

# **LEVERAGING THE INSTITUTIONAL DIMENSION INTO THE ALPACA FIBRE GLOBAL VALUE CHAIN**

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## 1. Introduction

During the past 500 years, economic history has provided significant empirical evidence about the fundamental importance that industrialization and industrial emulation have had for national economic development (Hamilton, 1791; List, 1841; Veblen, 1915; Rosenstein-Rodan, 1943; Nurkse, 1953; Hirschmann, 1958; Gerschenkron, 1962; Lall, 1987; Reinert, 1995; Chang, 2002; Cimoli et al, 2009; Acemoglu and Robinson, 2012). However, since the second half of the 20th century, production systems have become more spatially and functionally fragmented while technological gaps between leaders and backward countries have continued to widen at a faster rate. These phenomena have posed serious threats to the theoretical and practical implications of staged industrialization models as noted by the recently introduced notion of Compressed Development (Whittaker et al, 2008).

Compressed development calls for industrialization strategies aimed at engaging developing countries' firms into Global Value Chains (GVCs) for further upgrading through learning and innovation. In an attempt to better describe, explain and map the activities involved in the production of goods and services – from raw materials to end consumers, the GVC theoretical framework has proven useful for guiding policy interventions aimed at fostering firms' upgrading within these chains (Gereffi, 1994; Gereffi et al, 2001; Humphrey and Schmitz, 2002). Although most attention has been paid to the economic performance of BRICS', global markets also present opportunities and challenges for smaller emerging economies aiming to reduce industrial and technological gaps with the leaders. In this regard, engagement in GVCs to upgrade production capabilities from primary resource based to higher value-added industries stands as an alternative strategy to promote and sustain economic growth.

Although the current GVC methodological framework is useful for describing input-output structures and territorial dimensions it falls short when providing explanatory accounts of a chain's structure, dynamics and performance. The Alpaca Fibre Global Value Chain (AFGVC) serves to exemplify these explanatory shortcomings particularly at the local, regional and national level of the chain where the vast majority of actors are not firms but poorly organized and highly fragmented small producers. In addition, given that the role played by institutions in the co-production of governance mechanisms remains ignored, strategies and policies for upgrading are unable to leverage fundamental input determinants for primary production processes. The evolutionary nature of organizational and institutional development – its history - in context-specific settings is also crucial to understand the origins and outcomes of conflicts among actors and their opportunities and capabilities for upward mobility.

Taking these issues into consideration, the main concern of this paper is to develop an expanded institutional framework for GVC analysis in order to understand how actors embedded in context-specific institutional environments – particularly those at the bottom end of the GVC - can climb the value added ladder. Through this approach, it is expected that we will be able to outline (i) the institutional structures and dynamics of GVCs; (ii) the interactions among institutions and governance structures that facilitate actors' engagement and upgrading, and; (iii) the role of formal institutions in functionally and geographically fragmented production processes.

## **2. Overview of the Global Value Chain theoretical framework**

The theoretical foundations of GVCs (Gereffi, 1994; 1999; Humphrey and Schmitz, 2002; Gereffi et al 2005; Sturgeon, 2001; 2008) can be found in literature on Global Commodity Chains (Hopkins and Wallerstein, 1986; 1994) and Value Added Chains (Kogut, 1985; Porter, 1985; 1990). According to Gereffi (2011: 4) the GVC framework “(...) focuses on the sequences of value added within an industry, from conception to production and end use. It examines the job descriptions, technologies, standards, regulations, products, processes, and markets in specific industries and places, thus providing a holistic view of global industries both from the top down and the bottom up”. The framework's analytical focus is how production systems are coordinated and how economic value is transferred and distributed among participants throughout all stages of production.

Complementing its analytical focus, the GVC framework is methodologically founded on four dimensions: (i) input–output structure dealing with the configuration of market exchanges between producers and buyers; (ii) territoriality or the geographical distribution and extension of the chain; (iii) governance or the upstream/downstream coordination mechanisms between producers and buyers; and (iv) institutions and the institutional context which frame these production chains. The first two dimensions provide answers mainly to the “who” and “where” questions while governance and institutions generally deal with the “how” and “why” ones. The input-output structure and territorial dimensions are linear, descriptive and graphical representations which identify the vertical connections and disconnections among actors within spatially and functionally fragmented chains and both dimensions provide fundamental analytical insights of structural nature.

The governance dimension allows us to understand the coordination mechanisms established by asymmetrically powerful actors of the GVC. Governance determines how financial and non-

financial resources are allocated and transferred within the chain. An initial typology of value chain governance was proposed by Gereffi (1994) who distinguished between producer-driven and buyer-driven chains. The former are generally led by firms involved in high technology and capital intensive industries where dominant firms exercise a strong and direct control over suppliers as well as distribution and commercial agents through upstream and downstream coordination linkages. These firms, due to the nature and scope of their activities, are capable of taking advantage of economies of scale. Buyer-driven chains are generally found in low technology and labour-intensive industries such as textiles. In these chains dominant firms govern decentralized networks of production mostly located in developing countries. Value-adding activities such as R&D and design remain fundamental in-house tasks although low sunk costs allow entry of new competitors which can foster intense competition. However, due to suppliers' fragmentation, dominant firms can easily protect the diffusion of their technologies and know-how through downward control mechanisms.

