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Pork Value Chains: A Comparison of Catalonia,
Spain and Manitoba, Canada

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Abstract

The purpose of this paper is to provide a comparative analysis of pork value chains in Catalonia, Spain and Manitoba, Canada. Intensive hog production models were implemented in Catalonia in the 1960s as a result of agriculture crises and fostered by feedstuffs factories. The expansion of the hog sector in Manitoba is more recent (in the 1990s) and brought about in large part by the opening of the Maple Leaf Meats processing plant in Brandon, Manitoba. This plant is capable of processing 90,000 hogs per week. Both hog production models - the 'older' one in Catalonia (Spain) and the 'newer' in Manitoba- have been, until recently, examples of success. Inventories and production have been increasing substantially and both regions have proven to have great export potential. Recently, however, tensions have been developing with the hog production models of both regions, particularly as they relate to environmental concerns. The purpose of the paper is to compare the value chains with respect to their origins (e.g. supply a growing demand for pork, ensure farm profitability) and present states (e.g. environmental concerns, profitability).

Keywords: pork value chain, hog farms, agri-food studies.

JEL: Q10, Q13, O57

Introduction

Canada and Spain are two of the largest pigmeat producers in the world. In 2008, Canada was the 10th pigmeat world exporter and the 7th world producer (FAOSTAT, 2011). Spain was the 4th largest pigmeat world producer (2nd in the European Union after Germany), accounting for 17% of European pig inventories (Eurostat, 2011). Spain is also the fourth largest world exporters of pigmeat. Hog production is concentrated in specific regions in both countries. Pig inventories in Canada are mainly located in Quebec, Ontario and Manitoba with each province accounting for approximately one-quarter of national production, respectively. While production in Ontario and Quebec has stabilized in recent years, due in large part to environmental concerns, Manitoba has witnessed dramatic increases in production since the mid-1990s. In Spain, the Autonomous Communities of Catalonia, Aragon and Castilla y Leon have the largest pig inventories. Catalonia is the largest producing region, accounting for 25% of the Spanish pig inventories (MARM, 2010).

Catalonia

Pig inventories in Catalonia increased from 1.4 million in 1970 to 6.6 million in 2009. The growth of the hog sector during this period is due to both demand and supply factors. On the demand side, economic development and growth in Spain in the 1960s resulting in an increase in consumptive demands for meat. In fact, domestic pigmeat demand is still strong at present. Also important to note is that there is a substantial demand for pork processing products that are traditional and popular in Spain, including Serrano ham, “morcillas”, “salchichón”, etc (Lence, 2005). In the 1990s, Spanish hog production exceeded domestic demand, resulting in a substantial increases in pigmeat exports from that time forward. On the supply side, farm modernization has increased productivity and efficiency. In particular, there has been specialization within biological phases of hog production: breeding and sows, weanling, finishing. This modernization has affected feed, genetics, equipment, and commercialization.

The origin of the hog sector in Catalonia is framed within the context of agricultural crises and urbanization processes in the 1950s. Population changes resulted from industrialization and urbanization in the 1950s and 1960s resulted in an increasing demand for meat products in Spain. During this time, however, it was difficult for Spain to import meat because of its economic (scarcity of currency) and political (Franco dictatorship) situations. However, Spain entered into a trade agreement with the United States to allow the import of grains (corn, soy, etc.) in 1958. This trade agreement allowed Spain to implement an intensive production model with hogs and chickens. This was consistent with the United Nations report (World Bank and FAO Report on the development of agriculture in Spain, 1966) that recommended expanding livestock production in Spain (Velarde, 1967).

The intensive hog production model emphasized location in areas closer to processing plants resulting in localized economies. As a result, new industrialized operations are located closer to communications infrastructure, slaughterhouses and urban markets. Catalonia became then the main regional producer because it was endowed with road and rail infrastructure, the

proximity of seaports to entry crops (Tarragona and Barcelona), and the proximity to large urban markets (Barcelona). Slaughterhouses were located in this region to supply urban areas¹. Whereas the traditional model was characterized by small, diversified, family operations, this model of intensive livestock production included new relationships between farmers and agribusiness. The hog sector began to operate on a contractual basis through “integration contracts”² with feed firms. Feed firms promoted integration contracts as a way to ensure a market for feed production but they also had good profits selling the fattened pig to the slaughterhouses. In these contracts, the agribusiness firm (normally coming from the feed sector) supplied feed, piglets and other inputs (medicines, etc.) to the farmer. The farmer provided facilities, machinery, equipment, and labour. One important element, that made the Catalanian model different from other regions, is that the herd was owned by the firm not by the farmer. Within the context of agricultural crises, farmers were looking for new incomes. Thus, diversification with intensive livestock under integration contracts was one of the most successful ways, especially for farms with little land as this model involved little capital requirements and was low risk.

The intensive model became for many years a ‘successful’ model and it seemed as a ‘win-win’ situation for all involved. Feed companies - involved in integration contracts - had high benefits, because on one hand, they had a “loyal” market for their feed production, and, on the other, they made profits by selling the pigs that they did not have to raise. Farmers had a new and steady source of income that allowed them to ‘survive’. Slaughterhouses and pork processing plants benefited from a low cost commodity that, first, allowed them to supply the increasingly large domestic demand, and later, in the 1990s, allowed them to be competitive in foreign markets. But changes in world markets, pork value chain and regulatory frameworks are creating tensions in the model. In this paper, we are going to focus specifically on changes in the pork value chain.

