buenos Aires* (Cambridge, 1998); Acemoglu and Robinson, *Why Nations Fail*, 258-71; For a comparison of Australian and Argentinian experience see Ian W. McLean, *Why Australia Prospered: The Shifting Sources of Economic Growth* (Princeton, 2013), chapters 4 & 5.
- ⁴⁹ We owe this point to Malcolm Abbott.
- ⁵⁰ Ville, *Rural Entrepreneurs*; Butlin *Investment*, 57-166.
- ⁵¹ The wool trade was a result of and a contributor to a 'network' resulting from the movement of people, goods and capital within the British world as described by Magee and Thompson, *Empire and Globalisation*.
- ⁵² Skinner's *Wool Trade Directory 1948*, lxxv-lxxxiii; Malcolm Abbott, "Promoting Wool Internationally: the Formation of the International Wool Secretariat", *Australian Economic History Review* 38 3 (1998), 258-79.
- ⁵³ Lloyd S. Tenny, "Standardization of Farm Products", *The Annals of the American Academy of Political and Social Science*, 137 (1928), 208 and 210.
- ⁵⁴ Skinner's *Wool Trade Directory 1948*, xxviii.
- ⁵⁵ Garside, *Wool and the Wool Trade*, chapters 8-9; Du Plessis, *Marketing of Wool* chapter 11.
- ⁵⁶ Sven Beckert, *Empire of Cotton: A New History of Global Capitalism* (London, 2014), 320-21.
- ⁵⁷ Rees, *Britain's Commodity Markets*, 332.
- ⁵⁸ Du Plessis, *Wool Marketing*, 120 and 135; Blau, "Wool in the World Economy", 216-17.
- ⁵⁹ Cuttings books. OM.A/7/1, Brisbane Wool Selling Brokers' Association, John Oxley Library, State Library of Queensland.
- ⁶⁰ David Merrett and Simon Ville, "Industry Associations and Non-Competitive Behaviour in Australian wool Marketing: Evidence from the Melbourne Woolbrokers' Association, 1890-1939", *Business History*, 54, 4, (2012), 510-28.
- ⁶¹ Australian Mercantile Land and Finance Company estimated that it would need to sell at least 25,000 bales to be profitable in the Brisbane market before WWI. We have raised the minimum efficient scale figure to 30,000 as brokers' cost would have risen. Moreover, the crossbred wool dealt with by New Zealand brokers reduced both their selling commissions and increased handing charges. John D. Bailey, *A Hundred Years of Pastoral Banking: A History of the Australian Mercantile Land and Finance Company* (Oxford, 1966), 196.
- ⁶² Anon, *Australasian Insurance and Banking Record* (1899) 19 October 1899, p. 699.
- ⁶³ Merrett, Morgan and Ville, "Industry Associations as Facilitators of Social Capital"; Merrett and Ville, "Industry associations and Non-Competitive Behaviour"; Merrett and Ville, "Institution Building and Variation".

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- ⁶⁴ Clapham, *Woollen and Worsted Industries*, "for two generations those sales [at the Wool Exchange in Coleman Street] have been the centre of the international wool trade." 91.
- ⁶⁵ Blau, "Wool in the World Economy", Table IV, 184-5.
- ⁶⁶ Garside, *Wool and Wool Trade*, 7-8; Ministry of Agriculture and Fisheries, *Report of Wool Marketing in England and Wales* (London, 1926), 27-30.
- ⁶⁷ Shelley Neller, *Wool in the Australian Imagination* (Glebe, NSW, 1994); Samuel. M. Wadham and Gordon. L. Wood, *Land Utilization in Australia* (Melbourne, 1950), 118
- ⁶⁸ Critchell and Raymond, *Frozen Meat Trade*.
- ⁶⁹ Jenkins, "Wool Textiles in the Twentieth Century", in Jenkins, *Cambridge History of Western Textiles*, vol. 2, 1007.
- ⁷⁰ Blau, "Wool in the World Economy", 181.
- ⁷¹ Textile Mercury, *Wool Year Book 1915*, 422-3; Textile Mercury, *Wool Year Book 1930* (Manchester, 1930), 82; Barker and Priestly, *Wool Carding and Combing*, 233-4.
- ⁷² Textile Mercury, *Wool Year Book 1915*, 465.
- ⁷³ Textile Mercury, *Wool Year Book 1915*, 62-3.
- ⁷⁴ Barnard, *The Australian Wool Market*, "the success of grading depended entirely on the extent to which each bale contained wool of one quality only and each lot contained bales of even quality". 81.
- ⁷⁵ Du Plessis, *The Marketing of Wool*, 58-9; Barker and Priestly, *Wool Carding and Combing*, 69 & 105.
- ⁷⁶ Barker and Priestly, *Wool Carding and Combing*, 97, 129-39 & 144-87.
- ⁷⁷ Having classing done prior to auction cost British top makers between 15 to 18 pence per 240 pounds weight of wool. Textile Mercury, *Wool Year Book 1915*, 93. For classing costs in Australia see Geoffrey Jeffery, *The Principles and Practice of Australasian Wool Classing* (Adelaide, 1899), 45; and Henry B. Smith, *The Sheep and Wool Industry of Australasia* (Melbourne, 1917), 89.
- ⁷⁸ Blau, "Wool in the World Economy", 191.
- ⁷⁹ Sabato, *Agrarian Capitalism and the World Economy*, 229.
- ⁸⁰ We ignore differences in interest rates and currency fluctuations.
- ⁸¹ Textile Mercury, *Wool Year Book 1930*, Prices at London auctions for "super", "average to good" and "inferior to average" categories, 51.
- ⁸² Sabato, *Agrarian Capitalism and the World Economy*, 229-30.
- ⁸³ Sabato, "Wool Trade and Commercial Networks", 60.
- ⁸⁴ Du Plessis, *The Marketing of Wool*, 102
- ⁸⁵ Fibres comprised around 16 per cent of all primary products exports in 1913 and 1928, and about ten per cent of all merchandise exports in those years. P. Lamartine Yates, *Forty Years of Foreign Trade* (London, 1959), Table A.16, 222-3.
- ⁸⁶ Brad Collis, *Fields of Discovery: Australia's CSIRO* (Crows Nest, NSW, 2002), 176-82.
- ⁸⁷ A. B. Cox, *Cotton: Demand, Supply, Merchandising* (Austin, Texas, 1953), 131-47 Beckert, *Empire of Cotton*.
- ⁸⁸ Donald Coleman, "Man-Made Fibres before 1945" in Jenkins, *Cambridge History of Western Textiles* Vol 2, 944.
- ⁸⁹ Scott, *Institutions and Organizations*.
- ⁹⁰ See Merrett and Ville, "Institution building and variation" for an account of inter-selling centres differences within Australia.
- ⁹¹ Acemoglu and Robinson, *Why Nations Fail*.