The dual producer/buyer-driven governance typology showed limitations because it restricted distinctions on the type and functions of firms driving the chain. In addition, little attention was paid to upstream and downstream connections and interdependencies among actors (Humphrey and Schmitz, 2000; 2001; 2002). In order to minimize these limitations, Gereffi et al (2005) further refined and expanded the governance types to the following five:

- (i) Markets, the simplest form of chain governance where commercial transactions are set through spot price. Producers and buyers have little interaction among them because knowledge and information sharing is relatively straightforward. Switching costs are low for all chain participants;
- (ii) Modular, production arrangements are characterized by suppliers who make products using generic technologies while following buyers' standards. Linkages among them tend to be thicker than in market governed chains due to higher inter-firm information flows although codified design and production processes avoid overly dense interactions;
- (iii) Relational, culturally complex and regulated by reputation and mutual dependence among actors. Social capital plays a crucial role as it takes long time to be established and is not dependent on spatial proximity. Interactions are dense and information and knowledge are shared on the basis of a deep understanding of the chain and its participants;
- (iv) Captive, often composed by small producers who are monitored and controlled by dominant buyers. Significant power and information asymmetries subject the former to specific transactional conditions set by the latter. Due to market and technological

constraints, small producers face prohibitive switching costs which affect their negotiation capabilities, thus remain “captive”; and

- (v) Hierarchical, vertically integrated systems of production under strong managerial control.

Beyond the fivefold governance types, Gereffi et al (2005) identified three fundamental determinants of GVC governance patterns, namely: (i) Complexity of information and knowledge transfer determined by the amount and quality of information and knowledge required to generate and sustain production processes and product standards often specified by buyers; (ii) Codifiability, dealing with the extent and efficiency of information and knowledge transmission among participants and the transaction costs involved in market exchanges and (iii) Capabilities of suppliers focusing on producers’ endogenous capabilities to handle complex and codified information delivered by dominant firms. These three factors are useful because changes in them may be followed by governance patterns shifts.

The governance dimension is not only relevant for theoretical and methodological purposes but also achieves policy relevance when combined with the concept of upgrading. While governance refers to the coordination mechanisms among different participants of the GVC, upgrading refers to the possibility that actors already engaged in the chain have to increase participation in production processes rendering higher value added. Upgrading deals with the question of how producers can improve their capacities to climb in higher value added stages of the chain. A fourfold upgrading categorization was proposed by Humphrey and Schmitz (2002) to guide policy design and implementation:

- (i) Process upgrading; a more efficient transformation of inputs into outputs through reorganization of the production system and/or introduction of superior technologies;
- (ii) Product upgrading; shifting into more sophisticated product lines;
- (iii) Functional upgrading; acquiring new functions to expand the base of production skills, and;
- (iv) Inter-sectoral upgrading; using knowledge acquired in specific chain functions to move into different sectors.

Attention to issues of governance and upgrading has allowed the GVC theoretical framework – in contrast to National Innovation Systems literature - to go beyond the geopolitical dimensions of nation-states as the central unit of analysis by replacing them with international production systems. In this regard, through the application of an internally consistent framework, the analytical focus of GVCs is how geographically and functionally fragmented production systems

are coordinated and how economic value is generated and distributed among participants throughout the entire input-output structure.

### **Institutions and institutional context: the ignored dimension**

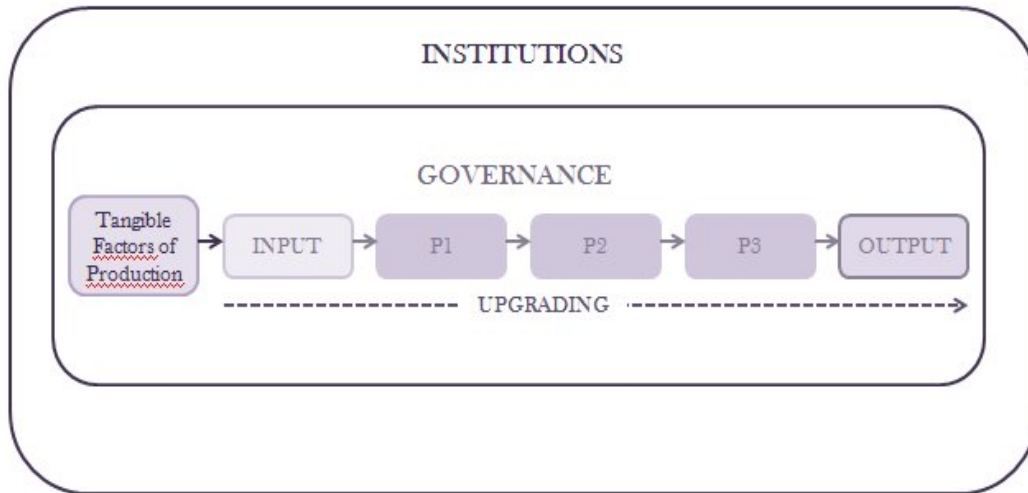
Institutions correspond to the fourth dimension of the GVC theoretical framework. This paper borrows the definition provided by North (1990: 3): “Institutions are the rules of the game in a society or, more formally, are the humanly devised constraints that shape human interaction. In consequence, they structure incentives in human exchange, whether political, social or economic.” North (1990) further elaborates on the differences between formal and informal institutions referring to the former as constraints such as rules, laws, and constitutions while the latter referring to norms of behaviour, conventions, and self-imposed codes of conduct among others. When enforced, they jointly condition and define the incentive and disincentive structures of societies and their context-specific economies.