Manitoba

Hog production in Manitoba has more than doubled since the early 1990s. The reasons for this explosion have been covered in detail elsewhere, but include, the impending loss of the Crow Rate (subsidy for grain transport), efforts by the provincial government to encourage on farm diversification and increase hog processing capacity, declining grain prices, growth in demand for pork products, and improved hog production technologies (Ramsey and Everitt, 2001; Tyrchniewicz and Gregoary, 2003; Ramsey, 2004; Honey, 2010). While a number of factors made producing hogs possible, given transportation costs, the increased production is in large part due to the construction of a large-scale hog processing plant in Brandon, Manitoba. This plant, which was opened by Maple Leaf Meats, opened in 1999, is capable of processing 90,000

¹ Resulting of that, there is a high geographical concentration in hog production in Catalonia: three counties - Osona, Noguera, Segria- are accounting for 44% of total pigs (Source: DAR).

² In some literature these ‘integration contracts’ are called ‘production contracts’ (see, for example, Martinez, 1999).

hogs per week. Further, a smaller processing in nearby Neepawa, Manitoba, and now owned by Hytek Corporation has recently expanded. While several reasons for this expansion have been identified (Ramsey and Everitt, 2001), the most important reason is that hog producers were facing increasing conflicts in the Provinces of Ontario and Quebec. In fact, Quebec established a moratorium on hog sector expansion in 2000.

The biggest change in the production model for Manitoba relates to the abolishment of the supply management system. In 1996, the Manitoba Pork Marketing Board was dissolved (Tychniewicz and Gregory, 2003). It was replaced by two agencies: a mandatory pork sector agency (Manitoba Pork Council) and voluntary marketing agency (Manitoba Pork Marketing Cooperative (MPMC)). In 2010, the Manitoba Pork Marketing Cooperative merged with SPI Marketing Group to create Hog Administrative Marketing Services (H@MS). H@MS, like each of MPMC and SPI before, is producer owned. Thus, hog producers remain some level of control over the marketing of their product.

Scholarly Context

While one could argue that agricultural sectors perpetually restructure, since the end of the Second World War, this restructuring has been the greatest. The primary changes have come about by agro-food industry expansion and farm modernization processes. This dual change has made it difficult to analyze agriculture and farming activities as separate from other economics activities as industry. Further, the increasing links between farm and industry further blur the reasons for change. For the most part, agriculture is no longer a self-sufficient activity as it requires industrial inputs (as fertilizers, machinery, pesticides, etc.) and services (financial, technical, regulatory, etc.). Following this trend, agriculture is no longer the sole producer of final goods. That is, it produces intermediate products that are then processed into end products by agro-food industries. Distance between farmers and consumers have increased as new agents have appeared in the agro-food value chain, including: agrarian inputs producers, veterinary services, primary industry, secondary industry, wholesalers, transport services, retailers, etc.

The notions of 'Agribusiness' and 'filières' approaches were first discussed in the 1960s and 1970s in an attempt to explain agricultural post-World War II agricultural restructuring. In particular, the new relationships between agriculture and industry have been examined within the context of 'agricultural industrialization' (e.g. Troughton, 1989, 2003 for the North American context).

The term 'agribusiness' was coined in 1957 (Davis and Goldberg, 1957). This seminal work refers to a complex value chain that begins with the farmer's purchase of inputs (seeds, feed, etc.) and ends with the food consumer purchasing products. This concept pointed out the fact of agricultural studies required a larger conceptual framework, and specifically one that is based on agro-foods (Viladomiu, 1985). 'Filière', rather, came from the Institute National de la Recherche Agronomique (INRA) in France. For Malassis, the study of the "filières" includes two methodological aspects: the 'filière' identification (the product, the itinerary, the agents, etc.)

and their regulation mechanisms (markets structure, public regulations, etc.) (Malassis, 1979). 'Filiere' approaches recognize the asymmetric power relationships between agro-food industries and farmers.

The agro-food sector is now involved in a deep restructuring process. Some authors have typified the process as a transition from the Second Food Regime to Third Food Regime (McMichael, 2004; Etxezarreta, 2007). This transformation is forcing academics to rethink their positions and seek new methodological frameworks to approach agro-food restructuring and including other perspectives related to agriculture, including globalization, environmental aspects, rural development, and multi-functionality.

The Global Commodity Chain or Global Value Chain (GVC) analysis³ has become quite popular in recent years. Gereffi and Korzeniewicz coined the word 'Global Commodity Chain' (GCC) in their book, "Commodity Chains and Global Capitalism" (Gereffi and Korzeniewicz, 1994). GCC is defined as:

"A GCC consists of sets of interorganizational networks clustered around one commodity or product, linking households, enterprises, and states to one another within the world-economy. These networks are situationally specific, socially constructed, and locally integrated, underscoring the social embeddedness of economic organization" (Gereffi and Korzeniewicz, 1994, pp. 2).

Based on this definition, Gereffi (1994) identified three main dimensions in Global Commodity Chains:

"an input-output structure (a set of products and services linked together in a sequence of value-adding economic activities); a territoriality (spatial dispersion or concentration of enterprises in production and distribution networks); and a governance structure (authority and power relationships)" (Gereffi, 1994, pp. 97).

