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New Zealand Agri-business Investment in South America: A Global Value Chain Perspective*

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Inversión agroindustrial de Nueva Zelanda en Sudamérica: Una perspectiva de la cadena de valor global

Investimento agro-industrial da Nova Zelândia na América Latina: Uma perspectiva de cadeia de valor global

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Using the global value chain analysis as a theoretical framework, this paper examines investment by New Zealand agri-business companies in South America. Of key importance within the global value chain analysis is the role that lead firms within an industry play in establishing and maintaining production links. Two of New Zealand's leading agri-business companies actively engaged in South America are Fonterra Co-operative Limited, the fifth largest dairy company globally, and PGG Wrightson, New Zealand's largest rural service provider. Our study indicates that by integrating South America in their global value chain, New Zealand agri-business companies are shaping production linkages and developing new markets, meanwhile, they are adding value to local farming practices.

A partir del análisis de la cadena de valor global como marco teórico, este artículo analiza la inversión realizada por empresas agroindustriales neozelandesas en Sudamérica. Una importancia vital dentro del análisis de la cadena de valor global la tienen las firmas líder de un sector para establecer y mantener vínculos de producción. Dos de las empresas agroindustriales más importantes de Nueva Zelanda con relación activa con Sudamérica son Fonterra Co-operative Limited, la quinta empresa de productos lácteos más grande del mundo, y PGG Wrightson, el proveedor de servicios rurales más grande de Nueva Zelanda. Nuestro estudio indica que al integrar a Sudamérica en su cadena de valor global, las empresas agroindustriales neozelandesas están dando forma a vínculos de producción y desarrollando nuevos mercados, mientras siguen aportando valor a las prácticas agrarias locales.

Usando a análise de cadeia de valor global como enquadramento teórico, o presente artigo examina o investimento das companhias agro-industriais neozelandesas na América do Sul. De importância chave na análise de cadeia de valor global é o papel que as principais firmas de uma indústria desempenham no estabelecimento e manutenção das relações de produção. Duas das grandes companhias agro-industriais da Nova Zelândia activamente empenhadas na América do Sul são a Fonterra Co-operative Limited, a quinta maior companhia leiteira do mundo, e a PGG Wrightson, o maior fornecedor neozelandês de serviços agrícolas. O nosso estudo indica que, ao integrarem a América do Sul na sua cadeia de valor global, as companhias agro-industriais neozelandesas estão a formular relações de produção e a desenvolver novos mercados, ao mesmo tempo que adicionam valor às suas práticas agrícolas locais.

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1. Introduction

Over the last few decades, South American countries have increasingly become efficient agricultural producers. As such they are spearheading a "global shift in food production" (Rother 2004). Advances in agronomy, the introduction of new technologies and techniques, coupled with macroeconomic reforms are reasons behind the increase in agricultural productivity in the region. Argentina, Brazil and Chile, in particular, are key suppliers of agricultural products, from raw materials through high value added products, to international markets. In 2007 Argentina and Brazil produced approximately 43.8 percent of the world's soybean production (Masuda and Goldsmith 2008). In turn, Uruguay and Argentina are key suppliers of beef to international markets (Mathews and Vandeveer2007).As the agricultural sector in countries in this region has developed, so has the demand for agricultural inputs and expertise. New Zealand companies, leaders in world agricultural technology and agricultural business areas, are building on firm and industry specific advantages to invest in the region and gain access to resources and markets. In particular, the dairy industry in South America is not as well developed as the New Zealand industry and provides a number of opportunities for New Zealand dairy investors.

Progressively more New Zealand companies are recognising opportunities in South America and are actively seeking new ways of engaging in the region as part of their global strategy. Two leading New Zealand companies actively engaging in South America are Fonterra Co-operative Limited and PGG Wrightson Limited (hereafter Fonterra and PGG Wrights on respectively). Both companies have undertaken a number of initiatives in South America. Fonterra is New Zealand's largest company in terms of contribution to GDP and globally is the fifth largest dairy company. Fonterra trades in over 140 countries, has processing facilities on four continents and has entered into strategic partnerships with multinational food companies, such as, Nestlé and Arla (Stringer, Tamásy, Le Heron and Gray 2008). Globally, Fonterra has a competitive advantage through in-market presence and global production and supply networks. As part of Fonterra's global strategy to obtain fresh milk supplies and service markets, the company has a local production growth strategy. Fonterra's investments in South America include a 99.8percent stake in Soprole, the largest milk processor in Chile, and Dairy Partners America (DPA) a strategic alliance with Nestlé, which operates 13 joint ventures in South America. PGG Wrightson is New Zealand's largest agricultural provider, with interests in livestock, wool, seeds, animal nutrition, farm supplies, finance, real estate, insurance, irrigation, consultancy and training (PGG Wrightson 2008a). PGG Wrightson has vertically diversified investments, ranging from seed to animal husbandry, in South America with a concentration in Uruguay. The company initially entered South America through the exporting of stock seed to Argentina, Chile and Uruguay. Key markets were developed in South America, and in particular, the Southern Cone as this region has similar climatic conditions to those found in New Zealand. Through their diversified investments, Fonterra and PGG Wrights on are integrating South America into their global value chains. They are adding value to farming practices in the region through local educational and market development initiatives.