According to Gereffi (1994; 1995; 1999), GVCs are framed within an institutional framework that allows us to identify the ways and conditions in which institutions shape each stage of the production chain at the local, national and international level. Moreover, Gereffi et al (2005: 82) acknowledge that “(...) history, institutions, geographic and social contexts, the evolving rules of the game, and path dependence matter; nevertheless, a simple framework is useful because it isolates key variables and provides a clear view of fundamental forces underlying specific empirical situations (...).” However, the shortcomings of theoretical simplification are that explanatory means are too weak or lacking on how and why institutional contexts condition the actions of chain actors and how they influence the structure and performance of GVCs. Based on a recent theoretical overview conducted by Gereffi and Fernandez-Stark (2011), Figure 2.1. shows a graphical representation of the traditional GVC approach in which institutions are treated as an external framework and where only physical factors of production – land, capital and labour - are considered.

The institutional weaknesses of the GVC framework were early noted by Sturgeon (2001: 11) who pointed out that global production chains “do not exist in a vacuum but within a complex matrix of institutions and supporting industries”. Humphrey and Schmitz (2002) also highlighted the importance of institutions by studying the characteristics and roles of linkages at the local and global levels and the ways in which these condition the upgrading possibilities of participating actors. Although the role of institutions in shaping production arrangements and outcomes has been recognized not equal attention has been paid to its conceptual development.

One possible reason for this weakness is provided by Hess (2004) who argues that issues of governance may have overshadowed the institutional dimensions of production chains leading to rigid and narrow interpretations.

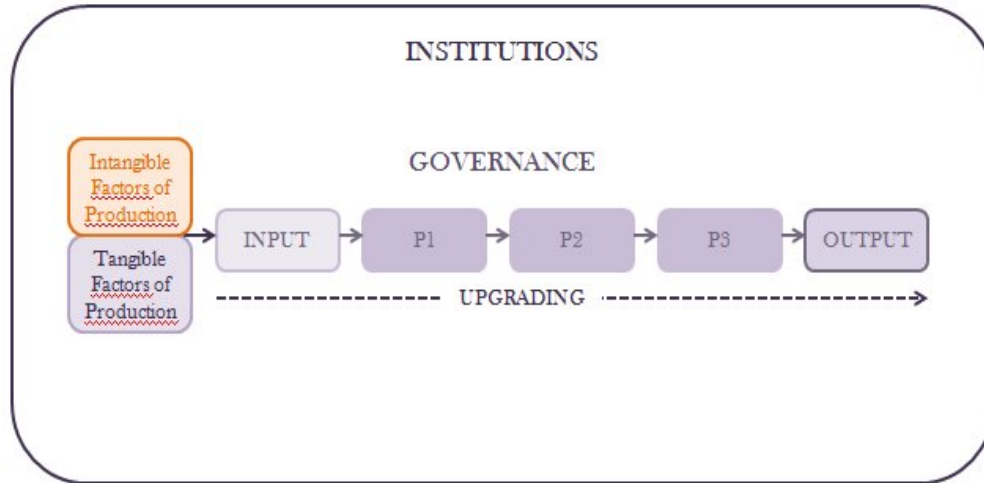
**Figure 2.1. The traditional GVC theoretical framework**



However, governance cannot be conceptualized and understood independently from institutions because interactions among fragmented actors are conditioned by formal and informal incentives (or disincentives) which strongly influence their upward (or downward) mobility and production capabilities. Different institutional contexts set different patterns for the distribution of economic, social and political power which in turn are the source of conflict (or cooperation) between GVC participants. In this regard, how the institutional context is configured determines the position of these actors, the degree and direction of power flows among them and the distribution of profits along and within the chain.

Governance and institutions are mutually dependent; both develop and co-evolve continually through complex processes of change which are directly influenced by the degree of conflict (or cooperation) displayed by chain participants. Therefore, as shown in Figure 2.2, institutions can no longer be conceptualized as external frameworks because they configure the economic, social and political determinants, structures, dynamics and outcomes of GVCs. A well grounded institutional perspective provides an explanatory – not just descriptive - means to understand processes of change within context-specific production chains while offering the opportunity to better accommodate the realities of global production systems and their governance mechanisms.

**Figure 2.2. Leveraging the institutional dimension into the GVC framework**



Given the intimate relationship between institutional development and history, New Institutional Economics (NIE) can aid the development of explanatory frameworks dealing with production structures, shifts in governance mechanisms and evolutionary institutional change. As argued by North (1981) structural change and evolution of production processes are moulded by their institutional environment through path-dependent trajectories. Institutions determine economic structures and their performance throughout time, thus history becomes critical for understanding and explaining processes of economic change. For North, this change is gradual, endogenous – in opposition to the GVC treatment of institutions as external frameworks - and shaped by formal and informal institutions which constrain organizational arrangements and actions. Although North’s approach is unable to map these evolutionary processes of change, GVCs input-output and territoriality dimensions provide the analytical methods to fill this gap.

The first and second dimensions of the GVC framework outline linear stages of added value processes. However, it is worth remembering Polanyi (1957: 249-50) in that “Unity and stability, structure and function, history and policy spell out operationally the content of our assertion that the human economy is an instituted process. The human economy, then, is embedded and enmeshed in institutions, economic and non-economic.” Polanyi’s assertion that self-regulated markets are a fallacy is complemented by the economic sociology approach adopted by Granovetter (1985: 482) who argues that “the behaviour and institutions to be analyzed are so constrained by ongoing social relations that to construe them as independent is a grievous misunderstanding.” Therefore, context-specific and temporally framed production and market exchange processes are embedded within and coproduced by governance and institutions.