While input-output structures and territoriality are perhaps more common in the literature and certainly relevant to our analysis, in understanding the changing value chains in the hog sectors of Manitoba and Catalonia, the concept of 'governance' is central. The meaning is similar to the concepts of 'power relationships' used in filière studies, yet it has added elements linked with coordinating production networks. According to Gereffi (1994), recent trends in manufactured value chains are based on changes occurring in the transition from changes from "producer-driven commodity chains" to "buyer-driven commodity chains". Producer-driven commodity chains are those in which value chain governance is under control of large manufacturing firms. Usually, 'producer-driven commodity chains' structure prevails in capital-and-technology intensive industries such as aircraft, automobiles and machinery. "Buyer-driven commodity

³ Kaplinsky and Morris changed the concept of Global Commodity Chain for Global Value Chain (Kaplinsky and Morris, 2002). Nowadays, both concepts are used as synonymous.

chains” refer to those value chains in which large retailers, marketers and branded manufactures play the central roles in coordinating backward and forward linkages and, frequently, in setting specifications to their suppliers (Gereffi, 1999). This pattern is more frequent in labour-intensive and consumer goods production (e.g. in footwear, garments, etc.). This trend to ‘buyer-driven commodity chains’ instead of ‘producer-driven commodity chains’ is also happening in agro-food chains (Dolan and Humphrey, 2000; Burch and Lawrence, 2005). Although the origin of Global Value Chain is in studies of manufacturing, its versatility has allowed it to be adapted as a methodology for other sectors such as agro-food regimes (e.g. Ponte, 2002; Gibbon, 2003; Pelupossy and van Kempen, 2005; Gwynne, 2006; Vagneron et al., 2009).

In sum, both analyses- filières and Global Value Chains- have important complementariness, as Raikes, Jensen and Ponte pointed out:

“(…) both the GCC and filière approaches make useful contributions to the study of commodity chains. Their different strengths and weaknesses make them, to a considerable extent complementary and indicate the potential usefulness of combining aspects from both” (Raikes, Jensen and Ponte, 2000, pp 20).

This paper includes aspects of both GCC and filière approaches in combine both analyses in order to better understand how pork value chains in Manitoba and in Catalonia are working.

Value Chain Analysis

Linkages in Catalonia Pork Value Chain

Feed companies, hog farms, crops farms, slaughterhouses, pork processing plants, and wholesalers and retailers are the main agents in the pork value chain in Catalonia (Figure 1). *Feed companies* have great importance as input suppliers in pork value chain⁴. In Catalonia, feed is approximately 60%-70% of production cost of a marketing pig (Observatori del Porci, DAR, 2010). In 2009, Catalanian production of pig feed was 4.4 million tonnes (Source: DAR, 2010) but feed producers are highly dependent upon imported crops such as corn and soy beans. There are a small number of large companies (e.g. Cargill, Vallcompanys, Cooperativa de Guissona), but also there are more than one hundred medium and small firms. Most feed firms have integration contracts with hog farms, thus feed production on the farm would be an anomaly.

Since the 1980s, Catalanian *hog farms* have been restructuring. The number of farms has declined substantially. Between 1988 and 2009, there was a decline from 20,752 to 6,522 hog farms (Source: DAR from SIR). However, pig inventories increased by 2 million head between

⁴ The genetics firms or equipments producers are also relevant suppliers.

1988 and 2009. The result has been a large increase in the average size of hog farm operations, with 50% of pig inventories now being raised on farms of 1000+ spaces (Source: DAR from SIR). This restructuring also includes a specialization process in that hog production was originally a diversification strategy for crop and fruit farmers. With increasing scales of operations, pig production is becoming the main economic activity on these farms with the other farm production (crops, fruits, vineyards) becoming a less significant element to the economic structure of the farm. Type of Farming (TF) classifies farms based on the agricultural production prevailing in their economic activity⁵. In 1989, only 17% of farms with hogs were *specialized* in pigs (that is, they are 'pig type of farming'). By 2007, 63% of farms with hogs were classified as farms specialized in hogs (Idescat, 2010). The result has been an increasing economic dependency from hogs in many Catalanian farms, and thus a reversal of the original diversification that hog farming provided. In addition to operational specialization, the production process has also become specialized, with most finishing hog farms having integration contracts with feed firms (74% of finishing farms). Having said this, rearing and farrow-to-finish farms, integration contracts are fewer (30%) (DAR, 2010).

Hog production in Catalonia faces many environmental problems. Geographical concentration and increasing size of farm operations has resulted in difficulties in manure management. Environmental regulations have been more restrictive with hog farms. Currently, a Manure Management Plan is compulsory for all intensive hog farms in Catalonia. In a Manure Management Plan the farmer must include the annual foresight of manure and how he is going to manage this manure. The primary manure management strategy is as fertilizer on crop land. Thus, *crop farms* are an important dimension to the new agrarian system. In the Manure Management Plan the farmer must indicate the availability of enough agrarian land to spread manure. Because intensive hog production has traditionally been implemented on small farms with little land and even now the Utilized Agricultural Area (UAS) of hog farms is not much larger (85% of hog farms have less than 50 hectares of AUU, 39% less than 10; author's by Idescat data), farmers lacking an adequate land base must develop agreements with other farmers who will allow manure to be spread on their land. In this situation, crop farmers have been able to demand a payment to agree with hog farmers. While the hog farmer often only pays the transportation cost of manure, in areas with high livestock density, these payments can be quite high⁶. Thus, crops farms must now be considered as part of Pork Value Chain in Catalonia (Soldevila, Frances and Viladomiu, 2009). In addition to being indispensable for hog production, crop farmers are crucial for enlarging pig farms.

In 2009, there were 50 hog *slaughterhouses* in Catalonia that slaughtered approximately 17 million pigs (DAR, 2010). Catalonia is the region with the largest number of meat plants and lots

⁵ A pig farm is classified as a 'pig type of farming' if more than 66% of Gross Income comes from pig production.