A key focus of the global value chain analysis is the emphasis on cross-border linkages between firms as a determinant of competitiveness and upgrading (Bair 2008) and in particular how individual chains are governed through inter-firm linkages (Gibbon and Ponte 2008).This research draws upon the global value chain literature to examine New Zealand

Key words
Agriculture, Multinational firms, New Zealand, South America, Fonterra, PGG Wrightson

Palabras clave
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agri-business investment in South America. Particularly this paper seeks to answer the following questions. First, which role is South America playing in the global value chain of New Zealand agri-business? Second, which governance structure is adopted by New Zealand agri-business companies in South America? And third, what impact does New Zealand agri-business investment bring to the local agri-business sector?

The paper is organised as follows. In the next section we discuss the global value chain analysis and its applicability to agri-business research. Based on this theoretical background, four propositions are developed. We then discuss methodology before examining the development of major New Zealand agri-business value chains in South America with a particular focus on Fonterra and PGG Wrightson. The findings are discussed in section five. The paper concludes with implications and suggestions for future research directions.

2. Global Value Chains

The global value chain analysis seeks to understand how “global industries are organised” (Bair 2005, 157) and views the global economy as comprising a series of “product-specific ‘value chains’ rather than of liberalised markets” (Gibbon and Ponte 2008, 366). Key to the analysis is the understanding of where and how value is created along the chain (Bair 2005). In his conceptualisation of the global value chain analysis, Gereffi (1994) sought to explain changing trends in global manufacturing and specifically the growing influence of retailers and brand-names companies in “creating production, distribution and marketing networks” (Humphrey and Memedovic 2006, 7). Increasingly key companies were beginning to play a strategic role in design and value coordination while not owning manufacturing production. Gereffi(1994)identified four dimensions to global value chains: 1) an input-output structure consisting of a set of products, services and resources which are necessary to “bring a specific product from its conception to its end use” (Gibbon and Ponte 2005, 77); 2) a geographical dimension encompassing a concentration of firms in different production and distribution networks; 3) a governance or coordination mode; and, 4) an institutional context which includes government, multilateral agencies and regulatory bodies which shape the rules in which a value chain is embedded.

Gereffi (1994) introduced the geographical or territoriality dimension describing it as “spatial dispersion or concentration of production and distribution networks, comprised of enterprises of different sizes and types” (p.97). Firms are increasingly spreading their production chains over various geographical locations, so that they can benefit from the advantages provided by different locations. Inputs are shipped in ever more complex pattern, and intra-firm trade makes up an increasing share of worldwide trade flow.

In recent years the agri-business value chain has gone through dramatic changes in terms of “how food is produced, distributed, consumed and controlled – and by high levels of concentration of market share” (Lang 2003, 555). There has been a marked shift from sourcing food at the local and regional levels to sourcing globally by lead firms. Large New Zealand

agri-companies have transformed themselves from exporters of New Zealand products into global players operating a global network of suppliers and firms, and supplying products to global markets. The increasing agricultural productivity and demand for agri-products in South America has made the region an important sourcing place and market for New Zealand agri-companies. Therefore we propose:
Proposition 1: South America is a key node in the global value chains of large New Zealand agri-business companies.

In his initial work on global commodity chains, Gereffi identified two key governance models: producer-driven and buyer-driven. Producer-driven chains are characterised by companies who control product and process technologies in capital-intensive industries (e.g. automobile industry).The buyer-driven chains, in contrast, are comprised of large retailers, brand-name merchandisers and trading companies which can control design and marketing but are not actually involved in the production process. The relationship between buyer-driven retailer firms, who "call the shots" and the firms and suppliers they manage in an external contracting relationship is largely characterised by non-equity ties (Bair 2008, 349). Gereffi's dichotomy has been disputed as it was seen to miss new types of governance structures which were emerging or chains with no clear "drivers" and the governance concept has been debated and refined several times (see for example, Henderson, Dicken, Hess, Coe and Yeung 2002; Dicken 2003; Gereffi, Humphrey and Sturgeon 2005).In later work, Gereffi in collaboration with other researchers (Gereffi *et al.* 2005) outlined five types of value chain coordination modes: market in which the relationship is governed by arms-length market transactions; modular wherein lead firms will supply full packages with limited monitoring; relational value chains highlighting a mutual dependency between supplier and buyer firms; captive value chains where the supplier is dependent on the buyer; and hierarchal or vertical integration where the buyer develops design and production skills as these are too complex for suppliers.

The inter-firm relationships that typify the global value chain governance structure are also applicable in agribusiness value chains (Humphrey and Memedovic 2006; Gibbon 1999; Fold 2002; Ponte 2002) where governance may occur through arms-length transactions or non-market relationships (Giuliani, Pietrobelli and Rabellotti 2005). Standardised agricultural products are characterised by arm-length transactions and operate largely under market forces. In contrast, small scale producers dependent on large companies which exercise control – for example through access to markets and resources – operate under a captive governance scheme. The third category, relational governance, reflects strategic alliances between agri-business firms. Under the modular governance arrangement, specifications are easy to transfer and buyers can easily switch between one supplier and another (Humphrey and Schmitz 2008). The hierarchical mode, or vertical integration, occurs when a firm ensures coordination through ownership (Gereffi, Lee and Christian 2009). According to Dolan and Humphrey (2004), the governance costs are lowest for market and modular value chains and highest for relational and captive chains.