It seems that GVC governance mechanisms are too influenced by neoclassical assumptions related to market equilibrium, rationality in decision-making processes, complete information and profit maximization of chain actors. Neoclassical economics accommodates governance mechanisms dealing with rational allocation of resources (e.g. market governance or spot price based on supply and demand) but is not theoretically suited as an explanatory model for governance mechanisms shaped by social, cultural and political institutions (e.g. relational and captive types of governance). In this regard, besides its strong leverage of institutions and history into the GVC framework, NIE's conceptual contributions can go beyond the transaction costs approach by emphasizing the importance of issues such as generation, accumulation and diffusion of knowledge and technology as well as individual and collective property rights as incentives for improved and sustained economic performance.

From a policy perspective, a deep understanding of formal and informal institutions is needed to identify, characterize and resolve market and non-market failures of context-specific and socio-culturally embedded production chains. For instance, institutions have profound effects on GVC governance mechanisms because they jointly constraint actors' choices for engagement and upgrading at the local, regional, national and international level. Institutions matter for policy design and implementation because as intangible input determinants they cannot be separated from the social, cultural and political trajectories in which actors influenced by them are embedded.

Therefore, an institutionally enriched GVC framework allows actors not to be treated simply as rational and unconstrained economic agents. In this regard, alpaca fibre GVC market exchanges and arrangements are shaped by factors beyond neoclassical assumptions. An understanding of the outcomes of GVC conflicts (e.g. distribution of profits, upstream-downstream mobility) demands context-specific attention (e.g. histories of institutional development) that could provide richer theoretical and applied policy insights for identifying, mapping and upgrading actors, especially those located at the bottom end of the GVC.

### **3. The national level of the Alpaca Fibre Global Value Chain: intangible input determinants and modes of production**

The Alpaca Fibre Global Value Chain (AFGVC) makes an excellent case to understand the explanatory relevance of the ignored institutional dimension. A complete graphical representation of the AFGVC, including its actors, locations, production processes, market

exchange flows among others is provided in Figure 3.1<sup>3</sup>. The first segment of the AFGVC is territorially located at the local, regional and national level and is governed by a mixed relational-captive structure. Transactional conditions are imposed downwards to small producers by a powerful national textile industry which commands a complex network of middlemen. Based on the traditional GVC framework, these actors participate in the following production and value addition processes: (i) tangible input determinants (e.g. animals, pastures, infrastructure, machinery); (ii) raw fibre production; (iii) collection, storage and distribution; (iv) manual (e.g. artisans) or industrial processing, and; (v) manufacturing of intermediate goods (e.g. yarns and tops). However, intangible input determinants such as animal health, nutrition and reproduction management condition the quality of the animal genetic pool for which institutions play a crucial role in the generation, adoption, diffusion and transfer of technology and knowledge.

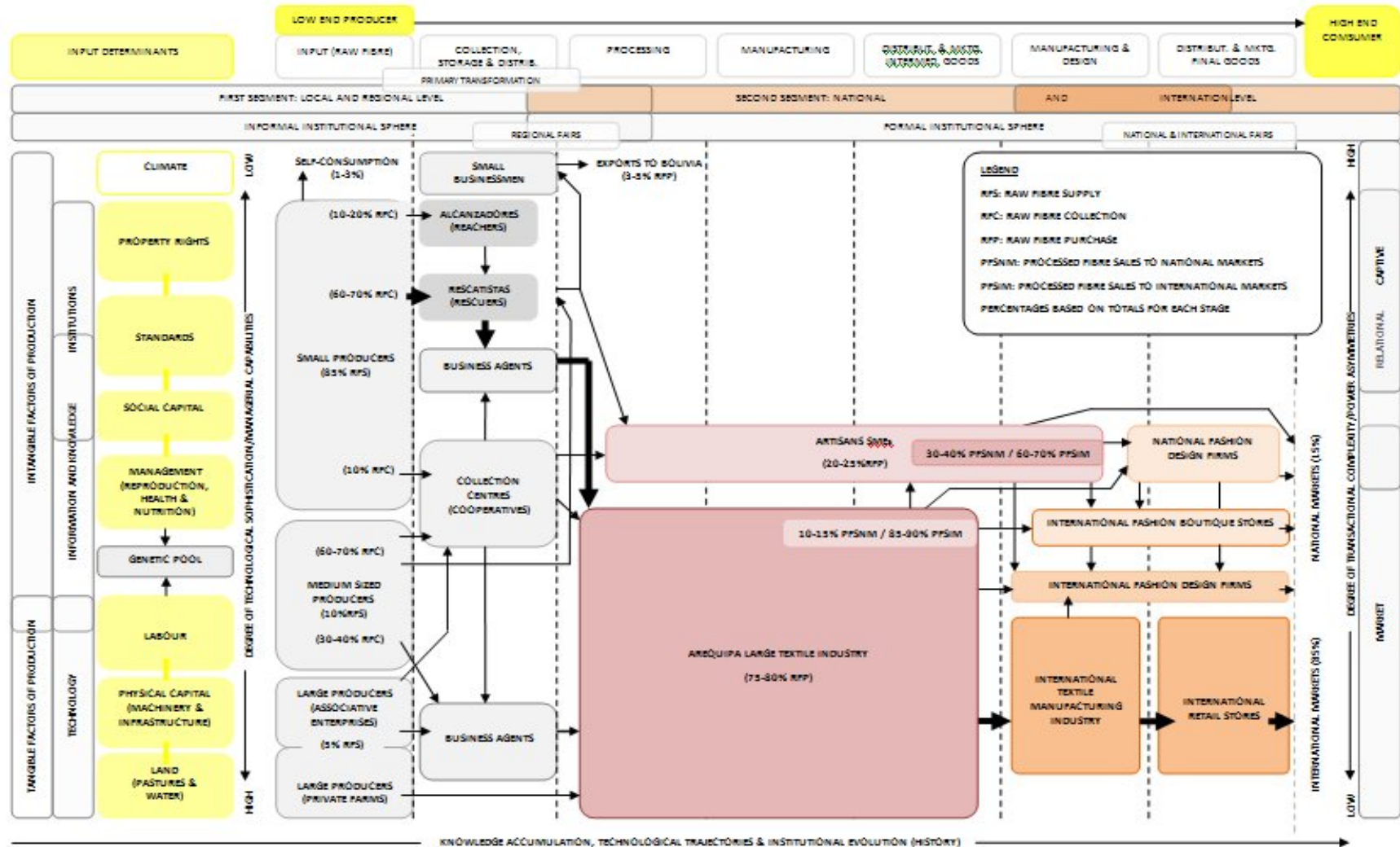
Above 4,000masl, due to poor soil and environmental conditions, small producers are dependent on fibre production with incomes ranging from US\$345 to US\$800 per year (Leonard, 2006). On average, each peasant family is composed of five members and owns between 50 and 100 alpacas although herds can range from 20 to 150 animals (MINCETUR, 2002). Mixed herding with llamas, sheep and cattle is the rule but the number of sheep and cattle tend to decrease as altitudinal location increases.