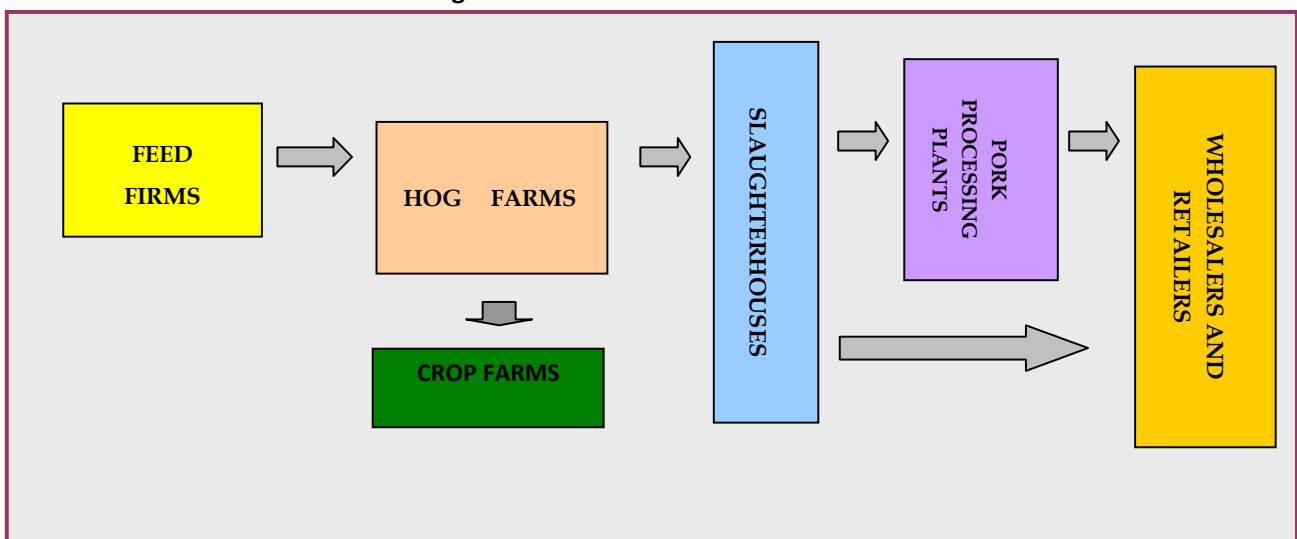
⁶ Also, different instruments can be implemented at the collective level (cogeneration plants and compost plants) and at individual level (mechanical separator, physiochemical systems, and biological systems). Also different collective plans are implemented in order to reduce slurry transport costs.

of pigs coming from other Spanish regions, as Aragon or Valencia, are slaughtered in Catalonia. Compared to Manitoba and other regions in Europe, Catalonian slaughterhouses are less concentrated⁷. The fifth main slaughterhouses in Catalonia mean 35% of total slaughtered animals (Soldevila, 2009). Some slaughterhouses in Catalonia are very exported-oriented with some firms sending more than 80% of their production to foreign markets. There is also vertical integration processes within meat processing with some slaughterhouses purchasing or building their own *cutting plants*, although some independent cutting plants do remain.

In contrast to Manitoba where hog slaughter and processing are integrated operations and meatpacking firms perform both activities, in Catalonia it is common to have different firms performing slaughtering and *hog processing*. One of the reasons is the significance of processed pork products in local consumption. Pork is the most used meat in industrial transformation. In Spain, pork processed products such as “Serrano” jam (cured ham) or different varieties of “chorizo” (a type of salami) are very popular. There is also great diversity in locally processed specialty products which are often produced in artisanal ways. In fact, processed meat makes up 60% of in-home consumption of pig meat consumption in Catalonia (in value) (MAPA, 2010). ‘Serrano’ ham and ‘chorizos’ are increasing their exports to foreign markets. Pork processing is a competitive, innovative and dynamic sector, with new products coming on, as pre-cooked meals, ready-to-eat products, and functional foods. There is a vast range in scale of enterprises, from large scale processors (e.g. ‘Casa Tarradellas’, ‘Grup Alimentari Guissona’, ‘Noel’) to the small artisanal processors.

Large scale *wholesalers and retailers*, including supermarket chains like ‘Carrefour’, ‘Mercadona’, ‘Erosky’, ‘Dia’ and ‘Lidl’ are playing an increasing role in the pork value chain through supplier contracts with slaughterhouses and pork processing firms. Having said this, the traditional retail meat sector remains quite specialized, with some retail stores, called “charcuterías” that only sell pork products (pigmeat, sausages, cured ham, etc.). Some of these “charcuterías” are surviving by selling other specialty or artisanal products. In Spain, there were more than 40,000 butcheries and “charcuterías” in 2006 (CEDECARNE, 2006). Thus, the concentration of meat retailers is far lower than in other European countries or in Canada and US. In addition, hotels and restaurants, particularly those in urban and or tourist areas, are large seasonal purchasers of pig meat and other pork products.

Figure 1. Pork value chain in Catalonia



Governance in the Value Chain

Power relationships between links into the Value Chain (VC) are less than symmetric. Traditional studies of *filière* are referred to as the “core” to the agent (or link) in the VC that has more “power” to articulate the VC in order to satisfy particular interests. Normally, the “core” is determinate because it controls the agricultural good of “high economic relevance” or “strategic character” (Trajtenberg, 1977). The degree of power the *filière* holds is largely determined by the level of control (e.g. oligopolistic and monopolistic) that exists in each link of the VC link (Viladomiu, 1985). In more recent Global Value Chain’ studies, the notion of governance is adopted which refers to who decides what to produce and how to produce in the VC (Kaplinsky and Morris, 2002). Drawing upon both perspectives - *filière* and Global Value Chain – this section of the paper describes phases in the evolution of internal governance in Catalanian Pork Value Chain. In each phase there are two special relevant issues in the governance analyses. First, those holding core power in the VC are identified and described, including reasons for the particular interest becoming the core. Second, governance mechanisms in the VC are explored. That is, how does the core impose their conditions to the other agents?