Governance in the global value chain literature is a dynamic concept. Gereffi *et al.* (2005) suggest some possible patterns of evolution of governance, and relate them to the change of the complexity of transactions, of the codifiability of transactions, and of the competence of suppliers. When New Zealand agri-companies first entered South America, a market governance structure was normally chosen. They sourced agri-products from South America through arms-length market relationship. In order to better control the quality of their supplies and to protect their technological know-how, New Zealand agri-companies gradually moved to more hierarchical governance model, in which they exercise a great deal of control over other firms in the value chain. This includes specifying the characteristics of products to be produced, the process and the control mechanism to be followed. Therefore, we propose:

Proposition 2: New Zealand agri-business companies initially enter South America through a market governance structure and overtime a shift in governance in their operations will occur.

The global value chain analysis seeks to understand the asymmetrical power of lead firms in organising and structuring value chains and consequences for local producers entering into global value chains (Humphrey and Schmitz 2002; Gereffi *et al.* 2005). The governance of value chains encompasses both coordination and market power and refers explicitly to the "coordination mechanism that facilitates exchange between two particular links in the chain" (Bair 2008, 353). Lead firms can also be involved in production upgrading, process upgrading, and as well as being involved in quality control systems and labour conditions. According to Humphrey and Memedovic (2006) agri-business value chains are dominated by lead firms exercising vertical coordination. "Lead firms in value chains are able to make key decisions about inclusion and exclusion of particular suppliers, the distribution of particular activities between different actors in the chain and even the structure of production (for example, whether small firms are incorporated into value chains or not)" (Humphrey and Memedovic 2006, 13).

The decision by lead firms to incorporate local firms into their global value chain can provide opportunities for local producers to "generate and retain more value" (Bair 2005, 161). So as to ensure local firms meet product and quality standards, lead firms establish parameters outlining what will be produced and the way in which it will be produced (Bair 2005). One of the most significant trends in the agri-business value chain in recent years has been the requirements of lead firms in terms of supply and standards as the customization of production is increasingly being shaped by lead firms. Lead firms may transfer up-to-date knowledge and technology to the producer thus benefiting not only themselves but also the local firm. Knowledge transfer may occur through a deliberate mechanism as well as through unintended spill over mechanisms (Altenburg 2006). The transfer of knowledge and technology is not however guaranteed and can vary considerably between lead firms and producers. Humphrey and Memedovic (2006) identify that lead firms will invest in local firms when three conditions are satisfied: "the buyer must need better capabilities than are currently available; the product cannot be sourced collectively from other suppliers; and the benefits from the investment in the supplier must be appropriable by the buyer" (p. 584). Notwithstanding, the local firm's ability and competence to undertake upgrading is a critical factor. New Zealand's small domestic market coupled with the country's geographical distance from principle markets such as the European Union and North America has meant that New Zealand agri-business companies continually need to invest in technology in order to maintain global competitiveness. As such, New Zealand companies have developed "state-of-the-art processing, packaging, agri-tech equipment, machinery and software" (Vitalis 2007, 5).Therefore, we propose:

Proposition 3: New Zealand agribusiness companies play a key role in reshaping farming and production practices in South America.

As discussed above, the incorporation of a local firm into a lead firm's global value chain can provide access to knowledge and technology that allows local producers to develop new competitive advantages (Altenburg 2006).Lead firm demands in terms of product quality and standards may lead to substantial upgrading being necessary (Altenburg 2006). The global value chain literature identifies three types of upgrading that can occur: process, product and functional upgrading. Process upgrading occurs when a company seeks a more efficient way of transferring inputs into outputs. Product upgrading refers to when a company moves from producing at the low end of the market to producing more value-added products within the same sector. In contrast, functional upgrading occurs when a company shifts into a different value chain activity or acquires superior functions within the chain (Humphrey and Schmitz 2000; 2002; Kaplinsky 2000). As leaders in the agri-business field, New Zealand companies provide scope for a number of upgrading possibilities for South American farmers. New Zealand companies have invested significantly over the years in productivity improvements and technology and hence can offer local firms incorporated into their value chain, access to substantial advantages in technology and productivity. Hence, we propose:
Proposition 4: Through their inclusion in New Zealand agri-business global value chains, smaller South American companies are obtaining upgrading opportunities.

3. Methodology

Despite recent high profile investments by New Zealand companies in South America, it is still a relatively new phenomenon for New Zealand companies to invest in South America. Therefore, we chose to use the case study method approach in this paper. The case study method provides rich information that will allow us to more fully understand the dynamics underpinning strategies New Zealand companies are implementing in South America. Such information cannot be easily obtained through a general quantitative analysis.

The methodology comprises in-depth semi-structured interviews undertaken with company representatives in New Zealand, Chile and Brazil as well as with New Zealand and Chilean government officials and industry personnel. There are three rounds of interviews in total. The two authors carried out their first round interviews with company representatives of the two case companies discussed in this paper as well as with other leading New Zealand agri-business companies with key interests in South America from August to October 2008. The second round of interviews were undertaken in Chile and Brazil in November 2008. From February to July 2009, a third round of interviews were taken out in New Zealand for additional information and clarification regarding the case companies.