Market exchanges are conducted by men through sales or barter of alpaca meat, dry manure and fibre for basic goods (e.g. cereals, medicines and clothing). Additional sources of income are sales of live animals obtained from the *saca*, a process where old or unfit animals are discarded from the herd. However, subsistence incomes avoid investment on fibre production given the prohibitive costs of infrastructure, veterinary products, feedstuff and tools and equipment for reproduction, nutrition and animal health management. In order to increase their income, following a traditional division of labour based on gender, men frequently migrate to urban areas during the dry season between May and October for temporary employment. However, in production terms, women play a more important role given that they are responsible for herd care and supervision throughout the year although men will support them during animal mating and shearing activities.

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<sup>3</sup> Due to paper extension limitations, this section does not include the history of land distribution and property rights in Peru which configure the current geographical and functional fragmentation of actors as well as the asymmetric power relations among them. The section on alpaca fibre standards and the description of the international segment of the AFGVC have also been omitted but will be briefly covered during the oral presentation of this paper.

Figure 3.1. The Alpaca Fibre Global Value Chain



Source: own elaboration based on interpretation of secondary sources

Small producers are socially organized as extended families or *ayllus*. The former are led by a head of family who defines how animal capital, land and labour will be used and distributed among members. Land property is obtained through inheritance or as a gift granted by the head of family to his younger sons who also receive a number of animals which increase as they reach adulthood until they are deemed capable of starting their own family. Although property rights over land and animals are individual, assets are managed by the head of family and pastures are available for communal use. The second level of organization corresponds to the *ayllus* which have their institutional origins in the early XIII century. Leadership is shared by several heads of family who conduct regular community meetings to decide how production resources (e.g. animals, land, pastures and water) will be distributed and managed among members. However, from a social and economic perspective, *ayllus* are structured by collective property rights.

The Andean highland prairies supply pastures that increase in volume and quality – measured by the amount of digestible protein – during the rainy season between November and April. Following a rotational pattern of herds, animals are taken to wetlands with rich pastures and left for free grazing until the green coverage is exhausted. Unlike large and some medium sized producers who supplement their animals with balanced feedstuff, natural pastures remain the single nutritional alternative for small producers’ herds. Given that no major rivers are found between 4,000 and 5,200masl and that the majority of small producers ignore irrigation and fodder production techniques, animal malnutrition is highly prevalent during the dry season with rates estimated around 90% of the alpaca population (Garcia et al, 2005). It should be noted that the production of fibre is highly sensitive to the availability and quality of pastures as shown in Table 3.1.

**Table 3.1. Volume of fibre production according to seasons**

Production of fibre (ton)	2010	2011	Season	Quality of pastures
Jan	340	324	Rain	Green, high quality and abundant
Feb	903	834	Rain	
Mar	648	684	Rain	
Apr	57	69	Rain	
May	21	21	Frost	Dry and low quality but still abundant
Jun	10	27	Frost	
Jul	2	5	Snow	Dry, low quality and limited availability
Aug	3	1	Snow	
Sep	5	5	Dry	
Oct	43	70	Dry	Green and high quality but limited availability
Nov	1785	1713	Rain	
Dec	535	NA	Rain	
<b>Total</b>	<b>4352</b>	<b>3753</b>		

**Source:** Adapted from San Martín (1995), Moya and Torres (2008) and (MINAG, 2011)

According to Manrique and Grupp (2005), while wetlands provide nutritional support to four alpacas per hectare, dry pastures can only accommodate one animal. However, with limited availability of quality pastures and intensive use through seasonal rotation of herds, combined pressure leads to overgrazing, thus configuring a Tragedy of the Commons. As Hardin (1968: 1244) puts it: “Therein is the tragedy. Each man is locked into a system that compels him to increase his herd without limit – in a world that is limited. Ruin is the destination toward which all men rush, each pursuing his own best interest (...). Freedom in a commons brings ruin to all”. Although costs arising from loss of green coverage - the commons - may not be immediately evident, throughout time they will be transferred to all stakeholders of the chain but particularly to small producers in the short term.