Governance in the Catalanian Pork Value Chain

Three phases of pork value chain governance can be identified for Catalonia. The first phase took place from the 1950s until the mid-1980s and was characterized by feed companies who controlled the pork value chain and promoted the intensive hog model in Catalonia. Feed became a commodity with high economic relevance to the pork sector in Catalonia with fattening done by feedstuffs coming from feed companies. Feed companies established themselves as the core to the value chain through a governance mechanism referred to as *integration contracts* which allowed them to impose to hog farmers all of the production conditions (e.g. which feed to use, which breed pig to raise). Another important tool is the power held by Mercolleida, the most important Marketing Board for pigs in Spain. Mercolleida was established in 1971 and is headquartered in Lleida, the primary province producing hogs in Catalonia. Mercolleida prices are the reference prices for almost 90% of marketing pigs in Spain (Lence, 1995). Weekly reference prices are negotiated by the eight largest pig buyers (slaughterhouses) and the eight largest pig sellers (feed companies involved in integration contracts). Until the 1980s, ‘VallCompany’s’, a feed company who has become the largest pig producer company in Catalonia, had enough power to settle the price with the Mercolleida.

The second phase began in 1986 with Spain’s entry into the European Community. This period coincided with technological changes in meat storage (large refrigerated slaughterhouses), which together resulted in power shifts within the pork value chain. Slaughterhouses needed high investments to accomplish stricter regulations brought down by the European Union. Smaller slaughterhouses, including those that were owned by municipalise, that unable to meet new regulations were forced to close. Consequences of the resulting concentration process in slaughterhouses included increasing ‘power’ of slaughterhouses in the VC. Feed companies had to ‘share’ the power in the VC with slaughterhouses, with the latter increasing its negotiation

power in the Mercolleida. Some slaughterhouses began negotiating contracts directly with farmers in an effort to guarantee pig supply. Some authors have referred to this period as a “bipolar oligopoly” in pork production (Langreo, 1997).

The third phase, beginning in the mid-1990s and continuing today, was initially characterized by increased production. An excess in meat supply resulted in the “core” moving from slaughterhouses to processing companies, including large-scale retailers. Slaughterhouses increased their capacity and new ones began entering the market, including rural areas that were able to access financial support from rural development programs. Excess meat supply became obvious by the mid-90s with increasing sales to foreign markets. Under free market conditions, retailers have been able to impose prices to producers. However, they have also been able to use marketing contracts which allow them to establish production specifications to their suppliers. In recent years, retailers have been capturing the highest value added dimension in pork value chain. In 2009, 30% of the value added from pork went to hog production ((i.e. integrators and hog farms), 16% to slaughterhouses and processors, and 50% to wholesalers and retailers (Observatori del Porci, DAR, 2010).

In summary, the evolution of the pork value chain in Catalonia is an example of changes from “production producer-driven commodity chain” to “buyer-driven commodity chains”. ‘Producers’ are faced with increasing power of ‘buyers’ and concentration and vertical integration processes as the sector expands into foreign markets. The size of slaughterhouses and meat plants are increasing with some of them becoming more vertically integrated, particularly with integration contracts with hog farmers. Feed companies are purchasing or becoming stakeholders in large slaughterhouses and meat processing plants. One of most successful cases of vertical integration is Grup Alimentari Guissona which includes feed factories, hog farmers (joined with Agropecuaria de Guissona Coop.), slaughterhouses and meat plants and processing, and retailer shops and restaurants (BonArea). Other companies are trying to settle down in foreign markets, so that, some Catalan slaughterhouses are highly export-oriented with some processing firms also profiting by increased production of ‘Serrano ham’ being sold in foreign markets.

The increasing power of retailers is affecting ‘traditional’ governance mechanisms in the Catalan pork value chain, that is, integration contracts and the Mercolleida. An increasingly distorted distribution in the value added dimension of the hog sector has resulted in reduced margins for hog farmers, feed companies and slaughterhouses. This situation is increasing ‘conflicts’ within the value chain, particularly in the Mercolleida board where there have been difficulties in establishing weekly prices. Farmers have complained about slaughterhouses non-fulfilment and regional governments have attempted to avoid these conflicts with new regulations to clarify carcass weight and classifications (*Decree 85/2010*)⁸. Although there are fewer conflicts with integrations contracts, union farmers pushed Regional Government to

⁸ *Decret 85/201*, de 29 de juny, sobre el pesatge, classificació i marcatge de les canals porcines)

regulate them (*Law 2/2005*)⁹. The control by the more traditional self-governance mechanism in Catalonia pork value chain, the Mercolleida and integration contracts, has declined with the result being increasingly external regulation and loss of capacity to articulate the pork value chain.

Linkages in the Manitoba Pork Value Chain

Feed mills, hog farms, meat plants and retailers are the main agents in the pork value chain in Manitoba (Figure 2). *Feed mills* have been an important industry in Manitoba, even before hog production increase, due to great importance of crop farming. With increasing pig inventories, feed mills plants have expanded. Given the harsh climate of the Canadian prairie, however, certain feedstuffs ingredients need to be imported (e.g. corn and soybean). Fusarium and drought conditions also restrict crop production (Tychniewicz and Gregory, 2003). The hog sector currently utilizes approximately two million tonnes of feed annually of which 30% to 40% is imported from the United States (Honey, 2010). Some of the barley, corn, dry peas and canola produced in Manitoba are used locally by the feed mills but significant amounts of corn and soybean are imported from the United States. Specialization of Manitoba pork in piglets results in little consumptions of feedstuffs. In Manitoba, feed is nearly 50% - 60% of production cost of a pig farm (Honey, 2010). The feed industry is concentrated in Manitoba with the primary feed firms vertically integrated with meat processing plants. Landmark Feeds, western Canada's largest livestock feed manufacturer was purchased by Maple Leaf Foods. Hytek, in Neepawa, Manitoba, operates its own feed mill facilities. However, several medium sized companies supply independent farmers, including Eastman and Maxpro. Some farms, especially medium sized operation use their own crops to feed hogs.