The interviewees from the two case companies and other New Zealand agri-business companies hold top managerial positions and have been directly involved in their companies' operations and strategy making in South America. For each company, there is more than one interviewee, by which we believe we can obtain a more complete picture about a company's operation in South America. New Zealand government officials that we interviewed include the Director of New Zealand Trade and Enterprise (NZTE), the New Zealand Government's economic development agency, in South America and First Secretary of New Zealand Embassy in Chile. Senior government officials from the Chilean Economic Development Agency (CORFO) were also interviewed regarding Chilean government's policies and strategies in facilitating the trade and investment opportunities between New Zealand and Chile. All the interviews were carried out by the two authors together. Whenever permitted, the interviews were audio taped and transcribed. After each interview, the two authors compared notes and had detailed discussion on the interviewees' responses to our interview guideline.

Secondary data from newspapers and databases such as Global Market Information Database and Factiva was also collected for each company as well as the company's annual reports. As both Fonterra and PGG Wrightson's are leaders in the agri-business sector in New Zealand, in-depth information was readily available on the Internet and an extensive Internet search was undertaken. Research was also undertaken using Spanish language sources.

4. New Zealand Agribusiness Companies in South America

For many years New Zealand was viewed as Britain's overseas farm and agricultural production, in particular New Zealand's meat and dairy industries, was shaped by the demands of the British market. Following the admittance of Britain into the European Economic Community (EEC) (later to become the European Union) in the 1970s, New Zealand farmers were forced to diversify and expand their geographical markets. By the early 1980s, Australia had replaced Britain as New Zealand's principal trading partner and by the mid-1990s Japan, Korea and Taiwan were key export markets for New Zealand. However, it wasn't until the late 1990s that New Zealand companies seriously began to consider South America as a strategic node in their global value chain and began to look for and create opportunities in South America, especially in the dairy industry.

The expansion and diversity of export markets following Britain's admittance to the EEC reshaped New Zealand's agri-business chains as companies along the value chain strategically laid the foundation for further expansion and control of value added nodes along the chain. This, in turn, resulted not only in the reshaping of production but also the reshaping of inter-company linkages. New Zealand is a small country and companies internationalize in order to remain competitive. New Zealand's economy remains dominated by the agricultural sector with over 90 percent of agricultural production exported. Agriculture and horticulture exports contribute to over 50 percent of merchandise export earnings (ABARE and MAF 2006). In 2008, agricultural and horticulture exports earned $NZ23.4 billion in revenue; over 50 percent of which was from the dairy industry (Statistics New Zealand 2010).

Investment by New Zealand companies in South America is in line with an increased focus by the New Zealand government towards the region. In 2000, the New Zealand government launched the Latin America Strategy, an initiative to enhance New Zealand's political and economic relations in recognition that the "region holds great, but unrealised, potential for New Zealand" (Ministry Foreign Affairs and Trade 2008). The Strategy was reaffirmed in

2006, signalling an on-going commitment. Part of this Strategy was the implementation of the Trans Pacific Strategic Economic Partnership Agreement (P4) with Chile, Brunei, and Singapore. In 2007, the Minister of Trade led a Trade Mission to Argentina, Brazil, Chile and Uruguay in recognition of investment interests by New Zealand companies in these countries and to encourage continuing collaboration by New Zealand agri-business companies in this region.

The rapid growth and development of the agricultural sector in South America is opening up new opportunities. New Zealand agri-business companies are engaging in South America in order to supply local and regional markets in addition to developing South America as an export platform. New Zealand companies have developed a competitive advantage in knowledge dissemination at the primary production and processing levels; this advantage has been facilitated, in part, by educational institutions in New Zealand. The educational and cultural importance of the agricultural sector has not been facilitated to the same extent in South American countries and this provides an opportunity for New Zealand companies to export knowledge. Geographical and climatic similarities, particularly in the Southern Cone, means that New Zealanders undergo less of an adjustment period when investing in this area.

Recognising the increasing importance of South America to New Zealand agribusiness companies, NZTE implemented a Food Value Chain project. The objective of this project is to promote investment and commercial collaboration by New Zealand agribusiness companies in Argentina, Brazil, Chile, and Uruguay. A core focus of the project is educating local farmers about New Zealand pastoral farming techniques as an essential part of market development. In Chile, local monitor farms have adopted the New Zealand programme, known as TechnoKiwi (Oram 2008).The Chilean Economic Development Agency (CORFO) also recognises the potential for New Zealand agri-business farmers to add value in Chile and has actively sought to identify New Zealand companies "seeking new locations for research and development or investment projects" (NZTE 2008a, 2).

Examples of New Zealand companies and investors active in South America include Novazel, the Chilean subsidiary of the New Zealand company Flowerzone. Novazel is applying New Zealand agriculture technology in Chile and within a five year period grew from simply being a bulb breeding operation to become one of the largest flower exporting companies in Chile. In the dairy sector, Manuka and Chilterra, two small New Zealand companies, have purchased dairy farms in Chile and introduced New Zealand farming systems as well as invested in technological infrastructure. In 2008, Manuka was "placed with the top producers" in Chile (NZTE 2008b, 2).In Argentina, Ten Cows Club, a New Zealand company was established to provide the opportunity for smaller investors to invest in South America. As the name suggests, each investor purchases shares equivalent to ten cows. New Zealand farmers are bringing knowledge and experience into all stages of the value chain in South America. They have been successful in increasing production rates, improving pasture performance, and identifying the capacity and capability of the dairy industry.