Large producers have the financial, managerial and technological means to avoid the Tragedy of the Commons. Until June 2011, three textile industries based in Arequipa, Michell and Co, Productos del Sur (PROSUR) and Grupo Inca, constituted an oligopolic national market with shares of 55%, 23% and 11% from total exports (Fairfield, 2006). However, after the purchase of PROSUR by Grupo Inca, a duopoly was established alongside Michell. These dominant firms are highly integrated and cover all stages of production, from processing to distribution and marketing of intermediate and final goods. Their raw fibre production units, Fundo Mallkini in Puno and Pacamarca in Arequipa – property of Michell and Grupo Inca respectively - manage farms with a superior genetic pool. The associative enterprises that survived fragmentation after the Agrarian Reform of 1969 are also classified as large producers. These enterprises are collectively owned by peasant communities and apply technical and managerial standards similar to those of large private farms. In Peru, less than 5% of farms qualify as large producers but produce 5% of the fibre national total.

In technology-intensive farms, the process of *saca* is strongly seasonal – usually after the rains – and constitutes the first step towards genetic improvement of a herd. Through primary selection of animals, large producers can supply-upgrade and demand-adapt the volume and quality of their production in the middle and long term by choosing parents that will transmit favourable characteristics to their offspring. Old and sick animals or those with unfavourable phenotypes<sup>4</sup> are discarded from the herd and sold or sacrificed. By reducing the herd’s age, the *saca* system increases fertility rates and the quality of fibre given that younger animals have thinner fibre.

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<sup>4</sup> The phenotype corresponds to the observable characteristics of a species such as its morphological structure and physiological properties. The phenotype expresses the interactions between the genotype – the non-observable genetic code of a species – and the environmental conditions that shape its evolution and development.

Furthermore, by discarding old or unfit animals there is less competition with apt ones for pastures and health and reproduction management costs are kept to a minimum.

Herds owned by large producers are never mixed and alpacas are separated according to age, sex, breed and colour of fibre. Phenotypical selection is complemented at laboratories where fibre width, density and length are corroborated. In terms of age and sex, studs, castrated males, mothers, *tuis* – animals between seven months and two years - and newborns are matched accordingly but raised separately allowing controlled mating or more advanced fertilization techniques. The season for controlled mating is supervised by qualified staff and runs for 90 days between January and March (Garcia et al, 2009). Given that pregnancy lasts between 342 and 345 days and mothers are ready for new mating 15 days after delivery, fibre production activities are arranged on a yearly basis (Lamo, 2011). For all genetic and reproduction management activities, registries are taken in order to identify the best studs, diagnose pregnancy, keep genetic traceability and track of mortality rates of newborns among others .

In low technology-intensive systems with limited access to high-quality pastures, genetic and reproduction management practices are almost inexistent (INIA, 2004). The *saca* does not follow sanitary or phenotypical selection criteria but is conditioned by financial hardship throughout the year. Moreover, due to lack of capital and technology and restricted access to training services, small producers´ herds are mixed in terms of species, breeds, age, sex and colour. Free mating in open pastures is the norm and has led to high levels of hibridisation<sup>5</sup>. As a result, the quality of the genetic pool has been severely affected; currently, 50% of alpaca fibre in Peru has a diameter over 27 $\mu$  (Pacomarca, 2012). The lack of reproductive management in combination with endemic malnutrition leads to poor production indicators. For instance, mortality rates of newborns normally range between 25 to 30% annually but can reach up to 70% with adverse weather conditions (Schmid, 2006).

Animal health constitutes the third intangible determinant related to information and knowledge affecting fibre production. In a vicious cycle reinforced by prevalent malnutrition, infectious and parasitic diseases lead to high morbidity and mortality rates in adults, *tuis* and newborns (see Table 3.2).

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<sup>5</sup> Crossbreeding between llamas and alpacas is frequent and results in sterile offspring known as *Huarizo* or *Llapaca*. It is also possible - though less frequent - to find *pacovicuñas*, the mating between alpacas and vicuñas. In addition, continued mating in small herds leads to homocigosis which increases the risk of delivering newborns with recessive genotypes and undesired phenotypes (e.g. congenital malformations). Increased diameter of fibre is a direct consequence of these events and goes against international textile markets which increasingly demand fine and uniform produce in terms of width and colour.

**Table 3.2. Alpaca mortality rates (%) according to age in a production system in the Altiplano**

Age	Median	Extreme Values
Newborns	26.7	9.3 - 56.6
Tuis	5.1	4.1 – 6.6
Adults	2.9	2.0 – 3.6

Source: FAO (2005)

Infectious and metabolic diseases generate high mortality rates and parasitic diseases - although not a major cause of death - lead to high morbidity that significantly affects the productive performance of animals (see Table 3.3).