In 1981, there were 5,098 *farms* reporting hogs in Manitoba. By July 2010, there were only 760 (Source: Statistics Canada and Honey, 2010). While only 16% of hog farms in Manitoba are weanling farms, this percentage is much higher than other Canadian provinces (Honey, 2010). Nearby 47% of hog farms have no sows. Feeder farms have an average of 1,505 hogs per farm. ILFOs are frequent in sow farms: 20% of farms with sows have more 1000 sows, accounting for 72% of the total number of sows in Manitoba. These large units averaged about 2,396 sows per unit (Honey, 2010). While hog production is distributed throughout southern Manitoba, overall hog densities are quite low (0.46 pigs/ha in 2009). Having said this, some municipalities with a small number of large ILFOs have larger hog concentrations. This has resulted in a number of environmental issues. In addition to regional moratoria, manure management regulations have meant hog operators must hold enough land to manage the manure produced from their operation (Ramsey and Soldevila, 2010).

Three types of hog farms exist in Manitoba with each type accounting for approximately one-third of the province's total hog production (Manitoba Pork interview, 2009). The first type includes operations held on Hutterite Colonies (Manitoba Pork Interview). There are

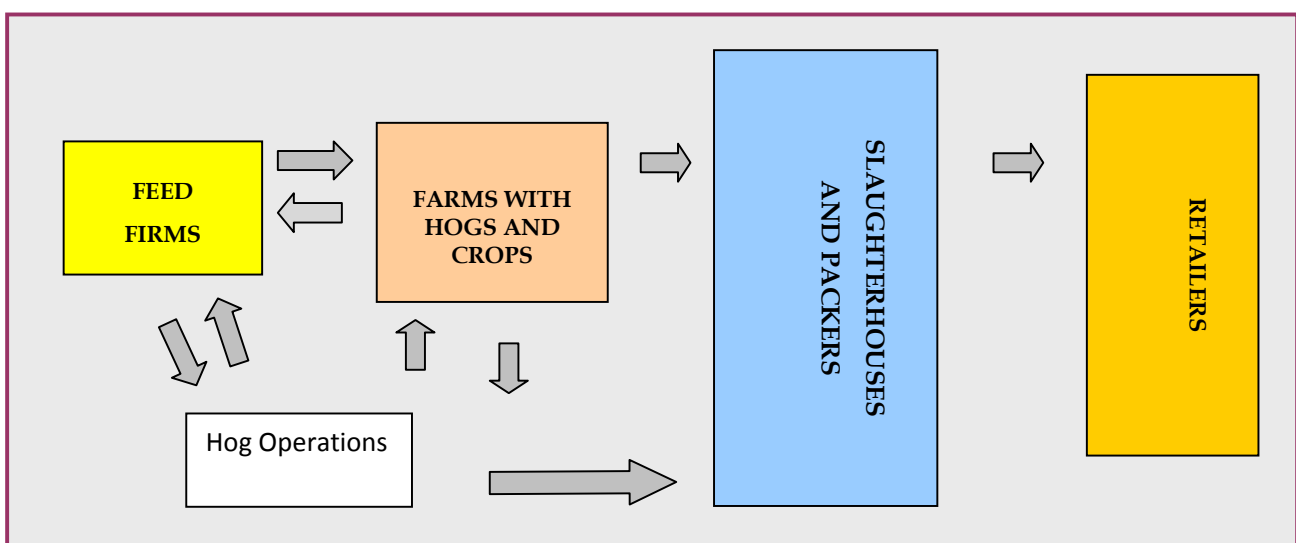
⁹ *Llei 2/2005, de 4 d'abril, de contractes de integració*

approximately one hundred Hutterite Colonies in Manitoba. These colonies are a branch of the Anabaptist religious community (Encyclopedia of Manitoba, 2007). All property is owned by the colony, no wages are paid, and provisions for all individual members, who live as individual families on the colony property, come from common resources (i.e. profits from the sale of goods from the colony). Hutterities farms are very diversified and efficient farmers. Through communal production, division of labour and adapting to new technologies has resulted in very competitive farm operations, including hogs. The second type of hog operation is that which is owned by non-family corporations or through integrations contracts with these companies. Hytek, Maple Leaf Agri-farms (formerly Elite Swine Inc.) and Puratone are the most important ones. The third type of hog operation is the independent producer which range from very small organic operations to some of the largest ILFOs in the province.

In contrast to Catalonia, pork processing in Manitoba has been a highly concentrated and vertically integrated industry. Processing plants and slaughterhouses are owned by large meatpacking firms. Maple Leaf Meats, located in the City of Brandon is Canada’s largest meat processing plant which has the capacity to process 90.000 hogs per week. This has created a near monopoly in the province. In comparison, the only other hog processing plant still operating in Manitoba, Hytek in the Town of Neepawa, has capacity to process 15.000 hogs per week. There are also a small number of provincially-inspected abattoirs and some meat processing plants with little capacity. As Manitobans consumed only 6-7% of the total pork produced by slaughter plants in the province, most of pork produced in Manitoba had to be sold to other provinces or countries (Honey, 2008). Processed pork is sold to other provinces but also to foreign markets as Japan, South Korea, Mexico and the US.