The remainder of this section discusses Fonterra and PGG Wrightson's operations in South America. Increasingly South America plays an important role in both companies' global value chains as each has a number of strategic investments in South America (refer Table 1 for key financial indicators and Table 2 for an overview of Fonterra and PGG Wrightson's interests in South America).

Table 1: Key Financial Indicators

	Fonterra Co-operative Limited Year ended 31 July 2010 ($NZ million)	PGG Wrightson Limited Group Year ended 30 June 2010 ($NZ million)
Operating Revenue	16,726	1,151
EBITDA	1,078	70
Profit after Tax	685	23
Total Assets	14,169	1,526
Total Liabilities	8,502	891
Total Liabilities and Equity	14,169	1,526
Earnings per share	0.19 cents	0.04 cents

Source: Fonterra 2010a; PGG Wrightson 2010. In mid 2010, 1 NZ$ was about 0.70 US$

Table 2: Fonterra and PGG Wrightson's Interests in South America

	Fonterra	PGG Wrightson
Argentina	• DPA: 50 percent joint venture with Nestlé. Three manufacturing sites.	• Alfalfares: 51 percent interest in a seed business. • R&D alliance.
Brazil	• Fonterra (Brasil). • DPA: 50 percent joint venture with Nestlé. Six manufacturing sites with the announcement in 2008 of a new plant to be built.	• NZ Rural co Participacoes Ltd: 100 percent ownership in a seed company.
Chile	• Fonterra Brands Soprole: 99.4 percent joint venture with Fundación Isabet Aninat. Five manufacturing sites. • Prolesur: 86.2 percent direct shareholding. Three manufacturing sites. • Two model farms.	• R&D alliance.
Colombia	• DPA: 50 percent joint venture with Nestlé.	
Ecuador	• Ecuajugos S.A: 25 percent. In December 2008 DPA del Ecuador S.A. was consolidated into Ecuajugos S.A.	
Uruguay		• Romualdo Rodriguez: 51 percent shareholding in a real estate, wool and livestock company. • Veterinaria Lasplaces: 51 percent shareholding in an animal health business. • Agar Cross Uruguay: 100 percent ownership of a seed company. Agar Cross Uruguay owns Agrosan company and trademark. • Wrightson Pas SA Ltd: 100 percent ownership of a seed company. • Rural Co: 100 percent ownership. • Riegoriental: 70 percent ownership. • New Zealand Farming Systems Uruguay: 11 percent shareholding, and fund management and farm management contracts. NZFSU owns 18 farms. • R&D alliance. • Seed exported to New Zealand and Australia.
Venezuela	• Corporacion Inlaca CA 25 percent joint venture.	

Source: Authors compiled from company websites, company annual reports and company news releases

4.1. Fonterra Co-operative Limited

Fonterra was formed in 2001 from the merger of the New Zealand Dairy Board, the sole authorised exporter for the dairy industry, and two major dairy co-operatives – the New Zealand Dairy Group of Companies and Kiwi Co-operatives Dairies Limited (Gray, Le Heron, Stringer and Tamásy 2007; Stringer *et al.* 2008). Fonterra is co-operatively owned by 10,537 supplying dairy farmers (Fonterra 2010b). The company processes approximately 92 percent of New Zealand milk of which 95 percent is exported within Fonterra's global networks. In turn, the 95 percent exported represents 40 percent of all milk traded across borders.

Fonterra's involvement in South America dates back to the 1970s when the New Zealand Dairy Board (NZDB), Fonterra's predecessor, undertook large government tenders for commodities. South America was considered an emerging market, and in particular Chile was developed as an export market. Offices were established in Chile, Mexico and Venezuela. In 1988, the NZDB entered into a joint venture with Soprole of which Fonterra held the majority shareholding of 56.85 percent. The joint venture partner is Fundación Isabet Aninat, the charitable foundation of the Chilean Catholic Church. By 2010, Fonterra had increased its shareholding in Soprole to 99.8 percent; the increased stake allowed Fonterra to integrate Soprole's ingredients business, milk powder production, into its global networks. Soprole, the leading consumer dairy business in Chile, controls around one third of the domestic market, and exports milk powder and cheese products (Fonterra 2009).

In Chile, dairy companies have actively engaged milk production across all seasons in order to flatten out the milk production peak curve and to meet increasing demand. Farmers have been meeting this demand as a result of price signals. This, however, resulted in increased costs for the farmers. In comparison, the New Zealand system is one of seasonal production. Fonterra has established two model farms in Chile in order to educate farmers on the New Zealand farming model: seasonal farming practices, maximising productivity per hectare and farm management techniques. Chilean farmers have the potential to triple productivity through the adaptation of New Zealand farming techniques such as pasture management as the climatic conditions are very similar (pers. comm. 1 August 2008).Milk supply in Chile currently is greater than domestic demand and Fonterra has invested in a new dryer in order to convert surplus milk to milk powder; the output has been incorporated into Fonterra's ingredients business and sold on the international market. Milk produced on the Fonterra's farms is processed by Prolesur, a subsidiary and the manufacturing arm of Soprole of which Fonterra holds 86.2 percent direct shareholding. Soprole and Prolesur have invested in capacity development, through the Pradera Project, in order "to attain adequate competitive levels [in processing capacity] to enter the world dairy market on a sustainable long term basis" (Soprole 2009, 8).