**Table 3.3. Causes of alpaca mortality (%) according to age in a production system in the Altiplano**

Category	Newborns	Tuis	Adults
Infectious diseases	66.5	53.1	52.4
Parasitic diseases	0.1	5.5	3.2
Metabolic diseases	22.8	21.0	22.8
Fortuitous causes	4.0	11.7	11.4

Source: FAO (2005)

Alpacas are affected by a large number of diseases, many of them endemic to the fibre production areas. Economic losses for producers are significant not only in terms of animal mortality but also because diseases affect the volume and quality of fibre and meat produce.

In terms of economic impact, the most important diseases are *Enterotoxaemia*, *Sarcocistiosis* and *Sarna*. *Enterotoxaemia* is an acute infectious disease that affects newborns within their first month with mortality rates regularly exceeding 50% (FAO, 2005). It is rapidly transmitted and animals die usually without showing symptoms, the most common being diarrhoea and fever. The disease is more common during the weaning period of the rainy season and appears at intervals of five to six years (ibid); after the initial breakup, mothers provide an immune response and develop antibodies that are transferred to future newborns through colostrum. Given the difficulty to control a breakup and the inexistence of an effective vaccine, preventive measures are fundamental and include clean, fenced and dry dorms, protection from the external environment, adequate nutrition of mothers and the provision of clean water (Mamani and Huanca, 2010). *Enterotoxaemia* has a profound impact on replacement rates of herds which affects genetic improvement strategies due to shortage of animals for future selection.

Although *tuis* and adult alpacas are also susceptible to infectious diseases, parasitic diseases are more significant in economic and public health terms given their zoonotic<sup>6</sup> condition. The most

<sup>6</sup> Zoonotic diseases are those transmitted among species and from animals to humans and viceversa.

important endoparasitic disease is *Sarcocystosis* which affects alpacas aged over 30 months through the formation of macroscopic cysts in their muscles (Mamani and Huanca, 2010). This disease has a prevalence of 70-80% (FAO, 2005) but rates in Altiplano herds can be as high as 80-100% (Mamani and Huanca, 2010). The biological cycle of *Sarcocystosis* begins with dogs – but also wild species like fox and pumas – which ingest alpaca meat with *sarcocysts*. After internal reproduction of the parasite, dogs eliminate *oocysts* via feces that contaminate pastures and water. After their ingestion by alpacas, the cycle is completed and repeated. Although main economic losses are associated with meat production – all contaminated carcass should be seized by public health authorities - stress and overall health condition of affected animals lead to significant reduction in fibre production. Given that affected animals do not show symptoms and no treatment is available, preventive measures are also fundamental.

With prevalence rates ranging from 5 to 80% (Mamani and Huanca, 2010), *Sarna* or Scabies is the most important ectoparasitic disease affecting fibre production. The biological cycle is initiated by acarus which penetrate the skin and form subcutaneous galleries where they deposit their eggs. After hatching, larvae mature into adult parasites and the cycle is repeated. Frequent locations are alpacas' face, ears and crotch with persistent itching that leads to stress and alteration of productive functions. Transmission is through direct contact with infected animals and is exacerbated by poor hygiene and malnutrition conditions. *Sarna* can be easily diagnosed and treatment with antiparasitic baths for all animals of the herd is recommended, especially in April and May after the shearing season.

The sanitary status of herds is positively correlated to the level of technological and managerial development applied. Small producers' animals are more vulnerable to disease and economic losses due to high prevalence, mortality and morbidity rates which perpetuate their position at the bottom end of the AFGVC. Although access to training services – information and knowledge - also stands as a critical input determinant, their straightforward provision sometimes collides with deeply rooted cultural practices and beliefs. For instance, in the case of *sarcocystosis*, its biological cycle can be broken by eliminating dogs or by avoiding feeding them with contaminated carcass. However, dogs aid peasants in the supervision of herds and provide company in isolated environments while carcass stands as their exclusive nutritional source. Moreover, although seizure and incineration of contaminated carcass may appear as a logical and straightforward measure to prevent disease perpetuation, for small producers owning very small herds the value placed on each animal – healthy or sick – is much higher; a contaminated carcass for self consumption or sale will always be better than an incinerated one.



In the case of *sarna*, financial hardship restricts the purchase of veterinary drugs. Therefore, traditional treatments may control disease transmission but at the expense of fibre quality.

Information and knowledge critically influence intangible input determinants such as nutrition, reproduction and health management practices, which in turn condition the quality of the genetic pool. Together, they structure the foundations of power asymmetries among actors due to their profound impact on productivity outcomes and distribution of costs and profits. Alongside the prevailing social and cultural arrangements underpinned by five-century old informal institutions they configure a chain where private returns largely exceed social ones. As a result, although small producers supply 85% of raw fibre, their productivity is limited to 1.6kg/year per animal with an average fibre width of 27 microns while large producers reach an average production of 2.5kg/year per animal (Schmid, 2006; Fernandez et al, 2007).

#### **4. Research strategy and methodological framework**

This dissertation is epistemologically founded in interpretivism. This perspective is best suited to the complexities associated with social science and management research. Interpretivism, in contrast to positivism, presents multiple realities which validate the internal research design through the subjectivism that will permeate the analytical assessment. Due to the lack of institutional considerations in GVC theory, New Institutional Economics theory will be leveraged into the framework and complemented by an inductive and qualitative research approach.