In Manitoba, most of the fresh and processed pork is sold to final consumers through integrated retail chain stores, as Superstore, Sobeys, Safeway, Wal-Mart, etc. Most of the pork products are transported directly from packers to the chain store warehouses. Only large scale meatpacking firms are able to supply these big retailers, so that increasing concentrations in retailers are pushing for bigger capacity in slaughterhouses and meatpacking firms.

Figure 2. Pork value chain in Manitoba



Governance in the Manitoba Pork Value Chain

There are two governance phases in the Manitoba pork value chain. The first phase occurred from 1967 to 1996, a period characterized by a 'single-desk' marketing monopoly. Hog producers in Manitoba organized in 1967 to form the Manitoba Hog Marketing Board. The Board, also referred to as a 'single-desk', marketed pork and negotiated price on behalf of all producers. Thus, farmers, through the Board, held a monopoly on the sale of slaughter hogs in Manitoba. Marketing boards are regulated federally in Canada, although provinces have the power to establish or abolish them. Other Marketing Boards exist for dairy, eggs, and poultry (Troughton, 1989). Until recently, flue-cured tobacco farmers also marketed and sold through a grower owned board (Ramsey, 2010). This governance structure ensured all received the same price for the same quality good regardless of the scale of their operation. According to Tychniewicz and Gregory (2003), smaller hog operations in Manitoba appeared to have more difficulty negotiating with large packers following the abolishment of the Pork Marketing Board.

The second phase in the Manitoba pork value chain began in 1996. First, Maple Leaf Foods acquired the Burns Meats meat processing plant in Brandon, Manitoba (Maple Leaf Foods, 2010). Second, the Manitoba Hog Marketing Board was dissolved (Tychniewicz and Gregory, 2003). As stated earlier, it was replaced by two agencies: a mandatory pork sector agency (Manitoba Pork Council) and voluntary marketing agency (Manitoba Pork Marketing Cooperative (MPMC)). Since this time, the Manitoba Pork Council has largely stayed the same, while in 2010, the Manitoba Pork Marketing Cooperative merged with SPI Marketing Group to create Hog Administrative Marketing Services (H@MS). Because H@MS, like MPMC and SPI, is producer owned, one could argue that hog producers retain some level of control over the marketing of their product. What is uncertain is whether there was pressure from firms such as Maple Leaf Foods to eliminate the marketing monopoly before they began building the new processing plant in Brandon.

Deregulation has been seen as a victory for the big producers against smaller ones and the disembodiment of the hog industry from collective supply management structures (Novec, 2003). With the removal of the 'single desk', meat plants (especially Maple Leaf) benefited from his monopolistic-oligopolistic situation and became the 'core' of pork value chain. In fact, the removal of the Manitoba Hog Marketing Board allowed the transfer of control of marketing hogs from government to private industry. Under free-market conditions, hog producers are essentially forced to agree to prices and specifications established by hog processing firms (e.g. Maple Leaf). Nevertheless, Maple Leaf and the other large processing plants must share their power in the chain with large retailers who supply Canadian and U.S. supermarkets. The result is a high level of integration in markets between Canada and the U.S.. Maple Leaf and Hytek, for example, must compete with their larger counterparts in the U.S. (e.g. Smithfield). Only large suppliers can fulfill the market requirements of large scale retail chains.

During this second phase, Maple Leaf Foods became the largest food processor in Canada. While beginning with the merger of Canada Packers Incorporated and Maple Leaf Mills Limited in 1991, it was the addition to other non-meat oriented acquisitions, including the acquisition

of J.M. Schneiders Incorporated which at the time was one of Canada's largest food processors, which made Maple Leaf Foods the dominant player. During this time, Maple Leaf also became vertically integrated with respect to hog production. First, Landmark Feeds (established in 1954 in Landmark, Manitoba) launched Elite Swine, an ILFO company. In 1999, there was a merger between Landmark Feeds and another Ontario-based feed company, Shur-Gain. In the same year, Maple Leaf Foods acquired Landmark, and through it, Elite Swine, making it a fully integrated hog operation – feed, farm, food processor. This dominance held until 2007 when the Netherlands firm, Nutreco acquired the livestock feed sector of Landmark (Nutreco, 2010). An important note during this period is that the Landmark facilities in communities of Souris and Landmark, Manitoba, as well as the subsidiary, Elite Swine were retained by Maple Leaf. In this move, Maple Leaf rebranded Elite Swine as Maple Leaf Agri-farms (Landmark Feeds, 2010).

The consolidation of aspects of the value chain such as animal nutrition was global and using the example of Nutreco provides a further comparison between Manitoba and Catalonia. Nutreco was established in the Netherlands in 1994. Far reaching globally, it is interesting to note their presence in Spain and in particular Catalonia. In 2008, Nutreco acquired the meat and feed assets of Copaga. One year later, Nutreco acquired the Cargill's animal nutrition division in Spain (Nutreco, 2010).

Two important aspects of this reorganization need to be highlighted as they speak to Maple Leaf's vertically integrated roles. First, the reorganization included reducing the number of hogs it produced and become 100 percent owners of fewer barns – as opposed to the pattern of the time that was based on partnered ownership with farmers. This retention illustrates the importance of the hog sector to Manitoba, but also the necessity of Maple Leaf to remain vertically integrated at a time when hog prices were low and farmers were struggling to remain viable. Second, Maple Leaf closed slaughter houses and processing plants in Nova Scotia, Ontario, Manitoba, and Saskatchewan and cancelled a proposed pork processing facility in Saskatchewan (Manitoba Cooperator, 2007).