Elsewhere in South America, Fonterra's position in the Brazilian market has traditionally been that of supplying the domestic market but there has been a strategic shift and today the company is exporting from their base in Brazil to other South American markets, in particular, Venezuela and Cuba (pers. comm. 1 August 2008). Furthermore, South America has a geographical alignment with North Africa and the Middle East. The Middle East, in particular, is a significant growth region due to the increasing wealth from petrodollars and both regions have limited potential to be able to increase domestic supply.

In 2002, Fonterra entered into a joint venture with Nestlé to form Dairy Partners of Americas (DPA). This was an interesting strategic alliance as Nestlé is one of Fonterra's largest customers as well as a fierce competitor in certain geographical markets. DPA has joint ventures in the Americas: Argentina, Brazil, Colombia, Ecuador, and Venezuela with the aim "to secure cost competitive supply of fresh milk and milk ingredients, to build strong positions in chilled and liquid milk businesses and to realize a wide range of synergies in dairy operations to become the cost leader of this part of the milk sector" (Nestlé 2004). According to Andrew Ferrier, CEO Fonterra, the establishment of DPA was a strategic decision by the company to focus on growth behind borders: "We started focusing on growing behind borders when we formed Dairy Partners of America (DPA) in 2002 with Nestlé in South America...That was for the most part an internal play in South America. We are in Brazil, Argentina, Colombia, Ecuador and Venezuela. And for the most part we are collecting local milk and it's going right up through the supply chain and we're selling it as consumer products" (Janes, n.d.). Through DPA, Fonterra gained a manufacturing base in South America and access to markets for chilled and liquids in this growth region. In return, Nestlé could use the capital to focus on their competitive strength, the consumer side of the business. Nestlé also gained access to Fonterra's technology and assistance (pers. comm. 1 August 2008). In 2008, DPA was the largest collector of milk in Brazil controlling around 10 to 12 percent of the market while in Argentina DPA had a 6 to 8 percent market share (pers. comm. 1 August 2008).Nevertheless, Nestlé and Fonterra are strong competitors in Chile.

In Argentina, Fonterra has a sales agreement with SanCor Co-Operativas Unidas Limited, Argentina's largest dairy co-operative. Fonterra exports SanCor's bulk commodity ingredients through their global networks. In turn, SanCor gained "value from our in-market presence and the proximity we have with our customers" (pers. comm. 1 August 2008). SanCor also has a co-operation agreement with DPA in Argentina; both companies had limited market share in fresh and chilled products and the agreement allows the two companies to become stronger players in the domestic market.

4.2. PGG Wrightson Limited

In order to further develop the Uruguayan seed market as well as obtain better returns from the market, in 1999, PGG Wrightson formed a joint venture with Semillas Pas, a company specialising in the production and sale of seeds. In 2005, PGG Wrightson increased its ownership from 51 percent to 100 percent and the company's name was changed to PGG Wrightson Pas. From 2001 to 2002, the company's profitability was seriously impacted by an outbreak of foot and mouth disease in Uruguay, and the subsequent export ban resulted in farmers buying less seed. The financial situation in Uruguay was worsened by the Argentina economic crisis which saw Uruguay record negative economic growth. During this period of time, Wrightson Pas were concerned about their operational viability and considered divesting from the market. The situation was eased by the willingness of local staff to take a 50 percent wage cut and furthermore they initiated a trading and bartering system for the benefit of the company (pers. comm. 14 August 2008).

PGG Wrightson remained in Uruguay and has subsequently undertaken further investments in vertically integrated operations (seed, real estate, veterinary, fund management). They have been actively involved in developing the local agricultural industry. For example, farmers attributed poor productivity to the low quality of the seeds whereas in fact, they had not used appropriate farming practices and technology. In 2002, PGG Wrightson established a demonstration farm to teach local farmers New Zealand farming practices, which led to increased sales of both seeds and farming systems.

A key development for PGG Wrightson was the recognition that dairying in Uruguay was underdeveloped compared to New Zealand and therefore Uruguay provided significant growth opportunities. Farm development and operating costs are significantly lower than in New Zealand; for example, the cost of establishing a dairy farm is 25 percent less in Uruguay (NZFSU 2007). In 1999, PGG Wrightson established NZFSU Limited, a large scale dairying operation using New Zealand style intensive grazing practices and in 2006, NZFSU was floated separately. PGG Wrightson retained an11 percent shareholding in the newly listed company and sold three Uruguayan farms to NZFSU. PGG Wrightson also established PGG Wrightson Funds Management Limited which holds the fund management and farm management contracts for NZFSU. In 2009, NZFSU owned 31,000 hectares and 55,300 livestock (NZFSU 2010) and it is estimated by 2012 that NZFSU will produce 20 percent of Uruguayan milk production. NZFSU has an advantage in the Uruguayan market as no other company is currently engaged to the same extent in the development of dairy farms. However, in July 2010, Singapore-based Olam International, which owns an 18.45 percent stake in NZFSU, announced a takeover bid for NZFSU (NZFSU 2010b). In August 2010, Olam increase the bid in response to a counter offer by Union Agriculture Group, a Uruguayan-based company (National Business Review 2010). The outcome of which is still not known. As part of its strategy to obtain NZFSU, Olam International reached agreement with PGG Wrightson's to purchase its stake in NZFSU (Steeman 2010).