Research strategies can be classified as descriptive, explanatory or exploratory. According to Saunders et al (2007) descriptive research aims for accuracy when portraying research features, explanatory research – often mutually complemented with descriptive research – seeks to identify relationships between different factors of empirical nature and exploratory research attempts to find new patterns and possible trends for particular phenomena. In light of these strategies, this research will adopt a descriptive and explanatory approach.

The case study method has been chosen to fulfil the aim and objectives of this investigation following the recommendations posed by Yin (2009) because: (i) the type of questions to be answered are mainly “why” and “how”; (ii) the phenomena under study is of contemporary nature; and (iii) the behaviour of agents cannot be controlled by the researcher. In this regard, Yin (2009: 18) defines a case study as “an empirical inquiry that investigates a contemporary phenomenon within its real-life context especially when the boundaries between the phenomenon and the context are not clearly evident”. Case studies are recommended when

adopting descriptive and explanatory strategies - often used for policy formulation – to respond “how” type questions.

The dominant type of research question – “how” – and the institutional context in which it is placed justify the use of a case study. In this regard, this research will adopt a single-embedded case study of the AFGVC. Single cases are used to confirm or challenge a theory, or to represent a unique or extreme case (Yin, 2009). They are ideal for cases where the researcher may have access to a phenomenon that was previously inaccessible. Their design requires care to avoid misrepresentation and to maximize the researcher's access to the evidence. In light of these general considerations, a case study protocol will be designed to allow replicability, traceability and internal validation of data and information collected.

### **Criteria for Selection of Main and Embedded Units of Analysis**

The sampling strategies employed for the case study will be convenience and criterion (Patton, 1990). Convenience is recommended when the investigation deals with rich sources of information but where there are also strong financial and temporal limitations for its conduction. The weakness of this strategy is its degree of subjectivity which could affect reliability. Criterion is applied when the case meets criteria specified by the research questions. In this regard, it is worth reminding that this research has adopted an interpretive approach. The main unit of analysis will be the AFGVC and the embedded units of analysis will be the actors embedded within it.

### **Data and Information Collection**

Based on the research philosophy, approach and strategy this dissertation will adopt a multiple method perspective for qualitative assessment with data and information to be collected from primary and secondary sources of evidence (Yin, 2009). Primary sources will be obtained through documentary information and semi-structured interviews conducted in Peru. Documentary Information in the form of white papers and official policy reports will be collected from government sources following an explicit data collection plan in order to corroborate or contradict information collected from semi-structured interviews and secondary sources.

Semi-structured interviews will be conducted with key actors of the AFGVC, including small peasants, alpaca fibre textile firms’ representatives, senior government officers and policy makers and representatives from civil society and private organizations. Interview questions will be prepared in accordance to the analytical framework developed and based on the main research

question which is how can actors embedded in context-specific institutional environments upgrade in Global Value Chains. All data and information collected will be organized and stored following a case study protocol designed in advance. Data and information collection from secondary sources will include journals, book chapters, newspapers and websites obtained from libraries in Manchester and Lima.

### **Data and Information Analysis**

Documentary information as well as data and information from secondary sources will be orderly analyzed within the conceptual and theoretical variables incorporated in the novel framework developed. In addition, Explanation Building techniques for a presumed set of causal links leveraged into the analytical framework will also be used to test the research hypothesis (Yin, 2009). Information collected from interviewees will be analyzed making use of an interpretative approach and will be supported by NVIVO software. After data and information analysis, a summary of findings will be developed to serve as the basis for policy recommendations.

The selection of a methodological framework is a sensitive issue. Therefore the research proposal's analytical framework is not exempt from limitations. In this regard, relationships and interactions between the main and embedded units of analysis within the framework of analysis are difficult to establish due to their particular organizational and institutional structures. In addition, although sectoral specificities within the analytical framework proposed are explicitly acknowledged they limit horizontal applicability. Nevertheless, the interpretive approach allows validation of the framework's application if sectoral differences are clearly identified, characterized and specified because subjectivism is explicitly acknowledged.

### **5. Conclusions**

The GVC theoretical framework provides a useful analytical device to describe, map and explain the role of actors embedded in it as well as their level and condition of engagement. However, how GVCs are governed is fundamentally influenced by the institutional structures that have evolved throughout time. Therefore, the GVC approach needs to further develop and refine its institutional dimension in order to find the ways it shapes GVC governance structures. The consideration of the institutional context within GVC analysis adds significantly to its utility as a tool of structured inquiry. Considered in conjunction with governance, institutions provide a useful framing device for the examination of how global production systems intersect with space and place. Issues related to governance encapsulate the coordinating structures which

connect economic actors across space while institutions represent the multi-layered and multi-dimensional contexts that explain how economic actors are embedded within particular territories.

The AFGVC is an export-dependent chain characterized by large value-addition abroad. However, mapping it does not show the intense competitive pressures faced by small producers at the national level and by large textile industries abroad. The input-output structure and territoriality provide the spatial and functional contexts that help framing the explanatory dimensions of governance and institutions but the ways in which small producers are embedded within the AFGCV can help or hinder their capacities to participate in these chains. A GVC theoretical framework focused on governance needs an institutionally enriched one to provide better explanatory accounts. Therefore, complexity, specificity and change are fundamental for analysis so the challenge is to incorporate these three factors into the GVC analytical framework.

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