Finally, in contrast with Catalonian pork processing markets, Canadian consumers tend to be loyal to a brand in pork processed products. While Maple Leaf may have acquired Schneider's and other firms such as Shopsy's and Mitchell's Gourmet foods, Maple Leaf continues to process these products under their original names in Maple Leaf facilities. Thus, the brand is a valuable resource and gives power to the processors. Further to this, Maple Leaf marketing strategies are based in product innovation (e.g. ready-to-cook and ready-to-serve meals). For example, the same year (1999) that Maple Leaf opened its processing plant in Brandon, Manitoba, was the same year it launched pre-cooked bacon, trade marked as Maple Leaf Read Crisp (Maple Leaf Foods, 2010).

Summary and Conclusions

Catalonia and Manitoba are both examples of models of intensive hog production fostered by agribusiness, feed companies in the Catalan case and slaughterhouses in the Manitoban one, which have to some extent profited from the agrarian crises of their respective jurisdictions. Increasingly, hog farmers have become highly dependent on agribusiness and their requisite power in the value chain. Having said this, there is a time lag in the progression towards ILFOs between the two regions, with the Catalan corporate value chain model beginning in the 1950s and the Manitoban being more recent, in the mid 1990s. In fact, the original Catalan model has perhaps more similarities with other 'traditional' areas in hog production in North America (e.g. Quebec in Canada or Iowa in the U.S.) with the Manitoban model being similar to other 'new' areas producing hogs (as North Carolina). This characterization, however, allows us to describe the similarities and differences in both models.

Similarities between Catalonia and Manitoba pork value chains

In pork value chains in Catalonia and Manitoba there is a tendency to concentrate all links of the value chain from feed firms to retailers. This process is parallel with a vertical integration process. That is, firms are attempting to absorb more activities from the value chain (from feed stuff to meat plants, or even, in the Guissona case, to retailers). In value chain governance, buyers, and in particular, large retail firms are increasing their power in the value chain to the detriment of industrial sectors (i.e. feed firms and slaughterhouses). Industries are trying to face the challenge by concentrating and vertically integrating, but also through innovations to meet new market demands (e.g. low fat/low salt products, ready-to-eat meals, organics, etc.) and internationalization by expanding into foreign markets. Traditional governance mechanisms in fixing pig prices have been eroded. The single desk model in Manitoba was eliminated and the Mercorleida appears to be having increasing difficulties in establishing prices in Catalonia. These governance mechanisms are being replaced by either integration contracts between slaughterhouses and farmers, marketing contracts between meat plants and retailers, or free market agreements.

During the period of corporate consolidation and related shifts in the value chains, with respect to farming, in both the Manitoba and Catalonia models there has been a trend toward larger, albeit fewer, hog operations. In both Manitoba and Catalonia, this trend has seen the small and medium hog farm operators exiting the sector.

Differences between Catalonia and Manitoba pork value chains

The Catalan value chain is longer than the Manitoban based on time and because there are more agents involved. Feed firms are essential for the hog sector in Catalonia as hog farmers tend to lack the land base to produce feed. For decades, Spain has imported feed from the U.S. However, in Manitoba hog farmers tend to own large tracts of land and can therefore grow some elements to the feed. On the processing side, in Manitoba, slaughterhouses, cutting-

plants and processing are integrated into one operation and thus of the same firm, whereas in Catalonia such integration has as yet not been fully realized.

Although concentration is increasing in the Catalonian value chain, it is less concentrated than in Manitoba where Maple Leaf Meats has almost monopolistic power in the pork value chain and distributors are also more concentrated. In Catalonia there is a much larger number of firms in every link. Similarly, with respect to retailers there is not much concentration with the presence of small butchers and 'charcuterías', most of which are family owned, still prevailing.

Pork in Catalonia is more like a domestic cluster. That is, most of enterprises involved in pork production are situated in Catalonia. Implementation of intensive hog production within a context of isolation could explain this. Nevertheless, feed firms are high dependent on crops coming from other countries. While in Catalonia, some pigs originate from other regions in Spain but are slaughtered in Catalonia, it is quite rare for pigs to be imported from other countries. While it was popular to import piglets from the Netherlands in the 1990s, this has become less common due to regulations in transportation of animals within the EU.

Manitoba is very different case, originating within the context of trade liberalization (WTO, NAFTA). That is, the hog sector in Manitoba operates as an international cluster with important trade of piglets (weanling exports are very important), slaughtered pigs and meat between Manitoba and U.S. However, Country of Origin Labelling (COOL) legislation will ultimately have an impact on exports of weanlings to the U.S. (Tyrchniewicz and Gregory, 2003; Honey, 2010). Thus, at present, the Manitoba value chain is more export-oriented than Catalonia's. Although there are increasing exports, there is an important domestic demand for pork within Spain. Further, there are some specialities that are very popular in the domestic market and Catalonian producers and processors are just now are trying to access at foreign markets for these products. In contrast, nearly 45 % of Manitoba pig production and 43% of pork production is exported (Honey, 2010).

With respect to farming there are also differences coming from different evolution of the two models. In Catalonia, hog farms tended to be located adjacent to slaughterhouses which, in turn, were sited near main roads close to large urban centres. This becomes an issue as farms in these areas have become specialized in hogs, and because these operators lack the land to manage manure, they must establish contracts with farmers with cropland within such urbanized zones. In Manitoba, rather, ILFOS were implemented not only in an era when environmental legislation was taking hold, but also it is a province that appears to have an adequate land base for managing manure. Maple Leaf and Hytek are located in comparatively isolated areas which allows farm operators to benefit from economy of scales with respect to available land base. In fact, farms have become highly diversified in that an operator can operate an ILFO and directly manage the manure on available cropland, thus bringing down the costs of production for that aspect of the farm.

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