In 2009, the Chinese agricultural company Agria Corporation purchased a 13 percent (NZ$36 million) stake in PGG Wrightson. This strategic partnership has implications for South America as both companies agreed to collaborate on future investment initiatives worldwide, including in South America. In particular, Agria and PGG Wrightson announced that they will work together to develop livestock demand in China – the demand will be serviced from New Zealand and South America as well as other markets. Furthermore, both companies "believe there is great merit to certain aspects of the business model encapsulated in the NZ Farming Systems Uruguay model, which is based upon a large scale dairy conversion managed" by PGG Wrightson (PGG Wrightson 2009).

In summary, two of New Zealand's leading agri-business companies, Fonterra and PGG Wrightson each have significant investment in South America. The region serves as a strategic node in each company's global value chain for sourcing input and supplying output for the local, regional and global markets. Both companies are providing upgrading opportunities for local farmers and firms through the dissemination of New Zealand farming and productivity techniques as well as market access opportunities.

5. Discussion and Conclusions

The primary sector of South American countries is attractive to foreign investors because of high commodity prices and the strong economic growth expectation in this region. New Zealand's strength in agriculture makes South America an important destination for New Zealand outward FDI. Nevertheless, there are only a limited number of studies on South American market as a destination, let alone studies on New Zealand companies in South America and the importance of this region to the companies' global strategy. This paper used the global value chain analysis to examine ways in which New Zealand agri-business companies are integrating South America into their global strategies and strategically building upon opportunities in this market. The paper looked at the reshaping of production links which have emerged through investment in South America and sought to examine the degree to which New Zealand agri-business companies may be agents of upgrading in South America.

The global value chain perspective was adopted for this study because of its key focus on cross-border linkages between firms. One of the characteristics of the current era of globalisation is that activities can be located in different geographical locations and co-ordinated through a company's global value chain. The global value chain perspective seeks to identify where value adding occurs whether it be at, or across, nodes of production and hence provides an important analytical framework for this research. Furthermore, the global value chain perspective recognises that lead firms provide different upgrading opportunities depending on the governance relationship established and this was applicable in examining New Zealand agri-business companies in South America. Through participation on global value chains, opportunities are provided for foreign producers to enter foreign markets as well as acquire knowledge and technological advancements both of which are key factors for productivity enhancement and growth.

The importance of South America in the global value chain of New Zealand agri-business is reflected in the increase of company involvement in the region. Both Fonterra and PGG Wrightson have significant investments in South America and their in-market presence allows them to understand and respond to customer needs as well as shaping supplier relationships. Fonterra's objective is to "become the partner of choice of major multinational food manufacturers" and they have demonstrated their capability working with Nestlé in the South American market (Fonterra 2007). Fonterra has extensive global networks with well-developed supply chains and their South American operations are integrated into the company's global networks. Fonterra's long term vision for the South America market is to continue to be successful for customers in the region, to lead the Chilean market through Soprole, and expand their sourcing footprint through DPA and Soprole (pers. comm. 1 August 2008). "Across Soprole and DPA, Fonterra has an interest in the annual processing of around 3.3 billion litres of South American milk, which equates to about one-fifth of Fonterra's New Zealand production" (Fonterra 2009, 26). During the negotiation periods for the Chile New Zealand Free Trade Agreement (FTA) in the 1990s and early 2000s, rounds of discussions were suspended due to opposition from the Chilean agricultural sector concerned about the strength of the New Zealand dairy industry and implications for less efficient Chilean farmers. The FTA was signed in 2005 following agreement by the two governments that Fonterra would assist producers to develop export markets (Atkinson 2008).

PGG Wrightson sees their core competitive advantage as "the provision of technology and related services to improve farm profitability" (PGG Wrightson 2008b, 6). Millions of dollars are invested yearly in research and development partnerships with links in South America, Europe and Australia (PGG Wrightson 2008c). Through their vertically diversified operation in Uruguay, PGG Wrightson is able to continually improve farm productivity and disseminate knowledge. Geographically, Uruguay like New Zealand is located in a temperature and subtropical climatic zone and hence PGG Wrightson is able to transfer the technology and knowledge gained over a hundred years in New Zealand to this region. Uruguay is integrated into the company's global value chain -- seed grown in the region is exported to New Zealand and Australia, in part in order to spread geographical risk for the company. South America is an important region for the company and it is to be expected that the company will explore further expansionary opportunities as they arise (pers. comm. 14 August 2008). PGG Wrightson has confidence in the political and economic environment of Uruguay and noted the support by the Uruguayan government towards foreign investors (pers. comm. 14 August 2008). Through Agria's shareholding, South America is being incorporated even further in the company's global value chain.

The integration of South America into New Zealand agri-business value chains is reflective of a multitude of governance modes. Fonterra and PGG Wrightson both entered South America through exporting – the market governance mode. Both companies are engaging in supplier upgrading reflective of both captive and relational value chains. Similarly, both companies have more fully integrated South America into their global value chains through the establishment of subsidiaries and joint ventures; reflective, respectively, of hierarchal and relational chain governance modes. Therefore, there is not an overarching clear cut division between governance types as each operation reflects a different governance mode or a combination of different governance types, and there is a general trend that the governance model of each company has evolved from a market mode to more hierarchical ones.

New Zealand companies are applying New Zealand technology in agriculture and are reaping the benefits of IP. Furthermore, they are active in disseminating knowledge of efficient growing and production systems as well as management techniques. The knowledge transfer, gained through participation in global value chains, is important for local producers as participation can provide the opportunity for "up-to-date and relevant information for producers, processors and exporters in developing countries. This knowledge transfer is not automatic" (Humphrey and Memedovic 2006, 43).Fonterra's establishment of model farms allows the company the opportunity to test the practicality of New Zealand farming systems in Chile prior to undertaking further investment. Once the farming system is tested and adjustments made, then techniques to improve production performance and pasture management are disseminated to local farmers. Fonterra has the goal of increasing milk production in Chile from a low 207 kg milk solids per hectare (MS)/ha to 862 kg (MS)/ha which is above the New Zealand average (Christian 2007). The company has also undertaken other initiatives to encourage better production standards and techniques, for example, Fonterra runs an annual competition for best milk producer in three farming zones in Chile. The farmers are judged on criteria such as: milk quality improvement, environmental and animal well-being.

In Uruguay, NZFSU undertakes specific industry related training in Uruguay relating to the financial and physical attributes of the farms as well as training cadets in New Zealand. Other New Zealand investors are also engaged in wider initiatives to support the farming industry. In conjunction with CODESSER (Corporación de Desarrollo Social del Sector Rural (Corporation of Social Development of the Rural Sector)), Manuka has undertaken to ensure the education of their employee's children at Liceo Agrícola Vista Hermosa, an agricultural institution; in addition they are supporting five students a year to study in New Zealand (Corporación de Desarrollo Social del Sector Rural 2009).

Despite its small size relative to the world output, New Zealand's agri-industry is very competitive in the global market place. New Zealand companies have responded effectively to a competitive global market environment that is increasingly demanding in terms of quality, safety and presentation of agri-products. By being part of the global value chain of New Zealand agri-business, South American firms are obtaining upgrading opportunities, especially in terms of product quality, technology used in the production and meeting the international standards. However, upgrading is not automatic and the scope for upgrading opportunities is affected by the governance mode, the competence levels of local suppliers as well as the availability of resources (Humphrey and Schmitz 2000; Giuliani *et al*. 2005). Meanwhile, the resistance from farmers in South America cannot be ignored. For example, some Chilean farmers are worried the increase of New Zealand investment, especially in local land, will harm their livelihood (Oram 2008).

The findings of this research suggest that South America plays an important role in the global value chain of New Zealand agri-businesses. However, South America remains a challenging place for New Zealand business as investment in this region has been concentrated in limited number of countries, mainly Chile and Uruguay. Investment in other South American countries is still limited, and there is a lot of potential to be developed in countries such as Brazil and Argentina (personal communication 1 August 2008).The political implication of this study is how the New Zealand government and its agencies, such as NZTE, can facilitate the investment process and especially work together with their counterparts in South America to provide more opportunities for New Zealand agri-business involvement in the region.

This paper discussed in detail the investment by Fonterra and PGG Wrightson in South America. One managerial implication for other New Zealand businesses considering investing in the region is that Fonterra and PGG Wrightson's experiences provide good examples of how to effectively integrate South America into their global value chain. The evolution of their governance structure in the region suggests that companies can choose more hierarchical governance modes when their knowledge in the region has increased, when they increase their investment in the region and when they need to have more control over their investments.

Our research investigated the positive impact that being part of the global value chain of New Zealand agri-business has on the local industry in South America. However, the local suppliers and New Zealand companies are also competitors in the global market place. Emerging forms of competition and collaboration amongst the different actors in the global value chain is an important area for future research.

Moreover, the current research focused on companies which have already invested in South America, albeit the largest companies, but they in fact only represent a small portion of New Zealand agri-businesses. It will be interesting to explore more widely reasons underlying New Zealand companies' investment decisions in the region, including companies which have decided to enter South America but haven't taken action yet as well as those companies which have previously invested in the region but have since divested. This research direction will provide both significant political and managerial implications.

In conclusion, of particular importance within the global value chain analysis is the role that global lead firms within an industry – in this case Fonterra and PGG Wrightson–play in setting up and maintaining production and trade networks. This paper has shown how two New Zealand leading agribusiness companies have incorporated South America into their global value chains. Key firms can be viewed as powerful economic agents or drivers of the chain and the focus of the global value chain analysis, and thus this paper, is on understanding how these firms, as "potential agents of upgrading and development" (Bair and Peters 2006,204), influence the composition of chains in which they are involved.

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